James R. Fouts, Mayor

Purchasing Division
Office of the Controller
One City Square, 4th Floor
Warren, Michigan 48093-5289

Phone (586) 574-4639
FAX (586) 574-4614

ADDENDUM 2

ITB-W-9330 **FEBRUARY 1, 2016**

REGARDING

CONSTRUCTION OF NEW BUSCH BRANCH LIBRARY

PLEASE ALSO BE ADVISED that the Hazardous Materials Survey (NTH Project No. 62-130322-00, dated June 10, 2013) for the Dorothy Busch Branch Library located at 23333 Ryan Road, Warren MI is available via the MITN system under Addendum 2 Documents.

PLEASE ALSO BE ADVISED that the Hazardous Materials Survey (NTH Project No. 61-160022-01, dated January 28, 2016) for the Residential Dwelling/Shed located at 23245 Ryan Road, Warren MI is available via the MITN system under Addendum 2 Documents.

PLEASE ALSO BE ADVISED that the specifications for Asbestos Abatement and Hazardous Materials Removal for the Busch Library (2333 Ryan Road) and the adjacent Residential Dwelling/Shed (23245 Ryan Road) available via the MITN system under Addendum 2 Documents (NTH Project No. 61-160022.01A, dated January 29, 2016).

PLEASE ALSO BE ADVISED Partners In Architecture has included additional information that is attached for your reference and is included as part of Addendum 2.

BIDDERS ARE REMINDED:

Additional information regarding this bid or any questions can be answered by contacting Partners in Architecture, PLC, via email; epacella@partnersinarch.com, Subject ITB-W-9330.

Sincerely,

Craig Treppa
Purchasing Agent

Acknowledged by _____

Company Name_____

ADDENDUM

Project Name:	Dorothy M. Busch Branch Library	**Addendum No:**	**Two (2)**
Project Number:	15-142	Issue Date:	February 1, 2016
Project Location:	23333 Ryan Road, Warren, Michigan 48091		

To the Contract Documents for the requested Dorothy M. Busch Branch Library project.

This Addendum forms a part of the above described Contract Documents and supersedes, supplements or clarifies parts thereof to the extent defined by the terms set forth in this Addendum.

This addendum consists of (3) typed pages and the following attachments:

Specifications:
City of Warren Sample Construction Agreement; 17 pages
AIA A201-2007 – General Conditions of the Contract for Construction (New section issued); 40 pages
003100 – Bid Form (Reissued); 3 pages
008000 – Supplementary General Conditions (New section issued); 8 pages
012200 – Unit Prices (Reissued); 2 pages
329200 – Sodding (New section issued); 4 pages
329220 – Topsoil (New section issued); 3 pages
329230 – Fine Grading (New section issued); 3 pages
329300 – Trees, Plants and Ground Covers (New section issued); 8 pages
329400 – Landscape Maintenance & Warranty Standards (New section issued); 4 pages

Questions: Pre-bid Questions and Answers; 7 pages

SPECIFICATIONS:

Item S1 Specification Section 000100 – City of Warren – General Conditions

A. Delete paragraph to "Taxes" on page 4 of the document.

Item S2 Specification Section 002213 – Supplementary Instructions to Bidders (Revised but not reissued)

A. Add paragraph 1.9.A.1.b as follows: "7.1.1.2 – Contractor to provide Maintenance and Guarantee Bond in an amount equal to the Contract Amount for the workmanship and materials for the work identified in the Agreement and said Bond shall cover a two year period after completion of the library, and final written acceptance and issuance of final payment by the City of Warren."
B. Add paragraph 1.9.A.1.c as follows: "7.1.1.3 – Refer to City of Warren Draft Contract for additional information regarding bonds."

Item S3 Specification Section 003100 – Bid Form (Reissued)

A. Revised bid form to include space for Unit Price No. 2.

Item S4 Specification Section 003126 – Existing Hazardous Material Information

A. Change paragraph 1.1.B to read: "Refer to reports and specifications as follows: 1. Hazardous Materials Survey (NTH Project No. 62-130322-00, dated June 10, 2013) issued in Addendum #1; 2. Hazardous Materials Survey (NTH Project No. 61-160022-01, dated January 28, 2016) issued this Addendum; Specifications for Asbestos Abatement and Hazardous Materials Removal for the Demolition of Busch Library -

23333 Ryan Road, and Adjacent Residential Dwelling / Shed - 23245 Ryan Road (NTH Project No. 61-160022-01A, dated January 29, 2016) issued this Addendum".

Item S5 Specification Section 006000 – Forms

A. Add paragraph 1.2.F Contract forms as follows: "1. Contract: Refer to City of Warren, Sample Construction Agreement; 2. General Conditions of the Contract: In addition to specification section 000100, General Conditions are to be AIA A201-2007 and Supplementary General Conditions (specification section 008000). Sample Construction Agreement, AIA A201-2007 and 008000 Supplementary General Conditions, all issued this addendum".

Item S6 Specification Section 012100 – Allowances

A. Add paragraph 1.6.E as follows: "For the purposes of calculating the contractor's overhead, profit and related costs, the allowance amounts are not to be included in this calculation of these amounts – they are thus are not to be "marked up". The contractor will be entitled to the specified markups upon approved usages of the allowances which will be incorporated via approved change orders."

Item S7 Specification Section 012200 – Unit Prices (Reissued)

A. Change Unit Price No. 1 to read "Undercutting Subgrade at Building Areas".
B. Add Unit Price No. 2 – Undercutting Subgrade at Paved Areas. Refer to revised specification section.

Item S8 Specification Section 012300 – Alternates (Revised but not reissued)

A. Revise Alternate No. 7 Building Management System, 1. Base Bid to include "and as outlined in specification section 230900 Instrumentation and Control for HVAC" at end of paragraph.
B. Revise Alternate No. 7 Building Management System, 2. Alternate to include "and as outlined in specification section 230900-ALT Automatic Control Systems" at end of paragraph.

Item S9 Specification Section 230900 – Automatic Control Systems (Revised but not reissued)

C. Revise specification section number and title to "230900-ALT Automatic Control Systems".

Item S10 Specification Section 329200 – Sodding (Issued this Addendum)

D. New specification section issued this addendum.

Item S11 Specification Section 329220 – Topsoil (Issued this Addendum)

A. New specification section issued this addendum.

Item S12 Specification Section 329230 – Fine Grading (Issued this Addendum)

A. New specification section issued this addendum.

Item S13 Specification Section 329300 – Trees, Plants and Ground Covers (Issued this Addendum)

A. New specification section issued this addendum.

Item S14 Specification Section 329400 – Landscape Maintenance and Warranty (Issued this Addendum)

A. New specification section issued this addendum.

Item S15 Specification Section 334100 – Storm Utility Drainage Piping

A. Revise paragraph 2.2.A. to read: "Type A (trench backfill) – aggregate shall meet the requirements of the City of Warren Standard Details for Pipe Bedding and Sewer Details."

B. Revise paragraph 2.2.C. to read: “Type C (stone for pipe bedding) – aggregate shall meet the requirements of the City of Warren Standard Details for Pipe Bedding and Sewer Details.”
C. Add paragraph 3.07.H. as follows: “All backfilling shall be in accordance with the City of Warren Engineering Division standards, Section 700 (Specifications for Sanitary and Storm Sewers) and the City of Warren Standard Detail Sheet Pipe Bedding and Sewer Detail.”

Item S16 Specification Section 334100 – Storm Utility Drainage Piping

A. Paragraph 2.6.A.1 - Delete “MDOT Standard Specifications” from paragraph.

****END OF ADDENDUM****

SAMPLE

CONSTRUCTION AGREEMENT FOR PUBLIC LIBRARY BETWEEN CITY OF WARREN AND _____

This agreement is made this ____ day of _____, 2016, between the City of Warren, a Michigan municipal corporation (the City or the Owner), whose address is One City Square, Warren, MI 48093 and _____, (Contractor), whose address is _____.

STIPULATIONS

1. The City is constructing a public library, known as the Busch Branch Library, located at 23333 Ryan, Warren, Michigan. The City or Owner, as used in this Agreement, will mean the City of Warren, City of Warren Downtown Development Authority, and/or the City of Warren Library Commission, and their officers, employees or agents, acting within the scope of their authority.

2. The library site will include adjacent property, which the City owns at 23245 Ryan Rd, Warren, Michigan. The residential structures on this property must be demolished, and the site cleared and resurfaced prior to construction of the library.

2. The City retained the services of Partners in Architecture, PLC (the Architect) to design and to administer construction of the library, and demolition of the adjacent property.

3. The City requested bids for the demolition of a residential property and construction of the library under ITB-W-9330.

4. The Contractor is a professional, licensed builder that submitted the lowest responsible and cost-effective bid.

5. The City of Warren, in reliance upon Contractor's Response to the Bid, oral negotiation and discussions, wishes to enter into this Agreement for the demolition work and construction of the library.

THEREFORE, in consideration of the mutual promises, covenants and understandings of the parties as set forth in this Agreement, the City of Warren (the City), and _____ (the Contractor), agree follows:

ARTICLE 1
PROJECT DESCRIPTION

1. Scope of Work. Contractor shall, in a professional and skilled manner, provide all materials, labor, equipment, services and transportation necessary to 1) demolish the 1,633 square foot residential building, and any garage, and accessory structure and trees at 23245 Ryan Rd, Warren, Michigan, and clear the site, and backfill and regrade and resurface the property; and to 2) construct a new public library building and all related infrastructure and work, at the site known as Busch Public Library, located on or about 23333 – 23245 Ryan Rd., Warren, Michigan (the Site), and to complete the requirements of this Agreement and all documents attached to or incorporated into this Agreement (collectively, "the Project"). All work and services shall be subject to and performed in accordance with the City of Warren Bid No.

ITB-W-9330, including the Specifications, Instructions to Bidders, the Response to Proposal and all addenda, clarifications, amendments and parts attached to or made a part of such documents (collectively, the Bid), and in accordance with the Contract Documents. The Contract Documents are defined as this Agreement, the Drawings, Specifications, the Bid, General Conditions, Supplementary Conditions, Demolition Specifications and Standards, Bonds, the Architect's Project Manual, dated January 13, 2016, Supplementary Conditions for Demolitions, and all exhibits and addenda attached to or made a part of such documents, and permit conditions, and applicable codes and regulations, all of which are incorporated by reference, and made a part of this Agreement. The Contract Documents will also include the Site Plan and Site Plan Conditions for the Project, approved by the Warren Planning Commission on October 26, 2015, subject to minor amendments as may be allowed in writing by the City of Warren Planning Director. The parties acknowledge receipt of the Contract Documents. The terms, "this Agreement" and "Contract Documents", may be used interchangeably unless specifically stated otherwise.

Site demolition and related work and the construction of the new library, and all services and work described in the Contract Documents are referred to as either the Work or the Project.

Contractor shall provide, without charge, all incidental items required as part of this Work, even though not particularly specified or indicated. The Contractor will work under the general supervision of the Architect and will comply with all requests of, and scheduling of work, with the Architect to ensure the proper coordination of the Project and with contractors who may be completing other aspects of the library.

2. Compliance with laws. In addition to compliance with the Contract Documents, all work shall be performed in compliance with all laws, codes, and regulations. Any work shall be undertaken as necessary to ensure that all installations, surfaces, products and processes, or any other part of the Project, are brought into compliance with current codes, regulations and standards, regardless of the condition that existed prior to the start of the Project.

3. Conflicts between Contract Documents. In the event there is a direct conflict between a term of this Agreement and a term contained in the Bid or another Contract Document, the term of this Agreement shall govern, unless specifically stated otherwise. The Agreement terms are otherwise supplemental to the terms of the other Contract Documents.

It is specifically understood that this Agreement is intended to supplement the terms in the General Conditions of the Contract for Construction, entitled AIA Document A 201 – 2007 (General Conditions). The Contractor will comply with such General Terms, except that in the event of a direct conflict between a term of the General Conditions, then the term of this Agreement will supersede such term.

4. Time for Performance; Schedule of Work. Upon execution of this Agreement, the Contractor will complete the Project in phases consistent with the schedule attached as Exhibit

All times stated in the Contract Documents are essential elements of the Agreement, unless excused by the Project Manager or for force majeure causes, as provided in this document.

Liquidated Damages. It is expressly agreed that in the event Contractor shall fail to perform its responsibilities under this Agreement within the times required by this Agreement, or, if excused or extended, within 15 days after the due date of each phase set forth in Exhibit A, as applicable, then Contractor shall pay to the City as liquidated damages and not as a penalty, the

sum of $200 for each calendar day that the work is late beyond the applicable phase completion. It is also understood and agreed that the liquidated damages mentioned are in lieu of the actual damages arising from such breaches of this Contract, which sums the City shall have the right to deduct from any monies otherwise due or to become due to Contractor or to sue for and recover compensation for damages for non-performance of this contract at the time stipulated herein and provided.

5. Compensation. It is agreed that, in consideration of the faithful and entire performance by Contractor or its obligations under the Contract Documents, the Contractor will be paid a sum up to exceed _____, subject to measured quantities and the respective unit prices provided in the Bid.

The Contract Amount may also be modified as follow:

a. Such sums as deemed appropriate for liquidated damages;
b. Cost to the City to repair or remedy damage not corrected by Contractor, or to remove debris, complete work;
c. Costs to pay a laborer, subcontractor or supplier and/or remove a lien;
d. Deductions for decreases in actual services and actual quantities based upon amounts stated in the Bid.

Payment shall be made according the following schedule and conditions:

a. Upon issuance of a written invoice, after approval of the Architect, the City shall pay to the Contractor progress payments as provided in the Exhibit B.
b. Prior to the City issuing progress payment, the Contractor must provide any waivers of lien, written manufacturer and labor guarantees, trade or building permits, and correction of all defects applicable to such portion of work.

Final Payment. The amount equal to 10 percent of the Contract Amount,_____, shall be withheld until the Architect issues a Written Notice of Acceptance. Such notice and payment shall be withheld until the following:

a. Work is completed to the satisfaction of the Architect. This will include approval of the Project, correction of all defects, replacement of unsatisfactory materials, final clean-up of work Sites, repairs to property damage to the Site and adjacent property, and any other property damaged caused during the performance of this Agreement.

b. Final completions issued by the City of Warren Building Department and/or the City of Warren Engineering Division for each permit and license.

c. Contractor submits fully executed change orders, executed unconditional waivers of lien from Contractor and its suppliers, and subcontractors, and notarized executed sworn statement from Contractor that all subcontractors, laborers and suppliers have been fully paid.

d. Contractor provides written warranties consistent the Contract Documents.

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e. Contractor provides all manufacturers' and suppliers' written guarantees and warranties covering materials and equipment furnished under the Agreement, and assigns such warranties and guarantees to the City.

Upon the Notice of Acceptance and written invoice detailing the remaining costs, hours, materials, and services, the City will pay to Contractor the entire retained amount, less liquidated damages, unless discharged, cost of the City to remedy defects or complete any work or amounts needed to satisfy any claims or liens from laborers, suppliers or contractors or to correct or complete any work.

Any progress payment shall not be construed as acceptance of work previously performed, and shall not relieve Contractor of the responsibility to correct defects to work for which the payment applied.

Permit fees. Contractor is responsible, at its sole expense, to obtain all permits, and complete all applications, and scheduling inspections, and satisfying all permit requirements within a timely manner. All City of Warren permit fees are waived, provided permits are obtained within the required time period, unless good cause extensions are allowed by mutual decision of the City inspector and Architect. If permits are not timely obtained, the full fee must be paid before the approved permit is issued. All payments for non-City permits are to be paid at the Contractor's expense.

6. Bonds.

Upon its execution of this Agreement, Contractor shall submit, the surety bonds as indicated below:

- Performance Bond in an amount equal to 100 percent of the Contract Amount as security for the faithful performance of the Agreement and adherence to its requirements and obligations.
- Labor and Materials Bond in an amount equal to 100 percent of the estimated Project Expenses as security for the payment of all persons and entities performing labor on the project and furnishing materials and equipment in connection with the Agreement.
- Maintenance and Guarantee Bond in an amount equal to the Contract Amount for the workmanship and materials for the work identified in the Agreement and said Bond shall cover a two year period after completion of the library, and final written acceptance and issuance of final payment by the City of Warren.

If, at any time, the City of Warren, for justifiable cause, shall be or become dissatisfied with any sureties pursuant to the Performance Bond, Labor and Materials Bond, and/or the Maintenance and Guarantee Bond, Contractor shall within five (5) days after notice from the City so to do, substitute an acceptance bond (or bonds) in such form and sum signed by such other surety or sureties as may be satisfactory to the City. The premiums on such bonds shall be paid by Contractor. No additional construction will be allowed or no further payments shall be deemed due nor shall be made until the new surety or sureties shall have furnished acceptable bonds to the City.

All bonds shall be obtained from sureties authorized to do business in the State of Michigan and shall be for the benefit of the City of Warren in a form approved by the City of Warren City Attorney.

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The rights reserved by the City with respect to the bonds are in addition to all other rights of the City, whether reserved by the Agreement or authorized by law, and no such action, proceedings or exercise of a right with respect to such bonds shall affect any other rights the City may have. In the event the City draws upon any bond, Contractor shall restore the bond to the required amount and shall remain responsible for the costs of curing any violation not covered by the bond amount.

The bonds shall be made in favor of the City of Warren, release of which is conditioned upon the faithful performance of the bonding company and Contractor under the terms of the Agreement, and the bonds shall contain the following endorsement:

"It is hereby understood and agreed that this bond may not be canceled by the surety until sixty (60) days after receipt by the City, by registered mail, of written notice of such intent."

7. Within 10 days of this Agreement, Contractor will provide the Architect and City with notice of a representative, with experience and competency in projects of this nature, and who will supervise Contractor's activities to be performed and represent Contractor on all contract and construction matters (Project Manager). The Architect will act on behalf of the City and have general oversight of all demolition and construction matters relating to, without limitation, the progress and quality of the work according to the Contract Documents. The Architect will consult with the City throughout the course of the Project, and will administer the Contract Documents according to its will. The City will designate a representative who may act on the City's behalf on administrative aspects of the Contract (City Representative), or in place of the Architect on the quality or progress of work, in the Architect's unavailability, or in any matter involving the public health, health or welfare.

8. Anticipated Conditions.

The Contractor acknowledges that it is not entitled to any additional compensation by reason of conditions being different from those anticipated or by reason of his failing to fully acquaint itself with the Sites, the conditions, and the work now in place or on account of interference by the City or by any other activities which affect the work of this Contract.

9. Responsibilities of Contractor.

A. Contractor shall be responsible for the execution of satisfactory and complete work in accordance with the true intent of the specifications and other Contract Documents. All measurements in the work specifications are approximate and are meant only as a bidding aid; exact measurements are the responsibility of Contractor.

B. Contractor will comply with all directives of the Architect as to the quality or progress of work, and to perform such work and install materials that meet with the Architect's satisfaction.

C. Contractor shall obtain and pay for all permits and licenses and shall give all notices, pay all fees, and comply with all applicable laws, ordinances, codes, rules and regulations at all times in the performance of this Agreement.

D. In addition to the Contract Documents, all work shall comply with all applicable local, state and Federal laws, codes and regulations, and any amendments as may be adopted during the progression of this Agreement. If any of the work performed on the Project shall be contrary

to laws, ordinances, codes, rules or regulations, Contractor shall bear all costs related to the correction of such work, and such costs will not be reimbursed by the CITY.

E. Contractor shall be responsible for scheduling the inspection for each permit and license and must obtain the inspection approvals accordingly.

F. In addition to the construction standards and specifications in the Contract Documents, Contractor shall comply with the standards of the City of Warren Director of Building Maintenance, local building codes, regulations and ordinances, and any other applicable statute, regulation or code.

G. All materials, equipment and furnishings incorporated into the work or otherwise provided under this Agreement shall be new and good quality. Contractor shall ensure that the Project shall be good quality, professional and free from faults and defects.

H. Contractor shall protect the Property from all liens, claims, assessments, or encumbrances from any person or entity, including without limitation, any subcontractor, laborer, supplier or any governmental unit. The work shall be completed free of liens, or rights of liens of contractors, mechanics, material suppliers and laborers. In the event of a lien or claim by any contractor, laborer or supplier for work performed on the Project, the City may, after seven (7) days' notice to Contractor, deduct from any installment owed to Contractor, the amount necessary to satisfy the claim of the contractor, supplier or laborer lien, and issue a one-party check to the contractor, laborer or supplier. Such amount shall be deducted from the Contract Amount.

I. Contractor shall be fully responsible for removal and transportation of all debris and materials, and shall safely ensure its disposal at a land site.

J. Contractor is responsible for contacting Miss-Dig and locating any underground facilities, telecommunication wires, or utilities, and will take all precautions to prevent any break or damage to such facilities, wires or utilities. Contractor will be responsible for damages caused by the destruction, damage, or loss of such facilities, wires or utilities.

10. Inspections.

A. Contractor, its employees, agents and any subcontractors shall fully cooperate with the inspections and sampling and testing of the Project. The Architect and City Representative shall have right of entry at all times to inspect the progress of the work and Contractor shall give them access to the materials and equipment for inspection prior to their installation.

B. If, in the Architect's opinion, the work is not being done in accordance with the Contract Documents, including applicable codes and regulations, or is not otherwise satisfactory, the City shall have the right to require compliance and require correction of defective work or replacement of unsuitable materials. Contractor shall correct all such defects.

C. The City Representative shall also have authority to stop work whenever necessary, to the extent as the Architect in the General Conditions or when in the interest of the public health, safety or welfare. It is understood and agreed that permit regulations and City inspections are not conclusive as to the quality of the work. The work must be performed to the standards of the Architect, as they deems necessary to effectuate the Contract Documents. In the event of a conflict between a City trade inspector and the Architect, the decision of the Architect will

prevail. Notice from the Architect to Contractor's Project Manager shall be deemed effective notice of any defect, requirement to cure, and an order to stop work. The City/Architect shall have the right to reject and require the re-performance of any and all services performed on the Project, at Contractor's expense.

D. The inspection or approval of the work and materials by the Architect or City inspector shall not relieve Contractor from any obligations under this Agreement. Defective work shall be remedied, unsuitable materials may be rejected, and any specification, code or regulation violations must be corrected, notwithstanding that such work or materials may have been previously overlooked or accepted. If any work fully or partially performed work is found to be defective or to contain defective materials, Contractor shall make the correction.

E. Final payment will be made only after final inspection and acceptance of all work by the City Representative, as well as all inspections for each permit and license. Contractor is responsible for scheduling all inspections, including the inspections for each permit or license, and for scheduling the final inspection and the lead-based paint clearance inspection. Contractor is responsible for having work completed at the time the inspections are made. Failure to do so will result in the need for a re-inspection at the Contractor's, expense.

10. Guarantees and Warranties

A. Contractor warrants to the City that all materials and equipment incorporated or otherwise used in the Project will be new and that the work will be good quality, professional, and free from faults and defects.

B. Contractor shall provide a written warranty in a form approved by the City a manufacturer guarantee on the roof materials and system, effective for a period of ___ years from the date of the Notice of Acceptance. Such warranty shall guarantee repair or replacement of all defective labor, work, materials, equipment and any damage caused by such defective or substandard materials. This written warranty must be provided before the final payment or any of the retained percentage will be paid to Contractor.

C. All other warranties shall be provided as stated in Section 15.142 of the Architect's Project Plan for the period specified. Manufacturer's warranties must be assigned to the City prior to Final Payment.

D. If any work or part or material is performed or replaced during the warranty period, such work, part or material will be warranted according to the Contract Documents.

E. Before final payment, Contractor must provide the City a written guarantee of all other labor, equipment, materials and work for a periods stated in the Architect's Project Plan, dated January 13, 2016, commencing in the date of Final Payment. The final payment will not be issued until this warranty if provided; no progress payment will be issued until the manufacturer and labor warranties are submitted covering the part of the Project to which the payment applies. Manufacturer warranties are to be assigned to the City.

11. Asbestos and Rodent Abatement

If any asbestos containing materials identified in the survey will be removed, patched or repaired as part of the demolition or construction work. This work must be completed by a properly licensed and insured asbestos abatement contractor (see insurance requirements

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below). In addition, the attached "Notification of Intent to Renovate/Demolish" must be submitted to the DNRE and/or DLEG as appropriate and the City of Warren, Office of Community Development, One City Square, Suite 210, Warren, Michigan 48093, 10 days prior to the start of any abatement work. In addition a City of Warren Inspector must be present when you start any abatement work to document that it is being undertaken by a properly licensed and insured asbestos abatement contractor.

In addition, all measures must be taken, and products used, to ensure that during and demolition and the construction, all rodents are eradicated from on or about the Site.

12. Ownership of Documents

Copies of all documents, including plans, specifications, reports, correspondence, contracts, databases and schedules developed primarily for or by Contractor in connection with the performance of the services provided for the City, or its contractors or subcontractors, shall become property of the City, and, upon completion of the Project or termination of this Agreement, whichever, occurs sooner, shall be given to the City, at Contractor's expense. The concepts, ideas, designs, computer models, and other similar property ("Intellectual Property") associated with the documents, work products or services developed for this project shall become the property the City, unless mutually agreed to by the City Representative and Contractor. Excluded are those programs, processes methods and techniques which Contractor has not rights to copy and distribute.

13. Personnel

A. Contractor shall supervise and direct all work on the site, and be responsible for the quality of all work, construction methods and materials and for coordinating all portions of the work. Contractor acknowledges that it is responsible for all persons and operations on or about the work site, regardless of whether such work is performed by an employee, volunteer, or subcontractor or trainee.

B. Contractor shall provide skilled and competent personnel necessary to perform, in a good and professional manner, all activities under this Agreement. Contractor shall ensure that all work is performed by individuals licensed and qualified to do that particular work.

C. Contractor shall ensure that no solicitations are made to any person by any of its employees, volunteers, or subcontractors, and shall not tolerate any disorderly, rude or unacceptable conduct by any person engaged in work under this Agreement. The City reserves the right to request removal of any person who is acting in an unsafe or disorderly manner, and Contractor shall hold harmless and indemnify the City, the Consultant, and their employees and agents from any liability that may accrue as a result of the removal of such person from the Project.

D. Contractor may not hire or engage any person, supplier, or subcontractor who is employed by or an agent of the CITY or is an elected official of the CITY, or related to an employee, agent or elected official of the CITY. In addition, any person performing work under this Agreement shall not be considered an employee or independent contractor of the CITY.

E. No liability or benefits such as worker's compensation, insurance or other rights or liabilities, or any other employment relationship shall be construed or accrue to the City for any personnel, or contractors involved in performing work under this Agreement. It is understood

that any involvement, supervision or direction from the City or any of its agents, employees, boards or commissions shall be for administrative purposes and to further the goals of the Project, and shall not give rise to any employment relationship with the Contractor, or any of the Contractor's officers, employees, agents or subcontractors.

14. Protection of Work and Property

A. Project Protection. Contractor shall be solely responsible for safeguarding the Project and materials and equipment that are used in the development of the Project. Contractor shall be responsible for the care, protection and condition of the work and all materials and equipment at the property until written final acceptance by the CITY. In addition, Contractor shall provide the necessary protection and take all necessary precautions to prevent damage, injury, or loss to the Sites, and adjacent premises, and all public and private property, which shall include but is not limited to, structures, fences, utilities, streets, sidewalks, driveways, adjacent trees, sod, shrubbery. Contractor shall, at its own expense, repair, replace or remedy any property which becomes destroyed, lost or damaged as a result of the performance of this Agreement or from motor vehicles transporting materials or otherwise used in connection with this Agreement, whether such loss, damage or destruction is caused to public property or their party property.

B. Risk of Loss. Regardless of the passage of title, the risk of loss to any of the work or any goods, materials, equipment and furnishings provided or to be provided under this Agreement shall remain with Contractor at all times after the date of this Agreement until written final acceptance by the CITY. Should any of the work, goods, materials, equipment or furnishings be destroyed, mutilated, defaced or otherwise damaged, the Contractor shall repair or replace them at no extra cost to the City. Any insurance protection required by this Agreement shall in no way limit the responsibility of Contractor under this section. Contractor bears the responsibility of unforeseen circumstances, unusual weather conditions, disasters, acts of God or other force majeure causes Contractor shall be responsible for the care, protection and condition of the work and all materials and equipment at the Sites, until written final acceptance of the Project.

C. Contractor shall take all necessary precautions for the safety of all persons and employees at or about the Sites and shall comply with all applicable federal, state, and local safety laws to prevent accidents or injury. Contractor shall erect and properly maintain, as required by the conditions and progress of the work, all necessary safeguards, barricades and warning signs for the protection of workers and the public.

D. Contractor shall keep the Sites and all surrounding areas free from refuse, rodents, debris, rubbish, waste and hazardous materials. All tools, construction materials, and machinery shall be removed promptly after the items are no longer necessary during the progress of the work. In the case of a dispute, the CITY may remove rubbish and debris, and may deduct the cost of the removal from the Contract Amount.

15. Insurance

A. Upon execution of this Agreement, Contractor shall provide the City and keep in full effect at all times until final payment is made, insurance certificates evidencing coverage in the following types and limits:

1. Worker's Compensation Insurance:

Insurance coverage in accordance with the Worker's Compensation statutory limits . .

2. Comprehensive Commercial General Liability Insurance:
   $1,000,000 per occurrence of Combined Single Limit Coverage and
   $2,000,000 general aggregate for bodily injury and property damage
   The policy shall include the following extensions:
   a. Contractual Liability
   b. Products and Completed Operations
   c. Independent CONTRACTORS Coverage
   d. Broad Form General Liability Extensions or equivalent
   e. Coverage for X, C and U Hazards
   f. Premises/Operations coverage

3. Automotive Liability Insurance:
   $1,000,000 combined single limit for bodily injury and property damage for any auto, including hired autos and non-owned autos.

4. Builder's Risk Insurance
   100 Percent of Completed Value Form, including theft of materials from the Sites

5. Products and Completed Operations coverage must have a minimum two-year extension of coverage following police expiration. The Contractor and all subcontractors will be responsible for proving coverage for their own protection after that.

6. Umbrella Liability.
   $2,000,000

7. *Truckers Pollution Liability Insurance (if removing contaminated materials) :*
   Truckers Pollution liability insurance in the amount of $1,000,000 per occurrence, see attached sample copy of Federal filing requirements and pollution liability endorsement number CA99481293 available on commercial auto policies.

B. The certificates of insurance shall be submitted upon Contractor's execution of this Agreement. Contractor shall also obtain and keep on file insurance for all subcontractors meeting the above requirements. These shall be made available to the CITY upon request.

C. The certificates of insurance (or applicable renewal certificates) in the name of Contractor or subcontractor shall include an endorsement naming the City of Warren, Partners in Architecture, City of Warren Municipal Building Authority, City of Warren Downtown Development Authority, 37th Judicial District Court, and their elected and appointed officers, employees, boards, commissions and agents as an additional insured.

D. All insurance policies and certificates shall include a written provision providing 30 days prior written notice to the CITY of cancellation, non-renewal or material change or reduction of coverage. All operations shall cease on the occurrence of any such cancellation, material change or reductions, and shall not resume operations until new insurance is in force, and such interruption of work shall not be deemed excused, and may be grounds for a breach.

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E. Contractor and any of its subcontractors shall maintain adequate insurance to cover any claims arising from or related to the performance of the work under this Agreement regardless of the limits imposed in this Agreement. Contractor further agrees that the insurance coverage pursuant to this Agreement shall in no way limit the Contractor's indemnification obligations specified in this Agreement.

F. All insurance will include a waiver of subrogation and be considered to be primary coverage. Contractor will be responsible for payment of any applicable deductible, and for any claim in excess of the insured amount.

16. Assignment of Contract

Contractor may not assign this Agreement without the written consent of the City, and approval of the local governing body. Work shall not be sublet except with the advance written permission of the Architect. Contractor shall provide the City with a list of all contractors and subcontractors are performing work on the Project. All such subcontracts shall be subject to a written agreement that includes, at a minimum, the indemnification, insurance, nondiscrimination and construction requirements contained in this Agreement, licensing and permit requirements, the rights of the City to stop work and accept work, compliance with laws and codes, and payment of laborers, suppliers and subcontractors. All work which may be performed by a subcontractor shall be in conformity with and be subject to all the provisions of the Contract Documents. No subcontracting of work shall in any way diminish or weaken the responsibility of Contractor or lessen its obligations under the Contract Documents.

17. Termination

A. The CITY may terminate this Agreement for cause for any of the following reasons:

- The work is abandoned for a period of seven or more consecutive days, or Contractor refuses or fails to prosecute the work or any separable part, with diligence in accordance with the timeframe specified in the Agreement.

- Contractor is adjudged bankrupt, makes an assignment for the benefit of its creditors, or is appointed a receiver on account of his or her insolvency.

- Contractor fails to provide properly skilled and licensed workers or materials that are adequate for Project and this Agreement.

- Contractor fails to make prompt payment to subcontractors or for material or labor.

- Contractor disregards laws, codes and ordinances, or the instructions of the City, or otherwise substantially violates any provision of this Agreement.

- Contractor fails to properly perform the work or to correct defective work.

B. Prior to terminating this Agreement, the CITY shall give the Contractor seven (7) days' notice to cure the default. If Contractor fails to correct the default within that time period or fails to diligently proceed to remedy the default within that time period, the termination will become effective with no further notice to the CONTRACTOR.

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C. Upon termination or upon notice from the City to Contractor to discontinue work as provided in this Agreement, all work, materials, tools and appliances on the Property shall be relinquished to the possession of the City to finish the work by whatever method the City may deem necessary. In such case, Contractor will not be entitled to receive any further payment until the work is finished. All costs or expenses incurred by the City as a result of the default, together with the cost of completing the work, shall be deducted from the compensation due to Contractor. In addition, Contractor will not be entitled to payment for any materials or other deliverables ordered after the notice of default or stop work, except upon agreement of the parties. Contractor will be compensated for all services performed and approvable reimbursable expenses from the inception date to the termination date provided the services performed and the expenses were provided in accordance with the Agreement. Payment shall be made upon Contractor delivering to the City all information and materials retained by Contractor, its affiliates, or subcontractors in performing the services described in this Agreement, whether completed or in progress. After giving Contractor and its sureties written, notice thereof, may order him to discontinue all work under this Contract, or any part thereof. Thereupon, Contractor and its contractors shall at once discontinue such work or such part thereof, and shall cease to have any right to the possession at the Sites. The City shall have the right to finish the work, or part thereof, by contract or otherwise as it may elect, and for that purpose to take possession and make use of such materials, tools, building appliances and equipment as may be found upon the Sites, and to charge the cost and expense of such completion to Contractor. If the unpaid balance of the Contract price shall exceed the expense of finishing the work, including compensation for additional managerial and administrative services, the amount of such excess shall be paid to Contractor.

It is expressly stipulated and agreed that from and after the date of the order to discontinue work, and until such work shall have been finally completed by the City, neither Contractor nor any of its agents or employees shall remove, or directly or indirectly, and of the above mentioned materials, tools, building appliances or equipment from the points at which they were located on the date of said order, except upon the written consent of the Owner to do so.
It is further understood and agreed that the foregoing provisions of this article are without prejudice to any other right or remedy which the City may have under this Contract.

18. In the event of a contract dispute, notwithstanding anything to the contrary in the other Contract Documents, the matter will not be subject to Arbitration, unless expressly authorized by the parties, including the express approval of the City's governing body.

19. Indemnity

Contractor, for itself, its officers, employees, affiliates and agents, at its sole cost, shall indemnify, defend and hold harmless the Architect, the City of Warren, the City of Warren Downtown Development Authority, the City of Warren Library Commission and City of Warren Building Authority, and their officers, employees, agents, commissions and boards (Indemnified Parties), for and from any liability, penalties, claims, demands, losses, judgments, suits, and expenses (including reasonable attorney fees) for any personal injury, loss or damage arising out of or related to any act or omission or the performance of this Agreement, whether by Contractor any of its officers, affiliates, employees, volunteers, agents, subcontractors or suppliers, (Indemnified Parties or of any violation of or failure to comply with any law, regulation, code, or ordinance, or any supplier, contractor, laborer or other claims and liens, or of any infringement of a copyright, license, manual, instruction, plan, design or work used in the performance of this Agreement to the extent of damages attributable to the Contractor's fault, or

for the violation of or failure to comply with any law, regulation, code, or ordinance, or for any claims or liens of any supplier, contractor, laborer or other claims and liens. Contractor will not be liable for any injury caused by the sole gross negligence of the City.

Contractor shall indemnify, defend and hold the Indemnified Parties harmless from and for any employment, worker's compensation, pension, insurance or other right or claim that may arise from an employment or contract for hire relationship that may be brought by any of the Contractor's employees, officers, agents, subcontractors, or any other person or entity performing services or fulfilling the Contractor's obligations under this Agreement.

In the event any action or proceeding shall be brought against the City by reason of any claim covered under this Agreement, Contractor, upon notice from the City, will at its own sole cost and expense, have the duty and the right to resist and defend the same; provided, however, the City shall also have the right to appoint an attorney.

20. Assumption of Risk. Contractor undertakes and assumes all risk of dangerous conditions, on all places where it will be performing the Project. Except for acts of gross negligence by the City or its employees or agents, Contractor also agrees to waive and release any claim or liability against the City for personal injury or property damage sustained by it or its employees, agents, officers, affiliates, or representatives for personal injury or property damages while performing under the Agreement.

These indemnification obligations shall survive termination or expiration of the Agreement.

21. Notices

Except as provided below, invoices or notices under this Agreement shall be made by personal delivery or by first class mail, addressed as follows:

All notices shall be deemed given on the day of personal delivery or mailing. Either party to this Agreement may change its address for the receipt of Notices at any time by giving written notice to the other as provided and signed by the authorized representative of such party. Any notice of termination or change of address, or notices of legal nature, shall be sent by registered or certified mail, postage prepaid, return receipt requested.

22. Force Majeure

1. Definition. As used below, "Force Majeure Event" shall mean any act, omission or circumstance occasioned by or resulting from any acts of God, acts of the public enemy, wars, blockades, insurrections, riots, epidemics, landslides, lightning, earthquakes, tornadoes, windstorms, volcanoes, fires, storms, floods, disasters, civil disturbances, explosions, sabotage, Governmental Actions, the failure to act of any Governmental Authority, the inability to renew any applicable permit, changes in applicable laws, shortages of labor or materials, strikes or other labor disputes, failures or partial failures of any equipment, failure of transportation, or any other events or circumstances not within the reasonable control of a party hereto which prevents the party from performing its obligation hereunder.
2. Financial Excluded. Force Majeure Event shall not include market conditions that affect the performance of services hereunder or a party's financial inability to perform.

3. Excused from Performance. The parties shall be excused from performing any of their respective obligations under this Agreement and shall not be liable in damages or otherwise on account of the non-performance, but only for so long as and to the extent that such party is unable to perform such obligation as a result of any Force Majeure Event.

4. Mitigation and Notice. The occurrence of a Force Majeure Event shall not relieve a party of its obligations and liability hereunder to the extent such party fails to use due diligence and its best efforts to remove the cause and remedy or mitigate the effects of the Force Majeure Event. No Force Majeure Event shall relieve a party of its obligations or liability unless such party shall give notice of such Force Majeure Event to the other party within three (3) business days of the party's knowledge of the occurrence.

23. Nondiscrimination

Contractor, and its subcontractors shall abide by Federal and local laws and regulations pertaining to equal employment, including, without limitation Executive Order 11246 of Sept. 24, 1965, entitled "Equal Employment Opportunity", as amended by Executive Order 11375 of October 13, 1967, and as supplemented in Department of Labor regulations (41 CFR chapter 60).

Contractor and its subcontractors not discriminate against any employee or applicant for employment with respect to hire, tenure, terms, condition or privileges of employment on a matter directly or indirectly related to employment, because of race, color, religion, national origin, age, sex, height, weight, or marital status pursuant to the Elliot Larsen Civil Rights Act, 1976, P.A. 453. The Agency and the Municipality shall also comply with the provisions of the Michigan Handicappers Civil Rights Act, 1976, P.A. 220 and the Federal Rehabilitation Act of 1973, P.A. 93-112, 87 Stat. 394, which require that no employee or client or otherwise qualified handicapped individual shall, solely by reason of his/her handicap, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal Assistance. No person shall, on the grounds of race, creed, color, sex, age, national origin, height, weight, handicap, or marital status be excluded from participation in, be denied the proceeds of, or be subject to discrimination in the performance of this contract. The Consultant further covenants that it will comply with the Civil Rights Act of 1973, as amended; and the Michigan Civil Rights Act of 1976 (78. Stat. 252 and 1976 PA 453) and will require a similar covenant on the part of any consultant or sub-consultant employed in the performance of this contract.

24. Prohibition of Political and Religious Activity

There shall be no religious worship or instruction as part of, or in connection with, the performance of this agreement. None of the funds, materials, property or services under this agreement shall be used in the performance of this agreement for any partisan political activity, including lobbying, as specified in Federal Circular A-122 Cost Principles for Nonprofit Organizations -- lobbying revisions, or to further the election, defeat, recall, impeachment, appointment or dismissal of any candidate for or from any public office.

25. Compliance with Laws.

In addition it its other obligations to perform all work in compliance with all applicable laws, codes, ordinances and regulations, Contractor and its subcontractors shall comply with the following laws specific to this Project:

26. Prevailing Wage. The Contractor is responsible for payment of the prevailing wages applicable to this Project in accordance with the City of Warren Code of Ordinances, sections 2-334.1, as provided in the Bid.

27. Occupational Safety and Health Administration.

Contractor and all subcontractors shall ensure full compliance with the terms of the Occupational Safety and Health Administration (OSHA) at all locations and shall comply with all safety and health regulations during the full term of this Agreement.

28. Miscellaneous

Governing Law. This Agreement shall be governed by, interpreted, and enforced in accordance with the laws of the State of Michigan, and in any court having jurisdiction over the property which is located in or whose district includes Macomb County, Michigan.

Assignments. Neither party shall assign or encumber directly or indirectly any interest whatsoever in this Agreement, and shall not transfer any interest in the Agreement without the prior written consent of the other party. Any consent given for any single instance shall not relieve either party of its obligation to obtain prior written consent of the other party to any further assignment except as provided herein. Notwithstanding this Article, the City reserves the right to assign partial rights and obligations to the City of Warren or any other public body corporate of the City of Warren authorized by the City to undertake the Project or a portion of the Project.

Firearms Prohibited. Contractor shall ensure that none of its employees, officers, contractors, the trainees, or Contractor's agents shall have any firearm in their possession or in a personal, company-owned/leased or other vehicle, or while on City property.

Liability of Affiliates. If Contractor is comprised of more than one legal entity, each such entity shall be jointly and severally liable hereunder.

Independent Contractor The relationship between the parties shall be limited to performance of this Agreement solely in accordance with its terms. No party shall have any responsibility whatsoever with respect to services provided or contractual obligations assumed by the other party, and nothing in this Agreement shall be deemed to constitute any party or partner, agent, joint venture, or legal representative of the other party or to create any fiduciary relationship. The relationship of Contractor and the City shall continue to be that of an independent contractor. No liability or benefits, such as workers compensation, pension rights, or liabilities arising out of or related to a contract for hire or employer/employee relationship shall arise or accrue to any party or any party's agent or employee as a result of the performance of this Agreement.

Conflict of Interest.

A. Contractor covenants that it presently has no interest and shall not acquire any interest, directly or indirectly, which would conflict in any manner or degree with the performance of the Services under this Agreement. Contractor further covenants that in the performance of this Agreement no person having any such interest shall be employed.

B. Contractor further covenants that no officer, member or employee of the Owner and no other public official who exercises any functions or responsibilities in the review or approval of

the undertaking or carrying out of this Agreement has any personal or financial interest, directly or indirectly, in this Agreement or in the proceeds thereof.

C. Contractor also warrants that it will not and has not employed any person to solicit or secure this Agreement upon any agreement or arrangement for payment of a commission, percentage, brokerage, or contingent fee, either directly or indirectly, and that if this warranty is breached, the City may, at its option, terminate this Agreement without penalty, liability or obligation or may at its election, deduct from any amounts owed to Contractor amounts of such commission, percentage, brokerage or contingent fee.

EXECUTION

Contractor, to the best of its knowledge, represents and warrants to the CITY that all corporate actions and all governmental approvals necessary to the authorization, execution, delivery and performance of this Agreement have been taken and that it is ready and capable to perform its obligations. Contractor further warrants that the person signing this Agreement is authorized to do so on behalf of Contractor and is empowered to bind Contractor to this Agreement, and will provide written evidence of such authorization.

The City of Warren and Contractor, by their authorized officers and representatives, have executed this Agreement as of the date set forth below.

Dated: _____, 2016

WITNESSED BY: CITY OF WARREN:

_____ By: _____
James R. Fouts
Its: Mayor

_____ By: _____
Paul Wojno
Its: City Clerk

WITNESSED BY: CONTRACTOR .

_____ By: _____

_____ Its:

I FURTHER CERTIFY THAT the following persons are the officers of the Contractor holding the indicated office:

_____
_____

I FURTHER CERTIFY THAT any of the aforementioned officers of the Contractor are authorized to execute or guarantee and commit the Contractor to the conditions, obligations and

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stipulations contained in the attached Agreement and that all necessary corporate approvals have been obtained in relationship thereto.

IN WITNESS WHEREOF, I have set my hand this _____ day of _____, 2016.

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General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)
Dorothy M. Busch Library
PARTNERS Project No. 15-142
23333 Ryan Road
Warren, MI 48091

THE OWNER:
(Name, legal status and address)
City of Warren
One City Square, 4th Floor
Warren, MI 48093-5289

THE ARCHITECT:
(Name, legal status and address)
PARTNERS in Architecture, PLC
65 Market Street
Mount Clemens, MI 48043

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 BASIC DEFINITIONS

§ 1.1.1 THE CONTRACT DOCUMENTS

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding requirements.

§ 1.1.2 THE CONTRACT

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 THE WORK

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 THE PROJECT

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by separate contractors.

§ 1.1.5 THE DRAWINGS

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

§ 1.1.6 THE SPECIFICATIONS

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 INSTRUMENTS OF SERVICE

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 INITIAL DECISION MAKER

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2 and certify termination of the Agreement under Section 14.2.2.

§ 1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

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§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 CAPITALIZATION

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 INTERPRETATION

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and will retain all common law, statutory and other reserved rights, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are authorized to use and reproduce the Instruments of Service provided to them solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers may not use the Instruments of Service on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and the Architect's consultants.

§ 1.6 TRANSMISSION OF DATA IN DIGITAL FORM

If the parties intend to transmit Instruments of Service or any other information or documentation in digital form, they shall endeavor to establish necessary protocols governing such transmissions, unless otherwise already provided in the Agreement or the Contract Documents.

ARTICLE 2 OWNER

§ 2.1 GENERAL

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

§ 2.2.1 Prior to commencement of the Work, the Contractor may request in writing that the Owner provide reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. Thereafter, the Contractor may only request such evidence if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) a change in the Work materially changes the Contract Sum; or (3) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due. The Owner shall furnish such evidence as a condition precedent to commencement or continuation of the Work or

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the portion of the Work affected by a material change. After the Owner furnishes the evidence, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.2 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.2.3 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.2.4 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.2.5 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.3 OWNER'S RIGHT TO STOP THE WORK

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect or failure. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

ARTICLE 3 CONTRACTOR

§ 3.1 GENERAL

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

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§ 3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.2.3, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall make Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and solely responsible for the jobsite safety of such means, methods, techniques, sequences or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner and Architect and shall not proceed with that portion of the Work without further written instructions from the Architect. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner shall be solely responsible for any loss or damage arising solely from those Owner-required means, methods, techniques, sequences or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 LABOR AND MATERIALS

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other

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facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work authorized by the Architect in accordance with Sections 3.12.8 or 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 WARRANTY

The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.6 TAXES

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 PERMITS, FEES, NOTICES AND COMPLIANCE WITH LAWS

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions. If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 21 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor in writing, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may proceed as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume

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the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 ALLOWANCES

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- **.1** Allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- **.2** Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- **.3** Whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 SUPERINTENDENT

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the name and qualifications of a proposed superintendent. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to the proposed superintendent or (2) that the Architect requires additional time to review. Failure of the Architect to reply within the 14 day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

§ 3.10.2 The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the Architect's approval. The Architect's approval shall not unreasonably be delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

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§ 3.11 DOCUMENTS AND SAMPLES AT THE SITE

The Contractor shall maintain at the site for the Owner one copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and one copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Architect and shall be delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. Their purpose is to demonstrate the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Architect Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such written notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be

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required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents.

§ 3.13 USE OF SITE

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 CUTTING AND PATCHING

§ 3.14.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting and patching shall be restored to the condition existing prior to the cutting, fitting and patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

§ 3.15 CLEANING UP

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 ACCESS TO WORK

The Contractor shall provide the Owner and Architect access to the Work in preparation and progress wherever located.

§ 3.17 ROYALTIES, PATENTS AND COPYRIGHTS

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the Owner or Architect. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect.

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§ 3.18 INDEMNIFICATION

§ 3.18.1 To the fullest extent permitted by law the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 GENERAL

§ 4.1.1 The Owner shall retain an architect lawfully licensed to practice architecture or an entity lawfully practicing architecture in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 4.1.2 Duties, responsibilities and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner, Contractor and Architect. Consent shall not be unreasonably withheld.

§ 4.1.3 If the employment of the Architect is terminated, the Owner shall employ a successor architect as to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 4.2 ADMINISTRATION OF THE CONTRACT

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, except as provided in Section 3.3.1.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and report to the Owner (1) known deviations from the Contract Documents and from the most recent construction schedule submitted by the Contractor, and (2) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

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§ 4.2.4 COMMUNICATIONS FACILITATING CONTRACT ADMINISTRATION
Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Architect about matters arising out of or relating to the Contract. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5 and 3.12. The Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more project representatives to assist in carrying out the Architect's responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

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§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 DEFINITIONS

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

§ 5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to any such proposed person or entity or (2) that the Architect requires additional time for review. Failure of the Owner or Architect to reply within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person or entity previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 SUBCONTRACTUAL RELATIONS

By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, which the Contractor, by these Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may

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be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

.1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor in writing; and

.2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon such assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

§ 6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Article 15.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights that apply to the Contractor under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6 and Articles 10, 11 and 12.

§ 6.2 MUTUAL RESPONSIBILITY

§ 6.2.1 The Contractor shall afford the Owner and separate contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Architect apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that

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the Owner's or separate contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a separate contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a separate contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or separate contractors as provided in Section 10.2.5.

§ 6.2.5 The Owner and each separate contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 OWNER'S RIGHT TO CLEAN UP

If a dispute arises among the Contractor, separate contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 GENERAL

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor and Architect; a Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive or order for a minor change in the Work.

§ 7.2 CHANGE ORDERS

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor and Architect stating their agreement upon all of the following:

.1 The change in the Work;
.2 The amount of the adjustment, if any, in the Contract Sum; and
.3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 CONSTRUCTION CHANGE DIRECTIVES

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

.1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
.2 Unit prices stated in the Contract Documents or subsequently agreed upon;
.3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or

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.4 As provided in Section 7.3.7.

§ 7.3.4 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 7.3.5 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.6 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.7 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the method and the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.7 shall be limited to the following:

.1 Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;

.2 Costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;

.3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;

.4 Costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and

.5 Additional costs of supervision and field office personnel directly attributable to the change.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 MINOR CHANGES IN THE WORK

The Architect has authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes will be effected by written order signed by the Architect and shall be binding on the Owner and Contractor.

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ARTICLE 8 TIME

§ 8.1 DEFINITIONS

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 PROGRESS AND COMPLETION

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 DELAYS AND EXTENSIONS OF TIME

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner; or by changes ordered in the Work; or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control; or by delay authorized by the Owner pending mediation and arbitration; or by other causes that the Architect determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 CONTRACT SUM

The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.2 SCHEDULE OF VALUES

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit to the Architect, before the first Application for Payment, a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 9.3 APPLICATIONS FOR PAYMENT

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and shall reflect retainage if provided for in the Contract Documents.

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§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or material supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

§ 9.4 CERTIFICATES FOR PAYMENT

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data comprising the Application for Payment, that, to the best of the Architect's knowledge, information and belief, the Work has progressed to the point indicated and that the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion and to specific qualifications expressed by the Architect. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment, or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 DECISIONS TO WITHHOLD CERTIFICATION

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- **.1** defective Work not remedied;
- **.2** third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;

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.3 failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;

.4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;

.5 damage to the Owner or a separate contractor;

.6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or

.7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.3 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or material or equipment suppliers to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Architect will reflect such payment on the next Certificate for Payment.

§ 9.6 PROGRESS PAYMENTS

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor no later than seven days after receipt of payment from the Owner the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and material and equipment suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay or to see to the payment of money to a Subcontractor, except as may otherwise be required by law.

§ 9.6.5 Contractor payments to material and equipment suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors and suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, shall create any fiduciary liability or tort liability on the part of the Contractor for breach of trust or shall entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.7 FAILURE OF PAYMENT

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents the amount certified by the Architect or awarded by binding

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dispute resolution, then the Contractor may, upon seven additional days' written notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 SUBSTANTIAL COMPLETION

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage applying to such Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 PARTIAL OCCUPANCY OR USE

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Section 11.3.1.5 and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

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§ 9.10 FINAL COMPLETION AND FINAL PAYMENT

§ 9.10.1 Upon receipt of the Contractor's written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection and, when the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment and (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- **.1** liens, Claims, security interests or encumbrances arising out of the Contract and unsettled;
- **.2** failure of the Work to comply with the requirements of the Contract Documents; or
- **.3** terms of special warranties required by the Contract Documents.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 SAFETY PRECAUTIONS AND PROGRAMS

The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 SAFETY OF PERSONS AND PROPERTY

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to

- **.1** employees on the Work and other persons who may be affected thereby;
- **.2** the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and

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.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

§ 10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3, except damage or loss attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 INJURY OR DAMAGE TO PERSON OR PROPERTY
If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 HAZARDOUS MATERIALS
§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner and Architect in writing.

§ 10.3.2 Upon receipt of the Contractor's written notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be

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extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shut-down, delay and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall indemnify the Owner for the cost and expense the Owner incurs (1) for remediation of a material or substance the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall indemnify the Contractor for all cost and expense thereby incurred.

§ 10.4 EMERGENCIES

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 CONTRACTOR'S LIABILITY INSURANCE

§ 11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- **.1** Claims under workers' compensation, disability benefit and other similar employee benefit acts that are applicable to the Work to be performed;
- **.2** Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;
- **.3** Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
- **.4** Claims for damages insured by usual personal injury liability coverage;
- **.5** Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
- **.6** Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;
- **.7** Claims for bodily injury or property damage arising out of completed operations; and
- **.8** Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18.

§ 11.1.2 The insurance required by Section 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the

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Work until the date of final payment and termination of any coverage required to be maintained after final payment, and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents.

§ 11.1.3 Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness.

§ 11.1.4 The Contractor shall cause the commercial liability coverage required by the Contract Documents to include (1) the Owner, the Architect and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's completed operations.

§ 11.2 OWNER'S LIABILITY INSURANCE

The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance.

§ 11.3 PROPERTY INSURANCE

§ 11.3.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.3 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.

§ 11.3.1.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's and Contractor's services and expenses required as a result of such insured loss.

§ 11.3.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance that will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor in writing, then the Owner shall bear all reasonable costs properly attributable thereto.

§ 11.3.1.3 If the property insurance requires deductibles, the Owner shall pay costs not covered because of such deductibles.

§ 11.3.1.4 This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit.

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§ 11.3.1.5 Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

§ 11.3.2 BOILER AND MACHINERY INSURANCE

The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

§ 11.3.3 LOSS OF USE INSURANCE

The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

§ 11.3.4 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

§ 11.3.5 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive all rights in accordance with the terms of Section 11.3.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

§ 11.3.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Section 11.3. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor.

§ 11.3.7 WAIVERS OF SUBROGATION

The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Architect, Architect's consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other causes of loss to the extent covered by property insurance obtained pursuant to this Section 11.3 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

§ 11.3.8 A loss insured under the Owner's property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.3.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

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§ 11.3.9 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, or as determined in accordance with the method of binding dispute resolution selected in the Agreement between the Owner and Contractor. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7.

§ 11.3.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power; if such objection is made, the dispute shall be resolved in the manner selected by the Owner and Contractor as the method of binding dispute resolution in the Agreement. If the Owner and Contractor have selected arbitration as the method of binding dispute resolution, the Owner as fiduciary shall make settlement with insurers or, in the case of a dispute over distribution of insurance proceeds, in accordance with the directions of the arbitrators.

§ 11.4 PERFORMANCE BOND AND PAYMENT BOND

§ 11.4.1 The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.

§ 11.4.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 UNCOVERING OF WORK

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, such costs and the cost of correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

§ 12.2 CORRECTION OF WORK

§ 12.2.1 BEFORE OR AFTER SUBSTANTIAL COMPLETION

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 AFTER SUBSTANTIAL COMPLETION

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct

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nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.4.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 ACCEPTANCE OF NONCONFORMING WORK

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 GOVERNING LAW

The Contract shall be governed by the law of the place where the Project is located except that, if the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 SUCCESSORS AND ASSIGNS

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to covenants, agreements and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate such assignment.

§ 13.3 WRITTEN NOTICE

Written notice shall be deemed to have been duly served if delivered in person to the individual, to a member of the firm or entity, or to an officer of the corporation for which it was intended; or if delivered at, or sent by registered or certified mail or by courier service providing proof of delivery to, the last business address known to the party giving notice.

§ 13.4 RIGHTS AND REMEDIES

§ 13.4.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

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§ 13.4.2 No action or failure to act by the Owner, Architect or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach there under, except as may be specifically agreed in writing.

§ 13.5 TESTS AND INSPECTIONS

§ 13.5.1 Tests, inspections and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of (1) tests, inspections or approvals that do not become requirements until after bids are received or negotiations concluded, and (2) tests, inspections or approvals where building codes or applicable laws or regulations prohibit the Owner from delegating their cost to the Contractor.

§ 13.5.2 If the Architect, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Section 13.5.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.5.3, shall be at the Owner's expense.

§ 13.5.3 If such procedures for testing, inspection or approval under Sections 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure including those of repeated procedures and compensation for the Architect's services and expenses shall be at the Contractor's expense.

§ 13.5.4 Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.5.5 If the Architect is to observe tests, inspections or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.5.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.6 INTEREST

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

§ 13.7 TIME LIMITS ON CLAIMS

The Owner and Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all claims and causes of action not commenced in accordance with this Section 13.7.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 TERMINATION BY THE CONTRACTOR

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, for any of the following reasons:

.1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;

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.2 An act of government, such as a declaration of national emergency that requires all Work to be stopped;

.3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or

.4 The Owner has failed to furnish to the Contractor promptly, upon the Contractor's request, reasonable evidence as required by Section 2.2.1.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, repeated suspensions, delays or interruptions of the entire Work by the Owner as described in Section 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, including reasonable overhead and profit, costs incurred by reason of such termination, and damages.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' written notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 TERMINATION BY THE OWNER FOR CAUSE

§ 14.2.1 The Owner may terminate the Contract if the Contractor

.1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;

.2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;

.3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or

.4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the above reasons exist, the Owner, upon certification by the Initial Decision Maker that sufficient cause exists to justify such action, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

.1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;

.2 Accept assignment of subcontracts pursuant to Section 5.4; and

.3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

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§ 14.3 SUSPENSION BY THE OWNER FOR CONVENIENCE

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

.1 that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or

.2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 TERMINATION BY THE OWNER FOR CONVENIENCE

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall

.1 cease operations as directed by the Owner in the notice;

.2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and

.3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 CLAIMS

§ 15.1.1 DEFINITION

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim.

§ 15.1.2 NOTICE OF CLAIMS

Claims by either the Owner or Contractor must be initiated by written notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party must be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3 CONTINUING CONTRACT PERFORMANCE

Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents. The Architect will prepare Change Orders and issue Certificates for Payment in accordance with the decisions of the Initial Decision Maker.

§ 15.1.4 CLAIMS FOR ADDITIONAL COST

If the Contractor wishes to make a Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.5 CLAIMS FOR ADDITIONAL TIME

§ 15.1.5.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

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§ 15.1.5.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

§ 15.1.6 CLAIMS FOR CONSEQUENTIAL DAMAGES

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

.1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

.2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.6 shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 INITIAL DECISION

§ 15.2.1 Claims, excluding those arising under Sections 10.3, 10.4, 11.3.9, and 11.3.10, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Initial Decision Maker with no decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of such request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

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§ 15.2.6.1 Either party may, within 30 days from the date of an initial decision, demand in writing that the other party file for mediation within 60 days of the initial decision. If such a demand is made and the party receiving the demand fails to file for mediation within the time required, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 MEDIATION

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.6 shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 ARBITRATION

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 CONSOLIDATION OR JOINDER

§ 15.4.4.1 Either party, at its sole discretion, may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration

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permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Either party, at its sole discretion, may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as the Owner and Contractor under this Agreement.

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BID FORM

CITY OF WARREN PROJECT NUMBER: ITB-W-9330

BID PROPOSAL FOR: **City of Warren – Dorothy M. Busch Library**

BID TO: **DIVISION OF PURCHASING,**
CITY OF WARREN,
ONE CITY SQUARE, 4TH FLOOR
WARREN, MI 48093-5289

BID DUE DATE: **FEBRUARY 10, 2016; 12:30PM**

BIDDERS NAME: _____

We have examined the Contract Documents for the proposed **City of Warren – Dorothy M. Busch Library** project as prepared by PARTNERS in Architecture, PLC.

In accordance therewith, the undersigned proposes to furnish all labor and materials for construction as set forth in the Contract Documents, including the following Addenda, if any (fill in the addenda number, thus confirming receipt):

Addendum Number _____ Addendum Number _____

Addendum Number _____ Addendum Number _____

1. Accompanying the proposal is a bid security for work required to be furnished by the Contract Documents, the same being subject to forfeiture in the event of default by the undersigned.

2. I agree to complete the Project, by the dates listed in Specification Section 011000 – Summary; provided that a notice to proceed is issued within thirty (30) days.

3. I understand that the Owner reserves the right to reject any or all bids, and it is agreed that this bid may not be withdrawn for a period of ninety (90) days from the opening thereof.

5. Attached herewith are the documents requested in the Supplementary Instructions to Bidders, Specification Section 002213, paragraph 4.3.5.

A. BASE BID: (Insert a base bid amount in the blank provided).

_____Dollars $_____

B. ALTERNATES: Refer to section 012300 for a complete description

1. Alternate No. 1: Replacement of Existing North Sidewalk

   Add: $ _____

2. Alternate No. 2: Decorative "City of Warren Logo" in Entrance Plaza Concrete

   Add: $ _____

3. Alternate No. 3: Side Folding Gate in Pre-Function Area

   Add: $ _____

4. Alternate No. 4: Provide Standard Acoustical Roof Deck in Lieu of Epic Deck

   Add / Deduct: $ _____

5. Alternate No. 5: Monument Sign

   Add: $ _____

6. Alternate No. 6: Concrete Screen Wall Staining

   Add: $ _____

7. Alternate No. 7: Building Management System

   Add: $ _____

C. ALLOWANCES: Refer to section 012100 for a complete description

(These amounts are included in the "Base Bid" amount listed on the bid form)

1. Allowance No. 1: Owner's Contingency Allowance — $ _____ (*Enter value of allowance)*

2. Allowance No. 2: Soil Corrections Allowance *(This allowance should correlate with unit price #1)* — $ _____ (*Enter value of allowance, based on quantity and unit price)*

D. UNIT PRICES: Refer to section 012200 for a complete description

1. Unit Price No. 1: Undercutting Subgrade***at Building Areas*** — $_____ per Cu. Yd. (*Enter value of unit price)*

2. Unit Price No. 2: Undercutting Subgrade at Paved Areas — ***$_____ per Cu. Yd. (Enter value of unit price)***

E. SCHEDULE: Refer to Specification Section 011000 for schedule requirements.

_____
(Fill in proposed construction completion date)

F. NON-IRAN LINKED BUSINESSES

By signing below, I certify and agree on behalf of myself and the company submitting this proposal the following: (1) that I am duly authorized to legally bind the company submitting this proposal; and (2) that the company submitting this proposal is not an "Iran linked business," as that term is defined in Section 2(e) of the Iran Economic Sanctions Act, being Michigan Public Act No. 517 of 2012; and (3) that I and the company submitting this proposal will immediately comply with any further certifications or information submissions requested by the City in this regard.

G. COMPANY / CONTACT INFORMATION

Company Name:_____

Contact Name:_____

Address:_____

Phone Number: _____ Cell Number: _____

Email: _____

Corporate Officer Name:_____Title_____

Corporate Officer Signature:_____ Date:_____

Federal ID Number : _____

END OF BID FORM

SECTION 008000 - SUPPLEMENTARY CONDITIONS

The following supplements modify, change, delete from or add to the "General Conditions of the Contract for Construction", AIA Document A201/2007 Edition. Where any Article of the General Conditions is modified or any Paragraph, Subparagraph or Clause thereof is modified or deleted by these supplements, the unaltered provisions of that Article, Paragraph, Subparagraph or Clause shall remain in effect.

SUPPLEMENTARY CONDITIONS

ARTICLE 16 MODIFICATIONS TO THE GENERAL CONDITIONS

16.1 Modification of ARTICLE 1 GENERAL PROVISIONS

16.1.1 Modification of Paragraph 1.1 BASIC DEFINITIONS

16.1.1.3 Add to Subparagraph 1.1.3:

The definition of 'Work' shall also include labor, materials, equipment and services provided or to be provided by subcontractors, sub-subcontractors, material suppliers or any other entity for whom the Contractor is responsible under or pursuant to the Contract Documents.

16.2 Modification of ARTICLE 2 OWNER

16.2.1 Modification of Paragraph 2.1 GENERAL

16.2.2 Modification of Paragraph 2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

16.2.2.3 Add to Subparagraph 2.2.3:

However, Contractor shall notify Owner of any errors, problems or inaccuracies which it becomes aware of in the course of its use of such surveys.

16.2.4 Modification of Paragraph 2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

16.2.4.1 Add Subparagraph 2.4.1:

2.4.1 The Contractor agrees that the Owner, by mutual agreement with the Contractor, shall have the right to place and install equipment and machinery during the progress of the Work before the completion of the various parts of the Work; and further agrees that such placing and installation of equipment shall not in any way effect the completion of the Work or any portion thereof, nor signify the Owner's acceptance of the Work or any portion thereof. Should the Owner place or install such equipment and machinery with its own forces, then it shall be responsible for any damage to Work of the Contractor caused by the Owner's work or workers. Should the Owner have such placement or installation performed by another contractor, then the Owner shall require said contractor to be responsible for all such damage caused by its work, its workmen, or its subcontractor.

16.3.4 Modification of Paragraph 3.4 LABOR AND MATERIALS

16.3.4 Add Subparagraphs 3.4.4, 3.4.5, 3.4.6 and 3.4.7:

3.4.4 Materials shall conform to manufacturer's standards in effect at the date of issuance of the proposed Contract Documents and shall be installed in strict accordance with manufacturer's directions.

3.4.5 Where the Contract Documents require the Work, or any part of same, to be above the standards required by applicable laws, ordinances, rules and regulations and other statutory provisions pertaining to the Work, or above the quality of normal construction or trade standards, such Work shall be performed and completed by the Contractor in accordance with the Contract Documents.

3.4.6 Immediately after the issuance of a Letter of Intent or the award of the Contract for the Work to the Contractor, and prior to the first Request for Payment, The Contractor shall submit to the Architect a schedule indicating the name of manufacturers of all material and equipment which it and its Subcontractors propose for use in the Work. No material or equipment shall be ordered until acceptance of the manufacturer is received from the Architect.

3.4.7 Identifying Markings: Where the manufacturer's name, patent numbers, Underwriter's labels, model numbers or similar identifying marks are required, locate such markings as inconspicuously as possible. In no case will such marks be acceptable as part of basic design.

16.3.5 Modification of Paragraph 3.5 WARRANTY

16.3.5.1 Add Subparagraph 3.5.1:

3.5.1 The Contractor shall:

.1 Warrant that all materials and workmanship of all of the Work of the Contract will be serviceable, satisfactory, and will perform dependably, without excessive or unusual maintenance or care, the functions for which it was designed and free of defects in materials or workmanship for a period of at least two (2) years, and for such longer periods and special requirements as may be specified for individual types of materials, equipment, or Work, under individual Sections of the Specifications. Such warranty is in addition to and independent of any warranty or guarantee of any Subcontractor, Supplier or Manufacturer.

.2 Submit the above warranty, and all warranties required by the Contract Documents to be delivered by Subcontractors, executed by the Contractor in written form and deliver all to the Owner as a condition precedent to Final Payment.

.3 Commence any work required hereunder within seven (7) working days after receipt of written notice to do so by the Owner. If The Contractor shall fail or neglect to do so or to complete the fulfillment of its obligations hereunder within thirty (30) days of receipt of

said notice or such longer period as may be authorized by the Owner, the Owner shall have the right to perform all or any part of the Work or employ another person to do all or part of such Work and charge the expense thereof to the Contractor.

.4 Warranties shall be assignable and enforceable by all future Owners of the project.

16.3.7 Modification of Paragraph 3.7 PERMITS, FEES AND NOTICES

16.3.7.1 Add to the end of Paragraph 3.7.1:

or which are required for the completion of the Project.

16.3.7.6 - .9 Add Subparagraphs 3.7.6, 3.7.7, 3.7.8 and 3.7.9:

3.7.65 The Contractor shall obtain a Certificate of Occupancy as required for partial and complete occupancy by the Owner. The Contractor shall pay all fees necessary to secure said Certificates and shall deliver said Certificate to the Architect or Owner.

3.7.7 The Contractor shall furnish to the local authorities all necessary bonds or cash deposits required as a pledge and security for the protection or maintenance of any public property or as otherwise stipulated.

3.7.8 Contractor shall be responsible for all approvals and permits not specifically enumerated as the Owner's responsibility in paragraph 2.2.2 hereof or in the Contract Documents.

3.7.9 A photocopy of the building permit shall be delivered to the Architect and Owner as soon as it is obtained.

16.3.9 Modification of Paragraph 3.9 SUPERINTENDENT

16.3.9 Add Subparagraphs 3.9.4, 3.9.5 and 3.9.6:

3.9.4 The Contractor's Superintendent or his duly authorized representative, shall remain in attendance at the Site and shall be present at all times when work of any kind is being done, including work done at other than normal working hours.

3.9.5 The Contractor's Superintendent shall not be removed except for valid cause acceptable to the Architect and the Owner in which case another Superintendent acceptable to them shall be provided.

3.9.6 Any employee of the Contractor whom the Architect or Owner considers detrimental to the proper carrying out of the Work is to be removed promptly on the request of the Architect or Owner.

16.3.17 Modification of Paragraph 3.17 ROYALTIES AND PATENTS

16.3.17 Add Subparagraphs 3.17.1 and 3.17.2:

3.17.1 Use of Printed Materials: Contractors and suppliers shall agree that the Owner may,

without cost, duplicate, publish, use, dispose of, and disclose in any manner and for any periods whatsoever, and have others so do, all Subject Data (whether or not copyrighted) which may be submitted or delivered to the Owner for use in the course of, or under, any Work performed for the Owner, or which may relate to said Work. By "Subject Data" is meant all writings (including, without limitation, instructions manuals, operating manuals, maintenance manuals and specifications), sound recordings, pictorial reproductions, drawings, prints, photographs and graphical representations, and works of a nature similar to any of the foregoing. In the event any such Subject Data shall be covered by copyright, Contractors and suppliers shall agree to grant to the Owner or obtain for the Owner the copyrighted material, a royalty-free, non-exclusive and irrevocable license, including a right to sublicense thereunder.

3.17.2 Any provision or provisions of these General Conditions or of the Contract to the contrary notwithstanding, the Owner shall have the right at any time to modify, remove, obliterate, or ignore any marking not authorized by the terms of the Contract on any piece of Subject Data furnished or delivered under the Contract.

16.4 Modification to ARTICLE 4 ADMINISTRATION OF THE CONTRACT

16.4.1 Modification to Paragraph 4.1 ARCHITECT:

16.4.1.1.1 Add Subparagraph 4.1.1.1 in its entirety and substitute:

4.1.1.1 Architect - As used herein and elsewhere in the Contract Documents, the term "Architect" shall mean PARTNERS in Architecture, PLC, 65 Market Street, Suite 200, Mount Clemens, MI 48043, acting individually or through any agents, consultants, or representatives duly authorized to act in its behalf, subject to the provisions of the Owner/Architect Agreement for the Project between Owner and PARTNERS in Architecture, PLC ("Architect").

16.5 Modifications of ARTICLE 5 SUBCONTRACTORS

16.5.2 Modification of Paragraph 5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

16.5.2.1 Add to Subparagraph 5.2.1:

The list of proposed subcontractors shall be submitted within 24 hours of bid opening by the low bidder(s), which list shall upon acceptance by the Owner be incorporated into the Contract.

16.5.3 Modification to Paragraph 5.3 SUBCONTRACTUAL RELATIONS

16.5.3 Add Subparagraphs 5.3.1:

5.3.1 Contractor shall furnish Owner a copy of each subcontract within ten days after it is executed.

16.7 Modifications to ARTICLE 7 CHANGES IN THE WORK

16.7.1 Modification to Paragraph 7.1 GENERAL

16.7.1 Add Subparagraphs 7.1.4, 7.1.5, 7.1.6 and 7.1.7:

7.1.4 Proposal Request is a Change Proposal: A document issued by the Architect and signed by the Contractor, containing a price quotation for Changes in the Work as described by a written "Change Description" and supplemented when necessary by revised drawings all attached thereto.

7.1.5 Contractor shall make no claims for extra cost on account of delay in completion of the Work caused by any Changes in the Work except as expressly provided in the executed Change Order authorizing said Change.

7.1.6 Changes in Contract Sum:
For any adjustments to the Contract Sum based on other than the unit prices method, the Contractor agrees to charge and accept payment for his overhead, bonds, insurance, field supervision, profit and all other general conditions items / related miscellaneous costs at the following percentages of the cost attributable to the change in the Work:

.1 Ten percent (10%) for Work (labor and materials) by the Contractor not involving subcontractors;

.2 Ten percent (10%) for Work (labor and materials) by subcontractors;

.3 When both additions and credits are involved in any change, the allowable markup shall be figured on the basis of the net increase, if any;

7.1.7 A detailed breakdown of material (quantity and type) and an hourly breakdown of labor must be submitted with each request for additional compensation.

16.8 Modifications to ARTICLE 8 TIME

16.8.2 Modification to Paragraph 8.2 PROGRESS AND COMPLETION

16.8.2.1 Add to paragraph 8.2.1:

and that Contractor is capable of properly completing the Work within the contract time.

16.9 Modifications to ARTICLE 9 PAYMENTS AND COMPLETION

16.9.2 Modifications to Paragraph 9.2 SCHEDULE OF VALUES

16.9.2 Add to Subparagraph 9.2:

9.2 The schedule of values shall only be used after approval by Architect.

16.9.2.2 Add Subparagraph 9.2.1:

9.2.1 Initial Sworn Statements. Prior to commencement of the Work, the Contractor shall deliver to the Owner, a contract or sworn statement, duly executed and acknowledged and in form satisfactory to the Owner, listing all subcontracts and the amount of each such subcontract, together with a similar sworn statement from each subcontractor and, where appropriate, from sub-subcontractors.

16.9.3 Modification of Paragraph 9.3 APPLICATIONS FOR PAYMENT

16.9.3.4 Add to Subparagraph 9.3.1.3:

9.3.1.3 Each application for payment shall be accompanied by the following, all in form and substance satisfactory to the Owner:

.1 A duly executed and acknowledged sworn statement showing all subcontractors with whom the Contractor has entered into subcontracts, the amount of each such subcontract, the amount requested for any subcontractor in the requested progress payment and the amount to be paid to the Contractor from such progress payment, together with similar sworn statements from all subcontractors and, where appropriate, from sub-subcontractors; and

.2 Duly executed Waivers of Mechanic's and Material Liens establishing payment or satisfaction of all such obligations.

16.9.4 Modification to Paragraph 9.4 CERTIFICATES FOR PAYMENT

16.9.4 Add Subparagraph 9.4.3:

9.4.3 If so directed by the Owner or Architect, the Contractor shall, within fifteen (15) days from the date of Owner's remittance, submit partial waivers of lien signed by each Subcontractor designated by the Owner, in a form acceptable to the Owner, for the full amount of the sum included for said Subcontractor, in the Owner's remittance for the previous month. Failure to submit partial waivers of lien shall justify the withholding of future payments by the Owner until said delinquent waivers are received by the Owner.

16.9.4.3 Add Subparagraph 9.4.3:

9.4.3 The Owner agrees to make payments to the Contractor on account of the Contract provided in the Agreement.

.1 Following Substantial Completion: Following the date of Substantial Completion, the Contractor may request the Architect to inspect the project and deliver to Contractor a list of work necessary to Final Completion. Promptly following certification by the Architect to the Owner that the work on such list has been satisfactorily completed, the Owner will pay to Contractor such additional sum as may be necessary to bring the total payments to Contractor to 98% of the total Contract Sum, adjusted as provided in the Contract Documents.

16.9.6 Modification to Paragraph 9.6 PROGRESS PAYMENTS

16.9.6.1 Add to Subparagraph 9.6.1:

9.6.1 Payments shall be made at the sole discretion of Owner with the advice and comment from Architect.

END OF SECTION 008000

SECTION 012200 - UNIT PRICES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for unit prices.

B. Related Requirements:
1. Section 012600 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.

1.2 DEFINITIONS

A. Unit price is an amount incorporated in the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.3 PROCEDURES

A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit and other ancillary costs.

B. Measurement and Payment: See individual Specification Sections and drawings for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor.

D. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES

A. Unit Price No. 1 – Undercutting Subgrade ***at Building Areas*** (Soil Corrections):

1. Description: This item shall include the labor, supervision, equipment, trucking, unsuitable material removal and disposal and new material necessary for the excavation of unsuitable material as determined by the Owner's Testing Engineer. Work will include grading and compaction of the undercut area and installing MDOT Class II granular material to the proposed subgrade elevation. The material shall be installed at a maximum depth of 12" per lift. The work will be paid for by in-field measurement quantities per cubic yard, as determined by the Owner's Testing Engineer.

2. Unit of Measurement: Cubic Yard (measured in place).

3. Quantity Allowance: Coordinate unit price with allowance adjustment requirements in Section 012100 "Allowances."

B. Unit Price No. 2 – Undercutting Subgrade at Paved Areas:

1. Description: This item shall include the labor, supervision, equipment, trucking, unsuitable material removal and disposal and new material necessary for the excavation of unsuitable material as determined by the Owner's Testing Engineer. Work will include grading and compaction of the undercut area and installing MDOT 21AA material to the proposed subgrade elevation. The material shall be installed at a maximum depth of 12" per lift. The work will be paid for by in-field measurement quantities per cubic yard, as determined by the Owner's Testing Engineer.

2. Unit of Measurement: Cubic Yard (measured in place).

END OF SECTION 012200

SECTION 329200 – SODDING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Attention is directed to Bidding and Contract Requirements, and to General and Supplemental Conditions, hereby made a part of this Section.

1.02 DESCRIPTION OF WORK:

A. Extent of sodded lawns is shown on drawings and by provisions of this Section.

B. Types of work required include the following:

1. Soil preparation
2. Sodding lawns
3. Seeding lawns, as an alternate

C. Related work specified elsewhere:

1. Section 329300: Trees, Plants and Ground Covers
2. Section 329400: Landscape Maintenance and Warranty Standards

1.03 QUALITY ASSURANCE:

A. Sod: Comply with American Sod Producers Association (ASPA) classes of sod materials.
B. Seed Mixture to be specified as an Addendum if Owner chooses Alternate.

1.04 SUBMITTALS:

A. Submit sod growers' certification of grass species including special shade grown species. Identify source location.
B. Manufacturer's certification of fertilizer.

1.05 DELIVERY, STORAGE AND HANDLING:

A. Cut, deliver and install sod within 24-hour period.
B. Do not harvest or transport sod when moisture content may adversely affect sod survival.
C. Protect sod from sun, wind and dehydration prior to installation. Do not tear, stretch or drop sod during handling and installation.

1.06 PROJECT CONDITIONS:

A. Work notifications: Notify Architect at least 7 working days prior to start of sodding operation.
B. Protect existing utilities, paving and other facilities from damage caused by sodding operations.

C. Perform sodding work only after planting and other work affecting ground surface has been completed.

D. Restrict traffic from lawn areas until grass is established. Erect signs and barriers as required.
E. Provide hose and lawn watering equipment as required.
F. An irrigation system will be installed prior to sodding. Locate, protect and maintain the irrigation system during sodding operations. Repair irrigation system components damaged during sodding operations at this Contractor's expense.

1.07 WARRANTY:

A. Refer to Section 02970

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Sod: An "approved" nursery grown blend of improved Kentucky Blue-grass varieties.

1. Sod containing Common Bermudagrass, Quackgrass, Johnsongrass, Poison Ivy, Nutsedge, Nimblewill, Canada Thistle, Timothy, Bentgrass, Wild Garlic, Ground Ivy, Perennial Sorrel or Bramegrass weeds will not be acceptable.

B. Provide well-rooted, healthy sod, free of diseases, nematodes and soil borne insects. Provide sod uniform in color, leaf texture, density and free of weeds, undesirable grasses, stones, roots, thatch and extraneous material; viable and capable of growth and development when planted.

C. Furnish sod machine stripped in square pads or strips not more than 3'-0" long; uniformly 1" to 1-1/2" thick with clean-cut edges. Mow sod before stripping.

D. Fertilizer: Granular, non-burning product composed of not less than 50% organic slow acting, guaranteed analysis professional fertilizer.

1. Type A: Starter fertilizer containing 20% nitrogen, 12% phosphoric acid and 8% potash by weight or similar approved composition.

PART 3 - EXECUTION

3.01 EXAMINATION:

A. Examine finish surfaces, grades, topsoil quality and depth. Do not start sodding work until unsatisfactory conditions are corrected.

3.02 PREPARATION:

A. Remove all existing sod and debris as described in Specification 329230 (Fine Grading)

B. Limit preparation to areas that will be immediately sodded. Spread topsoil, fine grade. Contractor to provide 1" max. shoveled, beveled edge where lawn areas meet sidewalks and curbs.

C. Treat lawn areas with "Round Up", by Monsanto, per label directions as required to kill existing vegetation prior to sodding.

D. Loosen topsoil of lawn areas to minimum depth of 3". Remove stones over 1" in any dimension and sticks, roots, rubbish and extraneous matter.

E. Grade lawn areas to smooth, free draining and even surface with a loose, and uniformly fine texture. Roll and rake; remove ridges and fill depressions as required to drain.

F. Apply type A fertilizer at the rate equal to 1.0 lb. of actual nitrogen per 1,000 sq. ft. (43 lbs./acre). Apply fertilizer by mechanical rotary or drop type distributor, thoroughly and evenly incorporated with the soil to depth of 1" by discing or other approved methods. Fertilize areas inaccessible to power equipment with hand tools and incorporated it into soil.

G. Dampen dry soil prior to sodding.

H. Restore prepared area to specified condition if eroded, settled or otherwise disturbed after fine grading and prior to sodding.

3.03 INSTALLATION:

A. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod strips. Do not overlay edges. Stagger strips to offset joints in adjacent course. Remove excess sod to avoid smothering of adjacent grass. Provide sod pad top flush with adjacent curbs, sidewalks, drains and seeded areas.

B. Do not lay dormant sod or install sod on saturated or frozen soil.

C. Install initial row of sod in a straight line, beginning at bottom of slopes, perpendicular to direction of the sloped area. Place subsequent rows parallel to and lightly against previously installed row.

D. Peg sod on slopes greater than 3 to 1 to prevent slippage at a rate of 2 stakes per yd. of sod.

E. Water sod thoroughly with a fine spray immediately after laying.

F. Roll with light lawn roller to ensure contact with sub-grade.

G. Sod indicated areas within contract limits and areas adjoining contract limits disturbed as a result of construction operations.

3.04 MAINTENANCE:

A. Refer to Section 329400

3.05 CLEANING:

A. Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, debris and equipment. Repair damage resulting from sodding operations.

END OF SECTION 329200

SECTION 329220 - TOPSOIL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Attention is directed to Bidding and Contract Requirements, General and Supplemental Requirements, which are hereby made a part of this Section.

1.02 DESCRIPTION OF WORK:

A. Extent of Topsoil Work is shown on drawings and by provisions of this section.

B. Topsoil for lawn work shall be as stripped from site or provided by contractor from off-site sources.

C. Related Work Specified Elsewhere:

1. Section 329200: Seeding & Sodding
2. Section 329300: Trees, Plants and Ground Covers

1.03 QUALITY ASSURANCE:

A. Testing and inspection: For supplied or stockpiled topsoil. Performed by a qualified independent testing laboratory, under the supervision of a registered professional engineer, specializing in soils engineering. Obtain samples of stockpiled topsoil before complete stripping from the interior of stockpile.

B. Provide and pay for testing and inspection during topsoil operations. Laboratory, inspection services and Soils Engineer shall be acceptable to the Architect.

1. Recommended testing laboratory:
   A & L Agricultural Laboratories, Inc.
   3505 Conestoga Drive
   Fort Wayne, IN 46808
   (219) 483-4759

C. Test representative material samples for proposed use.

D. Topsoil: (Supplied and Stockpiled - See Materials 2.01)

1. pH factor
2. Lime requirement
3. Mechanical analysis (P.K. Ca. mg) and cation ratios
4. Percentage of organic content and loss by ignition
5. Soil series classification
6. Clay content

E. Recommendations on type and quantity of additives required to establish satisfactory pH factor and supply of nutrients to bring nutrients to satisfactory level for planting.

F. Submit test reports.

1.04 PROJECT CONDITIONS:

A. Known underground and surface utility lines are indicated on the drawings.

B. Protect existing trees, plants, lawns and other features designated to remain as part of the landscaping work.

C. Promptly repair damage to adjacent facilities caused by topsoil operations. Cost of repair at Contractor's expense.

D. Promptly notify the Architect of unexpected sub-surface conditions.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Topsoil: Supplied or stockpiled topsoil proposed for use must meet testing criteria results specified and conform to adjustments as recommended by soil test and Architect.

B. Existing topsoil: Existing topsoil from on site stockpile shall be utilized. All processing, screening, cleaning and preparation of this stored topsoil to render it acceptable for use is the responsibility of the contractor.

C. Provide additional topsoil as required to complete job. Topsoil must meet testing criteria results specified. All processing, cleaning and preparation of this stored topsoil to render it acceptable for use is the responsibility of this contractor.

D. Supplied or stockpiled topsoil, shall be fertile, friable and representative of local productive soil, capable of sustaining vigorous plant growth and screened free of clay lumps, subsoil, noxious weeds or other foreign matter such as stones greater than 1" in diameter in any dimension, roots, sticks and other extraneous materials: not frozen or muddy. Ph of soil to range between 5.0 and 7.5. Adjusted to 6.0 to 7.5 by additives as required by soil test. Topsoil shall contain not less than 3% and not greater than 10% organic matter. Clay content as determined by Bouyoucous Hydrometer Test shall range between 5 and 15 percent. Mechanical analysis as follows:

PASSING	RETAINED ON	PERCENTAGE
1" Screen	100%	
1" Screen	1/4" screen (gravel)	Not more than 3%
1/4" Screen	No. 140 USS Mesh Sieve	40-60%

PART 3 - EXECUTION

3.01 EXAMINATION:

A. Examine rough grades and installation conditions. Do not start topsoil work until unsatisfactory conditions are corrected.

3.02 FINISH GRADING:

A. Perform topsoiling within contract limits, including adjacent transition areas, to new elevations, levels, profiles, and contours indicated. Provide uniform levels and slopes between new elevations and existing grades.

B. Grade surfaces to assure areas drain away from building structures and to prevent ponding and pockets of surface drainage.

C. Lawn and planting areas: Supply and spread topsoil to 4" minimum compacted depth in lawn areas or as indicated on drawings.

D. For trees, shrubs, ground cover beds and backfill for beds see Trees, Plants and Ground Cover Section.

E. Provide earth crowning where indicated on drawings.

F. Crowning/mounding to be free flowing in shape and design, as indicated, and to blend into existing grades gradually so that toe of slope is not readily visible.

G. Regardless of finish grading elevations indicated, it is intended that grading be such that proper drainage of surface water will occur and that no low areas are created to allow ponding. Contractor to consult with Owner or Architect regarding minor variations in grade elevations before rough grading is completed.

3.03 CLEANING:

A. Upon completion of topsoiling operations, clean areas within contract limits, remove tools and equipment. Site shall be clear, clean, free of debris and suitable for site work operations.

END OF SECTION 329220

SECTION 329230 – FINE GRADING

PART 1 - GENERAL

Provide all topsoil and establish fine grade over Areas of Construction prior to or in conjunction with landscape construction.

1.01 SITE INSPECTION:

A. The Contractor shall visit the site and acquaint himself with all existing conditions. The Contractor shall be responsible for his own subsurface investigations as necessary to satisfy requirements of this section. All subsurface investigations shall be preformed only under time schedules and arrangements approved in advance by the Architect or Owner's Representative.

B. Contractor to inspect and approve finish grade prior to installation of landscape plantings and lawn areas to ensure positive grade, proper elevations and free of debris and rocks. Contractor shall alert Architect of any inadequacies in finish grade or materials.

1.02 Existing Conditions:

A. Contractor shall make whatever corrections and/or repairs necessary to make finish grades consistent with the requirements of the grading drawings and specifications.

1.03 UTILITIES:

A. Before starting site operations verify that the earlier Contractors have disconnected all temporary utilities that might interfere with the fine grading work.

B. Locate all existing, active utility lines traversing the site and determine the requirements for their protection. Preserve in operating condition all active utilities adjacent to or transverse the site that are designated to remain.

C. Observe rules and regulations governing respective utilities in working under requirements of this section. Adequately protect utilities from damage, remove or relocate as indicated, specified or required. Remove, plug or cap inactive or abandoned utilities encountered in excavation. Record location of active utilities.

1.04 QUALITY ASSURANCE:

A. Requirements of all applicable building codes and other public agencies having jurisdiction upon the work.

B. Primary emphasis should be given to the aesthetic appearance and function of berming and swales, as directed by the Architect or owner's Representative. The Contractor shall employ skilled personnel and

any necessary equipment to insure that finish grading is smooth, aesthetically pleasing, drains well and is ideal for receiving sod and plant materials.

PART 2 - MATERIALS

2.01 EXISTING SOIL:

A. The Contractor shall ensure that all existing soil has sufficient percolation and surface drainage to support grasses and plant material and that extreme compaction occurs only in areas receiving pavement.

B. In areas to receive sod, verify that all soil is scarified to a depth of three inches and that soil contains enough organic matter to support and encourage rooting of sod.

PART 3 - EXECUTION

3.01 JOB CONDITIONS:

A. Dust Control: Use all means necessary to prevent dust from construction operations from being a nuisance to adjacent property owners and from damaging surfaces on adjacent buildings, paving, etc. Methods used for dust control are subject to approval by the Architect or Owner's Representative.

B. Burning: On-site burning will not be permitted

C. Protection: Use all means necessary to protect curbs, gutters, sprinklers, utilities and vegetation designated to remain and in the event of damage, immediately make repairs, replacements and dressings to damaged plants necessary to the approval of the Architect. Contractor shall incur all cost for the replacement of damaged objects and vegetation.

3.02 SCHEDULING:

A. Schedule all work in a careful manner with all necessary consideration for adjoining property owners and the public.

B. Coordinate schedule with other contractors to avoid conflicts with their work.

3.03 EXCAVATION:

A. Excavate where necessary to obtain subgrades, percolation and surface drainage as required

B. Materials to be excavated are unclassified.

C. Remove entirely any existing obstructions after approval by the Architect or Owner's representative.

D. Remove from site and dispose of debris and excavated material not required.

3.04 GRADING:

A. The Contractor shall inspect and ensure finished grading is smooth, aesthetically pleasing, drain well and ready to receive sod and other plant material to full satisfaction of the Owner's Representative and Architect. Finish grade shall not fall below the top of sidewalk elevation.

B. Contractor shall provide a 1" max. shoveled, beveled edge where lawn areas meet sidewalks and curbs.

3.05 CORRECTION OF GRADE:

A. Bring to the required grade levels areas where settlement, erosion or other grade changes occur. Adjust as required to carry drainage away from buildings and to prevent ponding around the buildings and on pavements.

B. Remove all rock or objectionable material larger than 1" any direction prior to commencing landscaping.

C. Contractor shall be responsible for stabilizing grades by approved methods prior to landscaping, and shall be responsible for correction of grades as mentioned above, and clean up washouts or erosion.

END OF SECTION 329230

SECTION 329300 - TREES, PLANTS AND GROUND COVERS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Attention is directed to Bidding and Contract Requirements, and to General and Supplemental Conditions, hereby made a part of this Section.

1.02 DESCRIPTION OF WORK:

A. Extent of trees, plants and ground covers is shown on drawing and by provisions of this Section.

B. Types of work required include the following:

1. Soil preparation
2. Trees, plants and ground covers
3. Planting mixes
4. Mulch and planting accessories
5. Soil percolation tests

C. Related work specified elsewhere:

1. Section 329220: Topsoil
2. Section 329200: Sodding and Seeding
3. Section 329400: Landscape Maintenance and Warranty Standards

1.03 QUALITY ASSURANCE:

A. Plant names indicated, comply with "Standardized Plant Names" as adopted by the latest edition of the American Joint Committee of Horticultural Nomenclature. Names of varieties not listed conform generally with names accepted by the nursery trade. Provide stock true to botanical name and legibly tagged.

B. Comply with sizing and grading standards of the latest edition of “American Standard for Nursery Stock". A plant shall be dimensioned as it stands in its natural position.

C. All plants shall be nursery grown under climatic conditions similar to those in the locality of the project for a minimum of 2 years.

D. Stock furnished shall be at least the minimum size indicated. Larger stock is acceptable, at no additional charge. Larger plants shall not be cut back to size indicated.

E. Provide "specimen" plants with a special height, shape or character of growth. Contractor to tag specimen trees or shrubs at the source of supply. The Architect will inspect specimen selections at the source of supply for suitability and adaptability to selected location. When specimen plants cannot be purchased locally, provide sufficient photographs of the proposed specimen plants for approval. The

Contractor shall inspect all plant material at source prior to Architect's approval. Contractor shall accompany Architect on final selection trip.

F. Such approval shall not impair the right of inspection and rejection upon delivery at the site or during the progress of the work.

G. Provide percolation testing by filling plant pits with water and monitoring length of time for water to completely percolate into soil. Submit test results to architect prior to starting work.

1.04 SUBMITTALS:

A. Submit the following material samples:

1. Shredded bark mulch.

B. Submit the following materials certification:

1. Topsoil source and pH value
2. Plant fertilizer

1.05 DELIVERY, STORAGE AND HANDLING:

A. Deliver fertilizer materials in original, unopened and undamaged containers showing weight, analysis and name of manufacturer. Store in manner to prevent wetting and deterioration.

B. Take all precautions customary in good trade practice in preparing plants for moving. Workmanship that fails to meet the highest standards will be rejected. Spray deciduous plants in foliage with an approved "Anti-Dessicant" immediately after digging to prevent dehydration. Dig, pack, transport and handle plants with care to ensure protection against injury. Inspection certificates required by law shall accompany each shipment invoice or order to stock and on arrival. A copy of certificate shall be filed with the Architect. Protect all plants from drying out. If plants cannot be planted immediately upon delivery, properly protect them with soil, wet peat moss or in a manner acceptable to the Architect. Water heeled-in plantings as required to keep root system moist until planting. No plant shall be bound with rope or wire in a manner that could damage or break the branches.

C. Cover plants transported on open vehicles with a protective covering to prevent windburn.

D. Frozen or muddy topsoil is not acceptable.

1.06 PROJECT CONDITIONS:

A. Work Notification: Notify Architect at least 7 working days prior to installation of plant material.

B. Protect existing utilities, paving and other facilities from damage caused by landscaping operations. See AIA General Conditions.

C. A complete list of plants, including a schedule of sizes, quantities and other requirements is shown on the proposal form. In the event that quantity discrepancies or material omissions occur in the proposal form, Contractor shall notify the Architect during the proposal bidding process.

D. An irrigation system will be installed prior to planting. Locate, protect and maintain the irrigation system during planting operations. Repair irrigation system components, damaged during planting operations, at this Contractor's expense.

E. Perform percolation testing.

F. Verify availability of on-site water.

G. Concealed contingencies. Refer to AIA General Conditions.

1.07 WARRANTY:

A. Refer to Section 329400.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Plants: Provide plants typical of their species or variety; with normal, densely developed branches and vigorous, fibrous root systems. Provide only sound, healthy, vigorous plants free from defects, disfiguring knots, sunscald injuries, frost cracks, abrasions of the bark, plant diseases, insect eggs, borers and all forms of infestation. All plants shall have a fully developed form without voids and open spaces.

1. Dig balled and burlapped plants with firm, natural balls of earth of sufficient diameter and depth to encompass the fibrous and feeding root system necessary for full recovery of the plant. Provide ball sizes complying with the latest edition of the "American Standard for Nursery Stock". Cracked or mushroomed balls are not acceptable.

2. Provide tree species that mature at heights over 25'-0" with a single, main trunk. Trees that have the main trunk forming a "Y" shape are not acceptable.

3. Plants planted in rows shall be matched in form. (See specimen stock).

4. Plants larger than those specified in the plant list may be used when acceptable to the Architect.

5. If the use of larger plants is acceptable, increase the spread of roots or root ball in proportion to the size of the plant.

6. The height of the trees, specified by height, measured from the crown of the roots to the top of the top branch, shall not be less than the minimum size designated in the proposal form.

7. No pruning wounds shall be present with a diameter of more than 1" and such wounds must show vigorous bark on all edges.

8. Evergreen trees shall be unsheared and branched to the ground.

9. Shrubs and small plants shall meet the requirements for spread and height indicated on the proposal form.

B. Container-grown Stock: Grown in a container for sufficient length of time for the root system to have developed to hold its soil together, firm and whole.

1. No plants shall be loose in the container.

2. Container stock shall not be root bound.

3. The measurements for height shall be taken from the ground level to the average height of the top of the plant and not the longest branch.

4. Single stemmed or thin plants will not be accepted.

5. Side branches shall be generous, well-twigged and the plant as a whole well-bushed to the ground.

6. Plants shall be in a moist, vigorous condition, free from dead wood, bruises or other root or branch injuries.

C. Specimen Stock: All specimen-designated plantings are to be nursery grown, fully developed, excellent quality and typical example of the species. Plants designated to be planted in rows must be matched, symmetrical and uniform in height, spread, caliper and branching density.

1. Matched plantings should be obtained from same nursery and, preferably, from same row or line. All specimen material will be approved by Architect at nursery.

D. Topsoil for Planting Mix: Refer to Section 329220.

E. Peat Moss: Brown to black in color, weed and seed free granulated raw peat.

1. Provide ASTM D 2607 sphagnum peat moss with a PH below 6.0 for ericaceous plants.

F. Planting Mixture Type A: Standard planting backfill shall be a mixture of 1/3 topsoil, 1/3 sand and 1/3 peat per cubic yard of mixture. Add fertilizer Type "A" to planting mixture per manufacturer's requirements. Follow planting details.

G. Planting Mixture Type B (for Flowers, Ground Cover Beds, Ericaceous Plants and Ornamental Grasses): Planting backfill shall be a mixture of 1/3 topsoil, 1/3 sand and 1/3 peat. Adding fertilizer type "B" to mixture per manufacturers requirements. Follow planting details.

H. Plant Fertilizer Type A: "Scotts Pro Grow 18-3-6 landscape fertilizer plus minors, applied per manufacturer's recommendations.

I. Plant Fertilizer Type B: Approved acid-base fertilizer; "Espoma Holly-Tone". 4-6-4 applied per manufacturer's instructions.

J. Superphosphate: Composed of finely ground phosphate rock as commonly used for agricultural purposes containing not less than eighteen 18%) percent available phosphoric acid. Apply as required based upon soil test report.

K. Lime: Ground dolomitic limestone, ninety-five (95%) percent passing through #100 mesh screen. Use to adjust soil pH only, under direction of Architect or based upon soil test report.

L. Sand: Clean, coarse, ungraded conforming to ASTM C 3 for fine aggregates.

M. Anti-Dessicant: Protective film emulsion providing a protective film over plant surfaces; permeable to permit transpiration. Mixed and applied in accordance with manufacturer's instructions.

N. Shredded Bark Mulch: Clean, free of debris and sticks, and well aerated. Materials shall be uniform in size, shape and texture. Submit samples to owner for approval prior to installation. Install mulch to finish grade, level smooth, without ridges, humps or depressions.

O. Water: Free of substances harmful to plant growth. Hoses or other methods of transportation furnished by Contractor.

P. Stakes for Staking: Hardwood, 2" x 2" x 6'-0" minimum length.

Q. Stakes for Guying: Hardwood, 2" x 2" x 36" long.

R. Guying/Staking Wire: No. 11 gauge galvanized wire.

S. Turnbuckles: Galvanized steel of size and gauge required to provide tensile strength equal to that of the wire. Turnbuckle opening shall be at least 3".

T. Staking and Guying Hose: Two-ply, reinforced garden hose not less than 1/2" inside diameter.

U. Tree Wrap: Standard waterproofed tree wrapping paper, 2-1/2" wide, made of 2 layers of crepe kraft paper weighing not less than 30 lbs. per ream, cemented together with asphalt.

V. Twine: Two-ply jute material.

W. Steel Edging: 3/16" x 4" Ryerson with interlocking joints and steel stakes. Install per manufacturer's recommendations. Top to be flush with finish grade, alignment per drawings. All edging to be new. Telephone (313) 874-3311, Detroit, Michigan.

PART 3 - EXECUTION

3.01 EXAMINATION:

A. Examine proposed planting areas and conditions of installation. Do not start planting work until unsatisfactory conditions are corrected.

3.02 PREPARATION:

A. Time of planting:

1. Evergreen material: Plant evergreen materials between August 15 and October 1 or in spring before new growth begins. If project requirements require planting at other times, plants shall be sprayed with anti-dessicant prior to planting operations.

2. Deciduous material: Plant deciduous materials in a dormant condition. If deciduous trees are planted in-leaf, they shall be sprayed with an anti-dessicant prior to planting operation.

3. Planting times other than those indicated shall be acceptable to the Architect.

B. Planting shall be performed only by experienced workmen familiar with planting procedures under the supervision of a qualified supervisor.

C. Individual plant locations shall be staked on the project site by the Contractor and approved by the Architect before any planting pits are dug. The Architect reserves the right to adjust plant material locations to meet field conditions, without additional cost to the Owner.

D. Planting pits shall be round, with vertical sides and flat bottoms and sized in accordance with outlines and dimensions shown on the planting details.

E. Accurately stake plant material according to the drawings. Stakes shall be above grade and painted a bright color to be clearly visible for inspection.

F. If obstructions are encountered that are not indicated, do not proceed with planting operations until alternative plant locations have been selected and approved in writing by the Architect. Where location or spacing dimensions are not clearly shown, request clarification by the Architect.

G. See drawings for planting details.

H. Vegetation Removal:

1. Strip existing grass and weeds, including roots, from all bed areas, till and fine grade existing topsoil, leaving the soil surface one-inch below finished grade (in areas shown on plan).

2. Herbicide: Use Round Up (Monsanto Co.) as required to prepare areas for new planting, applied to all ground cover, evergreen and shrubbery beds and all mulch areas before application of pre-emergence herbicide, per manufacturer's recommendations. Clean area of all dead material after five (5) days.

3. Pre-Emergence Herbicide: DACTHAL W-75 (Diamond Shamrock Agricultural Chemicals) applied to one (1) ounce per l00 square feet to same area where "Herbicide" has been applied and after area is cleared of dead vegetation.

4. Herbicides to be applied by licensed applicator as required by the state.

3.03 INSTALLATION:

A. Excavate circular plant pits with vertical sides, except for plants specifically indicated to be planted in beds. Provide plant pits per planting details. Depth of pit shall accommodate the root system. Scarify the bottom of the pit to a depth of 4".

B. Provide pre-mixed planting mixture Type "A" for use around the balls and roots of all deciduous and evergreen tree plantings.

C. Beds for Ground Cover, Flowers, Ericaceous Plants and Ornamental Grasses: Excavate existing soil to 12" depth over entire bed area and remove soil from site. Set plants according to drawings and backfill entire bed with pre-mixed planting mixture Type "B".

D. Planting:

1. Set plant material in the planting pit to proper grade and alignment. Set plants upright, plumb and faced to give the best appearance or relationship to each other or adjacent structure. Set plant material 2"-3" above the finish grade. No filling will be permitted around trunks or stems. Backfill the pit with planting mixture. Do not use frozen or muddy mixtures for backfilling. Form a ring of soil around the edge of each planting pit to retain water in non-irrigated areas.

2. After balled and burlapped plants are set, muddle planting soil mixture around bases of balls and fill all voids. Sufficiently compact to prevent settlement.

3. Remove all burlap, ropes and wires from the tops of balls.

4. Space ground cover plants in accordance with indicated dimensions. Adjust spacing as necessary to evenly fill planting bed with indicated quantity of plants. Plant to within 12" of the trunks of trees and shrubs within planting bed and to within 6" of edge of bed.

5. Spread and arrange roots of bare-rooted plants in their natural position. Work-in planting mixture. Do not mat roots together. Cut all broken and frayed roots before installing planting mixture.

6. Water immediately after planting.

F. Mulching:

1. Mulch tree and shrub planting pits and shrub beds with required mulching material 3" deep immediately after planting. Thoroughly water mulched areas. After watering, rake mulch to provide a uniform finished surface.

G. Wrapping, Guying, Staking:

1. Inspect trees for injury to trunks, evidence of insect infestation and improper pruning before wrapping.

2. Wrap trunks of all trees spirally from bottom to top with specified tree wrap and secure in place.

3. Stake/guy all trees immediately after lawn seeding or sodding operations and prior to acceptance. When high winds or other conditions that may effect tree survival or appearance occur, the Architect shall require immediate staking/guying.

4. Stake deciduous trees under 4" caliper. Stake evergreen trees under 12'-0" tall with 2 x 2 cedar stakes, 2 per tree.

5. Guy deciduous trees 4" caliper and over. Guy evergreen trees 12'-0" tall and over with metal fence post, 3 per tree.

6. All work shall be acceptable to the Architect.

H. Pruning:

1. Prune branches of deciduous stock, after planting, to balance the loss of roots and preserve the natural character appropriate to the particular plant requirements. Remove or cut back broken, damaged and unsymmetrical growth of new wood.

2. Multiple leader plants: Preserve the leader that will best promote the symmetry of the plant. Cut branches flush with the branch collar. Make cut on an angle.

3. Prune evergreen trees only to remove broken or damaged branches.

3.04 CLEANING:

A. Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, soil, debris and equipment. Repair damage resulting from planting operations.

END OF SECTION 329300

SECTION 329400 - LANDSCAPE MAINTENANCE AND WARRANTY STANDARDS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Attention is directed to Bidding and Contract Requirements, and to General and Supplemental Conditions, hereby made a part of this Section.

1.02 DESCRIPTION OF WORK:

A. The requirements of this section include a one-year warranty period from date of acceptance of installation.

B. Related Work Specified Elsewhere:

1. Section 329220: Topsoil
2. Section 329200: Sodding and Seeding
3. Section 329300: Trees, Plants and Ground Covers

1.03 ACCEPTANCE OF INSTALLATION:

A. At the completion of all landscape installation, or pre-approved portions thereof, the Contractor shall request in writing an inspection for acceptance of installation in which the Contractor, Architect and Owner's Representative shall be present. After this inspection a "Punch List" will be issued by the Architect and/or Owner's Representative. After completion of punch list items, the Architect, Contractor and Owner's Representative shall re-inspect the project and upon satisfactory completion of punch list items, issue a written statement of acceptance of installation and establish the beginning of the project warranty period.

B. It is the responsibility of the Contractor to make the above written request for inspection of installation in a timely fashion. If there is plant material loss prior to the Contractor's written request for inspection of installation, the Contractor shall make all replacements of this dead material at no additional cost. These replacements are not considered to be the required one (1) replacement of dead plant material by the Contractor during the one (1) year project warranty period, as outlined below.

C. Landscape work may be inspected for acceptance in parts agreeable to Owner's Representative and Architect provided work offered for inspection is complete, including maintenance as required.

D. For work to be inspected for partial acceptance, supply a written statement requesting acceptance of this work completed to date.

1.04 PROJECT WARRANTY:

A. The project warranty period begins upon written acceptance of the project installation by Architect and Owner's Representative.

B. The contractor accepts responsibility for the irrigation system operation, watering schedule, watering amounts and monitoring system for duration of maintenance and warranty period.

C. The Contractor shall guarantee trees, shrubs, ground cover bed, and seeded or sodded areas through construction and for a period of one year after date of acceptance of installation against defects including death and unsatisfactory growth, except for defects resulting from neglect by owner, abuse or damage by others, or unusual phenomena or incidents which are beyond Contractor's control.

D. The Contractor shall warranty plants due to over watering or under watering by automatic irrigation system during maintenance and warranty period.

1.05 MAINTENANCE

A. To insure guarantee standards, the following maintenance procedures shall be executed during construction and for the full project warranty period.

B. Maintenance of Trees, Shrubs and Ground Covers:

1. Contractor shall be responsible for only one (1) replacement of any plant materials after project acceptance date, see Section 1.03, that are dead or in the opinion of the Architect are in an unhealthy or unsightly condition, or having lost natural shape, resulting from die back, excessive pruning, excessive or deficient watering practices, or inadequate or improper maintenance as part of the guarantee. Prior to any replacements Contractor shall review individual plants in question with Architect and determine the reason for plant demise.

2. Replacements must meet specifications i.e. quality, species of plant material and planting procedures to receive approval of replacement materials by Architect.

3. Costs for replacements are assumed part of bid quotations and therefore will not result in an additional cost to Owner or Architect.

4. Areas damaged as result of replacement operations are to be restored by Contractor at no cost to the Owner or Architect.

5. The Contractor shall be responsible for keeping guy wires taut, raise tree balls that settle, furnish and apply sprays as necessary to keep the plantings free of disease and insects until the end of the warranty period. All evergreens shall be watered thoroughly and wilt proofed in the fall to insure they do not go into the winter dry.

6. Winter Evergreen Protection (Trees and Shrubs): Treated burlap (green) and 2' x 2' x 8' hardwood stakes @ 4'-0" O.C. Attach burlap with wood lath and roofing nails. Contractor shall erect, remove and deliver to owner. Contractor shall install winter protection the first winter, install December 1 and remove April 15. Install screen height as required. Spray evergreens with wiltproof prior to December 1 and again January 1, two coatings are required.

7. The Contractor shall be responsible for watering of all plantings throughout construction, maintenance and warranty periods.

8. The Contractor will be responsible for irrigation system operation, watering schedules, watering amounts and general monitoring of irrigation system throughout construction, maintenance and

warranty period. Over watering or lack of, from irrigation system source is the responsibility of the contractor.

9. Remove and replace trees, shrubs, or other plants found to be dead or in unhealthy condition. Remove rejected plants and materials promptly. Make replacements during following normal planting schedule. Replace trees and shrubs which are in doubt, unless, in opinion of Owner's Representative and Architect it is advisable to extend warranty period for a full-growing season. Remove all stakes, guy wires, tree wrap paper, dead twigs and branches from tree and plant materials at the end of this warranty period. Keep planting beds free of weeds during guarantee period. See Trees, Plants and Ground Covers Section for suggested herbicides.

C. Maintenance of Sodded and Seeded Lawn Area:

1. Maintain sodded and seeded lawn areas, including watering, fertilizing, spot weeding, application of herbicides, fungicides, insecticides, and resodding until a full, uniform stand of lawn is knitted to topsoil.

2. Water sod thoroughly, as required to establish proper rooting. Water seed as required per mixture requirements for optimum establishment.

3. Repair, rework and resod all areas that have washed out or are eroded. Replace undesirable or dead areas with new sod. For seeded lawns, reseed any areas that are bare or weedy.

4. Provide a uniform stand of grass by watering, mowing, and maintaining lawn areas until acceptance of installation. Resod areas, with specified materials, which fail to provide a uniform stand of grass until all affected areas are accepted by Architect.

5. Mow lawn areas as soon as lawn top growth reaches a 3" height. Cut back to 2" height. Repeat mowing as required to maintain specified height. Not more than 40% of grass leaf shall be removed at any single mowing. Minimum of two cuttings.

6. Sodded or seeded areas will be acceptable provided all requirements, including maintenance, have been complied with, and a healthy, even colored viable lawn is established, free of weed, undesirable grass species, disease, and insects.

7. After acceptance of installation, and for the duration of the project warranty period of the Contractor shall continue all maintenance procedures including fertilizing, except for mowing, weeding, rolling, regrading, resodding and applying herbicides, fungicides, insecticides as required to establish a smooth acceptable lawn, free of eroded or bare areas.

8. At Conclusion of project warranty period and after receiving written final acceptance by Owner's Representative and Architect, the Owner shall assume all sodded or seeded lawn maintenance responsibilities.

1.06 FINAL ACCEPTANCE:

A. At the conclusion of the project warranty period the Contractor shall request a project inspection for final acceptance in which the Contractor, Architect and Owner's Representative shall be present. After this inspection a "Punch List" will be issued by the Architect. Upon completion of all punch list items, the Architect and Owner's Representative shall reinspect the project and issue a written statement of final acceptance. Upon final acceptance the Owner assumes all maintenance responsibilities for the project.

PART 2 AND 3 - PRODUCTS AND EXECUTION

Not Applicable.

END OF SECTION 329400

PRE-BID QUESTIONS & ANSWERS

Project Name:	Dorothy M. Busch Branch Library
Project Number:	15-142
Project Location:	23333 Ryan Road, Warren, Michigan 48091
Issue Date:	February 1, 2016

QUESTIONS:

Item Q1:
Question: *What is the form of contract between City of Warren and Contractor? If AIA, which form? If other can a copy be provided?*

Answer: **The City of Warren will provide a copy of the draft agreement.**

Item Q2:
Question: *Will certified payroll be required from the subcontractors and GC's as part of the billing?*

Answer: **The City of Warren may request that payroll documentation be submitted for review. If requested, payroll documentation must be provided within ten (10) days.**

Item Q3:
Question: *Are the City of Warren General Conditions provided in the Specifications 000101 the only applicable General Conditions?*

Answer: **No. In addition to Section 000101, AIA document 'A201-2007 General Conditions of the Contract for Construction' shall be used. A copy of A201-2007 is attached to this addendum.**

Item Q4:
Question: *Who is responsible for the following permits and inspection fees? Are they to be quoted lump sum as part of the bid or will there be a Stipulated Allowance for the GC to include to cover these?*

Building permit
Plan review fees
Civil Inspection fees (Any? If by GC who should be contacted to provide this rate / cost)
Soil erosion permit and review fees
Right of way permit.

Answer:
All City of Warren permit and plan review fees are waived. All payments for non-City permits are to be paid by the Contractor and the City of Warren will reimburse the Contractor (without markup), upon presentation of a paid receipt. All utility connection / service fees will be paid directly by the City of Warren. Refer to Draft Contract for additional information.

Item Q5:
Question: *Will there be a charge for the water meter? If so who is to be contacted to determine this charge?*

Answer: **No. The City will waive the costs for the water meter.**

Item Q6:
Question: *Please confirm the city will pay directly any water or sewer assessment, capitalization, lateral or similar charges.*

Answer: **The City will waive all fees associated with their utility connections. Contractor will be responsible to pay for utility usage during construction as well as provide temporary provisions.**

Item Q7:
Question: *Insurance requirements / limits?*

Answer: **Insurance requirements are outlined in the Draft Contract.**

Item Q8:
Question: *Testing - Per specification section 014000, where specifically indicated as being by the Owner, the Owner will provide the testing specified and when not specifically called to be by the Owner the GC will provide this Testing. The front end indicates the Owner will provide all required Special Inspections. Some spec sections call for Testing but do not indicate who is to provide it (321313 - Concrete Pavement, 334100 – Storm, 334600 – Sub Drainage) and there are other specs that normally require Testing in which the specs do not require any at all (321500 – Earthwork, 321616 – Asphalt, 321316 – Decorative Pavement, 321600 – Curb and Gutter).*
Is this the intent for the Owner to handle all Testing and Special Inspections?
Is there a Stipulated Allowance amount the Owner wishes to be included in the bids?

Answer: **The City of Warren will contract directly with a testing engineer whom will be responsible for construction testing and special inspections.**

Item Q9:
Question: *Hazardous materials remediation By Owner per specification section 011000. Will this be completed before the 3/8/16 Award date? If not how long will it take for this work to be completed?*

Answer: **This work is to be performed by the General Contractor as part of the base bid. Summary of work requirements and specifications for the removal of hazardous materials will be issued by the City of Warren as part of this addendum. Refer to the following documents:**

- **Hazardous Materials Survey (NTH Project No. 62-130322-00, dated June 10, 2013) issued this Addendum.**
- **Hazardous Materials Survey (NTH Project No. 61-160022-01, dated January 28, 2016) issued this Addendum.**
- **Specifications for Asbestos Abatement and Hazardous Materials Removal for the Demolition of Busch Library - 23333 Ryan Road, and Adjacent Residential Dwelling / Shed - 23245 Ryan Road (NTH Project No. 61-160022-01A, dated January 29, 2016) issued this Addendum.**

Item Q10:
Question: *The specification section 003126 indicates there is an Asbestos, Lead and PCB report from NTH dated 6/10/13 on the MITN website. This was not available at the time of this question. Can this be provided?*

Answer: **The reports for the existing Library as well as the existing House are issued this Addendum. The specifications for abatement and hazardous materials removal for both buildings are also included in this addendum.**

Item Q11:
Question: *Please confirm if any subsequent Hazardous and / or Contaminated material is found after the Owner' work, it will be paid for on a change order basis. (Note the unit price for Sub Grade Undercuts will not cover costs associated with special landfill disposal or handling requirements)*

Answer: **This work is to be performed by the General Contractor as part of the base bid.**

Item Q12:
Question: *Who will pay for the DTE and Mich-Con Electrical and Gas Service charges? If by the GC, who is the contact at these firms who can quote the cost? (Best handled either directly by the Owner or thru a Stipulated Allowance established for the bid)*

Answer: **All utility connection / service fees will be paid directly by the City of Warren.**

Item Q13:
Question: *Section 017839, 2.1, B calls for the GC to make digital corrected as built drawings. Will the original drawings be provide in .dwg format without charge?*

Answer: **Yes. AutoCAD drawings will be provided to the GC for use in creating As-Built drawings at no charge.**

Item Q14:
Question: *Will there be a charge for .dwg background documents for the GC's use in shop drawing preparation? If so what is the cost?*

Answer: **Refer to specification section 013300, paragraph 1.4.A.**

Item Q15:
Question: *Landscape and Design / Build Irrigation is shown on the drawings but not specified or described in the Summary. Is this to be included in the bid?*

Answer: **Yes. Irrigation is to be provided per the "Irrigation Notes" listed on Drawing L1-01 in the "Bidding – Construction" documents dated 1/13/16.**

Item Q16:
Question: *Section 011000 indicates Video Surveillance is By Owner. Plan view 1/ T1-01 shows Card Readers on the same plan as Video Surveillance.*
Will the Owner provide Access Control as well?
Who is responsible to provide empty conduits for Video Surveillance and Access Control? If by GC, is the empty conduit in-wall to accessible ceiling only (assuming the use of plenum rated cable)
Will the Owner's contractor provide their own cabling for these systems?

Answer: **The Owner will provide the following:**
- **Access control system, card readers, associated cabling and installation**
- **Video surveillance system, cameras, associated cabling and installation**

The General Contractor is to provide the following:
- **Conduit pathways & junction boxes for access control card readers**
- **Conduit pathways & junction boxes for video cameras**

- **Conduit shall be ran into an accessible ceiling space**
- **Blank cover plates shall be provided at all junction boxes**

Item Q17:
Question: *Division 27 specifies structured cabling, A/V and Network Equipment. It this to be included in the GC's bid? (Not identified in the Summary as By Owner)*

Answer: **Yes. The General Contractor is to include all data cabling (with the exception of card reader and video surveillance cabling), A/V and Network Equipment as indicated in the documents.**

Item Q18:
Question: *In the areas on the outside of the Construction limits going to have all new sod and new irrigation?*

Answer: **Yes, everything shown on Drawing L1-01 in the "Bidding – Construction" documents dated 1/13/16 and noted to be irrigated sod lawn is to be included within the irrigation and sod plan. This includes the areas between the curb and sidewalk along both roads.**

Item Q19:
Question: *Section 1014190 Dimensional Letter Signage – Most fabricated letters are now manufactured from stainless steel-Alloy 304 is standard. The faces are 18 ga and the returns are 22 ga. There are no manufacturers that will provide aluminum letters with .125" returns. Depth of letters is based on the size and stroke of the letter. Typically, the 8" halo letters specified may only be 1" deep and the 14" halo letters can be 2" deep. Can the bid be based on standard stainless steel painted letters?*

Answer: **Yes. Stainless steel channel letters are an acceptable alternate.**

Item Q20:
Question: *Section 1014190 Dimensional Letter Signage – We need a specific font to quote the cast metal letters since the price varies based on font style?*

Answer: **Bid is to be based on Twentieth Century font.**

Item Q21:
Question: *Section 101463 Electronic Message Signage – Drawing 4/A2-01 reads the sign to be a depth of 12", the minimum depth for this type of sign is 14".*

Answer: **This is acceptable. The "Upper ID Cabinet Sign" is to match.**

Item Q22:
Question: *Section 101463 Electronic Message Signage – It would be recommended that the lighting of the top monument sign is white LED.*

Answer: **This is acceptable.**

Item Q23:
Question: *Section 101463 Electronic Message Signage – In the specs for this section, 203 Electronic Message Sign, D. Control and Communications, 2. reads each single-face display shall be controlled and monitored by its own controller. Are there going to be two different messages on each sign face at the same time? If so then the sign requires two masters instead of a master and a slave and additional equipment.*

Answer: **There will only be a single message displayed on both faces. Provide components required to achieve this.**

Item Q24:
Question: *Section 101463 Electronic Message Signage – Note that the monument sign also requires (2) grounding rods and (2) 120 volt 20 amp circuits that would need to be in the concrete base.*

Answer: **Provide grounding and circuits as required and coordinate installation locations.**

Item Q25:
Question: *Section 101463 Electronic Message Signage – Since the EMC is 5'-7" wide and the sign is 6'-4" wide, the EMC will need filler panels on each end. Is this appearance going to be acceptable?*

Answer: **No. The sign will be revised in size to align with the specified Electronic Message Sign and eliminate the need for filler panels on each end.**

Item Q26:
Question: *Which contractor is responsible for the relocation of the stone dedication plaque?*

Answer: **The City of Warren has already removed this stone plaque from the site. General Contractor is required retrieve the plaque from the Owner (when ready) and install it as detailed.**

Item Q27:
Question: *Sheet A1-01 Key note #8 indicates to remove letters and prep for refinishing. Are they to be refinished and what color will they be painted?*

Answer: **The salvaged letters are to be finished in accordance with Specification Section 101419, 2.2 Dimensional Characters, A. Cast Characters.**

Item Q28:
Question: *I am questioning if there is asbestos or lead abatement included in this project?*

Answer: **This work is to be performed by the General Contractor as part of the base bid.**

Item Q29:
Question: *What, if any, furniture and shelving items are to be included this construction project?*

Answer: **The furniture on the Furniture Plan 2/A3-01 on Drawing A9-01 is shown for reference only. Procurement of furnishings is not part of this bid package. The location of project components designed to interface with the furniture is to be coordinated with the Owner, the selected furniture and furniture vendor (which is not yet determined).**

Item Q30:
Question: *Will the City allow the copy of the USB Flash Drive that contains all documents, to be delivered to the City by COB on the bid due date?*

Answer: **Yes, however the information on the USB Flash Drive must be an exact match of the bid document that was submitted. The bid document submitted by the due date / time will take precedence.**

Item Q31:

Question: *Who is responsible for charges related to utilities (DTE, Consumers, Gas, Water, Telephone, Cable)?*

Answer: **All utility connection / service fees will be paid directly by the City of Warren.**

Item Q32:
Question: *Have all the utilities be shut off?*

Answer: **If not already, the utilities will be shut off prior to demolition.**

Item Q33:
Question: *Are there any utility meters that need to be disconnected and removed?*

Answer: **Meter removal will be coordinated by the City of Warren with the respective utility companies.**

Item Q34:
Question: *We need to know where the transition between CPT-1 & CPT-2 is located.*

Answer: **CPT-1 and CPT-2 do not have an adjacent edge. CPT-1 is only located in the Vestibule and at the South end of the Pre-Function area.**

Item Q35:
Question: *The plans state that future card readers and cameras are not in contract, but do you need them to be cabled for future?*

Answer: **Refer to answer to Question Q16.**

Item Q36:
Question: *There is no mention of cable tray for routing telecommunication cables. Will cable tray be installed or will we be installing J-hook pathways throughout.*

Answer: **There is no cable tray in the project. J-hooks are acceptable above full accessible ceilings. Pathways are not to be visible in exposed roof deck or cloud ceiling areas.**

Item Q37:
Question: *Drawing E1 - 01 Note 5 states; All conduits to be run concealed above the roof deck. Provide deck access plate at each light fixture and area above full ceiling and coordinate location with structure. No conduit to be mounted exposed to roof deck in exposed roof deck areas. Our understanding of the 2014 National Electrical Code prohibits this wiring method to be employed. See attached excerpts prohibiting this type of installation. Please advise your comments as soon as possible?*

Answer: **The conduit used in these locations is to be compliant with the exception noted in section 300.4 (E) of the 2014 NEC.**

Item Q38:
Question: *Would you be able to advise us on the size of the access panels and the number that would be required for your project?*

Answer: **Refer to drawing E1-01, Key Note #5.**

Item Q39

Question: *If the (3) Card Reader (symbol CR) are not part of the contract (noted on Drawing T1-01), does each location require 1 data cable to each location?*

Answer: **Refer to answer in Item Q16 issued this addendum.**

Item Q40:
Question: *On electrical riser diagram drawing sheet number E0-01 in the electrical legend, the split triangle icon indicates COMBINATION DATA AND TELEPHONE OUTLET. Do these locations require 1 data cable and 1 voice cable?*

Answer: **This symbol represents (2) data cables at each location.**

Item Q41
Question: *Are the security cameras part of the technology requirements? If so, is this one data cable run per camera location?*

Answer: **Refer to answer in Item Q16 issued this addendum.**

****END OF ADDENDUM****

NTH Consultants, Ltd.

Infrastructure Engineering
and Environmental Services

41780 Six Mile Road
Northville, MI 48168
Phone: 248-553-6300
Fax: 248-324-5179

Ms. Donna Dordeski, P.E.
Environmental Compliance Engineer
City of Warren
One City Square, Suite 300
Warren, Michigan 48093-2390

January 29, 2016
NTH Project No. 61-160022-01A

Re: Specifications for Asbestos Abatement and Hazardous Materials Removal
Demolition of Busch Library (23333 Ryan Road) and
Adjacent Residential Dwelling/Shed (23245 Ryan Road)
Warren, Michigan

Dear Ms. Dordeski:

NTH Consultants, Ltd. (NTH) is pleased to submit this specification package for the asbestos abatement and hazardous materials removal associated with the demolition of the existing Busch Library located at 23333 Ryan Road and the two structures located on 23245 Ryan Road property. The specifications were developed in accordance with our as-requested engineering services contract with the City of Warren (RFP-W-8755) and your email authorization to proceed for this specific project.

Laura Willem of NTH, who is a State of Michigan accredited Asbestos Project Designer (Accreditation No. A25682) developed the specifications document.

We appreciate this opportunity to be of service to you on this project. If you have any questions or need any additional information, please feel free to call us at 248-553-6300.

Sincerely,

NTH Consultants, Ltd.

Laura A. Willem
Assistant Project Scientist

Bhushan C. Modi
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LAW/BCM/kg

Attachments

SECTION 02 8000

HAZARDOUS MATERIALS REMEDIATION

PART 1 - GENERAL

1.01 SUMMARY OF WORK

A. Provide all labor, materials, equipment, transportation, packaging, sampling and testing, and incidentals required to remove and dispose of hazardous materials in accordance with applicable regulations.

B. Information on hazardous materials found in the buildings are listed in this specification document and are presented in survey reports described in Article 1.04, Section C. Contractor shall verify all the information.

C. The following hazardous materials were identified in the Busch Library Building:

- Fluorescent light tubes
- Mercury vapor lights
- Fire extinguisher
- Air-handling unit
- Emergency light units
- Exit signs
- Smoke detectors
- Central processing units
- Monitors
- Keyboards
- Printers
- Copy machines
- Shredder
- Microwave
- Refrigerator
- Scanner
- Drinking fountain

D. The following hazardous materials were identified in the 23245 Ryan Road dwelling:

- Fluorescent light tubes
- Smoke detector
- Central processing unit
- Television
- Paint containers
- Caulk containers

No hazardous materials were identified in the storage shed at this address.

1.02 RELATED SECTIONS

A. Section 02 8200 - Asbestos Abatement

B. Section 02 8400 - Polychlorinated Biphenyls (PCBs) 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 Consultant 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 the Owner's and/or Owner's Consultant approval.

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 the applicable laws and regulations.

C. NTH Consultants, Ltd. conducted Hazardous Materials Surveys of the buildings scheduled for demolition and the findings of these surveys are presented in the following reports:

1. Report on Hazardous Materials Survey of Dorothy Busch Branch Library – 23333 Ryan Road (NTH Project No. 62-130322-00), dated June 10, 2015.

2. Report on Hazardous Materials Survey of 23245 Ryan Road Property (NTH Project No. 61-160022-01), dated January 28, 2016.

It is the Contractor's responsibility to verify all information and to interpret all data and reports for removal/evacuation purposes.

D. 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

40 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

E. 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

F. STATE OF MICHIGAN

PA 451, PART 201	Michigan Natural Resources and Environmental Protection Act
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 Wastes Act (effective until March 2016)
PA 451, PART 121	Michigan Liquid Industrial By-Product Act (effective March 2016)
PART 309	Michigan Occupational Safety and Health Administration – Cadmium
PART 603	Michigan Occupational Safety and Health Administration – Lead Exposure in Construction

1.05 SUBMITTALS

At least two weeks prior to beginning work, submit the following items. Do not begin work until the submittals are acknowledged as received.

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 a detailed description 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 Michigan Occupational Safety and Health Act (MIOSHA) requirements with confined space entry provisions (if necessary).

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's Consultant to review prior to Owner'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 Consultant will either return the Owner 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 Owner 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 site. The approval shall contain the facility's waste approval number.

5. Submit a sample waste disposal manifest filled out in accordance with the requirements of this Section.

D. Submit the name and address of any environmental testing laboratory to be utilized.

1.06 SAMPLING AND ANALYTICAL TESTING

A. Retain a laboratory 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 or Owner's Consultant 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.

1.07 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 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 to clean up all spills that occur during loading, hauling and final disposal at no cost to the Owner. Contractor shall immediately notify the Owner's Consultant 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.

D. If additional data is required to obtain disposal facility approval, collect and analyze appropriate samples. Notify the Owner's Consultant 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 Consultant will have the opportunity to collect co-located samples.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 GENERAL

A. Preparation

1. Obtain all required permits, including confined space entry permits (if necessary). Provide approved containers, vehicles, equipment, labor, labels, and manifests and other documents necessary for accomplishment of the work.

B. Safety Guidelines

1. Perform work associated with hazardous materials using appropriate Personal Protection Equipment, as defined by MIOSHA.

2. Ensure that personnel conducing 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 REMOVAL

A. General 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 wastes 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 evacuate refrigerants, coolants or other gases into appropriate containers for transportation and disposal.

6. Properly label all containers prior to shipment in accordance with all MDOT and other applicable regulations.

7. Provide for the safe storage of waste on-site, prior to disposal. For security reasons, restrict access to waste storage areas.

8. Provide covered dumpsters and storage containers with appropriate hazard labels.

9. Do not place waste on the unprotected ground. Adequately shield waste to prevent dispersion of the debris by wind or rainwater.

10. Evidence of improper storage shall be cause for immediate shutdown of the project until corrective action is taken.

B. Hazardous Waste Packaging and Handling Requirements

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 the Owner's generator size status.

3. Inspect hazardous waste storage areas as required by applicable regulations.

C. Additional Requirements

1. Lead was detected in paint in the buildings; therefore contractors shall comply with the requirements outlined in the following Michigan Occupational Safety and Health Administration (MIOSHA) regulations:

a. MIOSHA Part 603: Lead Exposure in Construction

2. If torch cutting is anticipated, the paint should first be removed using a chemical stripper or needle-gun removal methods.

3.03 DISPOSAL AT A LICENSED DISPOSAL OR RECYCLING FACILITY

A. General

1. 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 Consultant. The Contractor shall be responsible for all costs and coordination for this testing.

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 DOT and MDOT regulations. Vehicles shall be properly licensed under and comply with all applicable 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 Consultant. Report all spills immediately to the Owner's Consultant. Cleanup of vehicle fluids released to the ground is the Contractors' responsibility.

6. Prior to loading, provide Owner's Consultant 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 disposal facility, the name of the transporter, and the disposal facility approval number.

7. During loading, the Owner's Consultant will provide a manifest signed on behalf of the Owner for each load.

8. Transport hazardous materials, universal waste and non-hazardous waste to a licensed treatment storage and disposal facility or recycling facility for disposal.

9. Within 24 hours of the load arriving at the disposal or recycling facility the site, provide to the Owner's Consultant 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 SECTION

SECTION 02 8200

ASBESTOS ABATEMENT

PART 1 - GENERAL

1.01 SUMMARY OF WORK

A. The type of work under this specification involves proper removal and disposal of asbestos-containing materials.

B. Information on asbestos-containing materials (ACM) found in the buildings are listed in this specification document and are presented in survey reports described in Article 1.03, Section F. Contractor shall verify all the information.

C. Identified ACM in Busch Library building include:

1. 9” x 9” beige floor tile in the Staff office area. Asbestos was not detected in the mastic.
2. Fire doors for the Furnace room and staff office area.
3. Pipe joint insulation on fiberglass lines throughout the building.
4. Light heat shield in the staff restroom.
5. Roof materials.

D. Identified ACM in the 23245 Ryan Road residential dwelling include:

1. 9” x 9” tan with black streaks floor tile in the 2nd floor southeast bedroom. Asbestos was not detected in the mastic.
2. 1’x 1’ brown mottle floor tile in the basement. Asbestos was not detected in the mastic.
3. Duct paper in the basement – southwest of water heater near ceiling.
4. White old window glazing on wood windows located on the north and west side of the dwelling.
5. Exterior transite siding.

No ACM were noted in the storage shed located at this address.

1.02 RELATED SECTIONS

A. Section 02 8000 - Hazardous Materials Remediation

B. Section 02 8400 - 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 all 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 58 of the Code of Federal Regulations

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

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

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

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

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

g. Occupational Health & Environmental Controls Title 29, Part 1926.1101Code of Federal Regulations

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

a. Worker Protection Rule 40 CFR Part 763, Subpart GCPTS 62044, FRL 2843-9 Federal Register, Vol 50 No 134, July 12, 1985 P28530-28540

b. Regulation for Asbestos Title 40, Part 61, Sub-part A of the Code of Federal Regulations

c. National Emission Standard for Asbestos Title 40, Part 61, Sub-part M (Revised Sub-part B) of the Code of Federal Regulations

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 Licensing and Regulatory Affairs (LARA) 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 13 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).

F. NTH Consultants, Ltd. conducted Hazardous Materials Surveys which included evaluation of ACM. The findings of these surveys are presented in the following reports:

1. Report on Hazardous Materials Survey of Dorothy Busch Branch Library – 23333 Ryan Road (NTH Project No. 62-130322-00), dated June 10, 2015.

2. Report on Hazardous Materials Survey of 23245 Ryan Road Property (NTH Project No. 61-160022-01), dated January 28, 2016.

It is the Contractor's responsibility to verify all the information and interpret the data for abatement purposes.

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 by the Owner or Owner's Consultant.

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 MDEQ and LARA.

B. Licenses: Submit copies of all state licenses necessary to carry out 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 61.156 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. Submit name and address of the disposal facility. The disposal facility must receive asbestos-containing materials.

F. Asbestos Abatement Action Plan. Contractor shall prepare and submit an Asbestos Abatement Action Plan (Plan). The Plan shall be submitted to the Owner's Consultant for review and approval at least **14 calendar 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. The specific areas of work in the building.
2. Removal methods.
3. Locations of critical barriers.
4. Delineation of the regulated area.
5. Location of Decontamination Enclosure Systems.
6. Location of waste accumulation.
7. Location of waste dumpster.
8. Location of mini-enclosures (if applicable).
9. Location of remote decontamination enclosure system (if applicable).
10. Location of negative air machine exhaust points and path of exhaust ducts.

G. 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.

H. 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.

1.05 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 Consultant 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 Consultant approval.

C. Allow the Owner's Consultant to inspect and approve all equipment and materials used before the start of any work.

D. Allow the Owner's Consultant to check or evaluate air monitoring methods, procedures and quality assurance.

E. All personnel performing work under this specification shall be State of Michigan-certified asbestos workers or contractor supervisors to do work from pre-clean/prep to and including tear down.

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 Consultant prior to commencing abatement activities.

1.06 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 job 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.

1.07 STOP WORK

A. If the Owner presents a written stop work order, immediately stop all work. Do not recommence work until authorized by the Owner.

1.08 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 job site.

d. Permits: Obtain building and special permits required for asbestos abatement.

e. Location: Be present on the job at all times when work is being performed.

f. Regulations: Ensure compliance with all applicable federal, state, and local regulations with regard to ACM.

1.09 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 of 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 asbestos-containing material and retardation of fiber release during disturbance of the material equal to or greater than that provided by the use of 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 member.

   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 Project site. The transport of materials and equipment to the Project 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 asbestos-containing material, which shall be removed from a work area for disposal.

L. Authorized Visitor: The Owner, the Owner's Consultant, 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
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

and

CAUTION
Contains Asbestos Fibers
Avoid Opening or Breaking Container
Breathing Asbestos Is Hazardous To Your Health.

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 (absolute) filtered vacuum collection equipment 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. Pre-cleaning: The cleaning of the work area of visible dust and debris prior to active abatement.

PP. 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.

QQ. 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.

RR. 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.

SS. 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.

TT. 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 in the course of 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 nonfriable 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.

UU. Respirator: A device designed to protect the wearer from inhalation of harmful atmospheres.

VV. Shower room: A room between the clean room and the equipment room in the worker decontamination enclosure suitably arranged for complete showering during decontamination.

WW. Spray Cement: Spray adhesive in aerosol cans that is specifically formulated to stick to sheet polyethylene.

XX. 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.

YY. Surfactant: A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.

ZZ. Transmission Electron Microscopy (TEM): An analytical technique used for the definitive identification of asbestos.

AAA. Time Weighted Average (TWA): The average concentration of a contaminant in air during a specific time period.

BBB. 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.

CCC. 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.

DDD. 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.

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

FFF. 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.

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

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 TESTING

A. Personal air monitoring required by MIOSHA is the work of the Contractor.

B. The Owner's Consultant shall conduct air monitoring to verify that the building beyond the work area and the outside environment remain uncontaminated. Retain qualified consultant to also perform clearance sampling.

C. Utilize 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 Consultant.

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 serve 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 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 job 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.

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 onsite 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 will 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 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 to clean up all spills that occur during loading, hauling and final disposal at no cost to the Owner. Contractor shall immediately notify the Owner's Consultant 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 notifications and licenses for the removal, packaging, loading, hauling, and final disposal operations.

D. Refer to Article 1.03 Section F for information concerning analytical data obtained by the Owner. If additional data is required to obtain disposal facility approval, collect and analyze appropriate samples. Notify the Owner's Consultant 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 Consultant will have the opportunity to collect co-located samples.

E. The Owner's Consultant will observe abatement operations, inspect critical barriers and other enclosures, and conduct air monitoring. Shut down the project if the clearance level is exceeded outside of the work area, and do not resume until corrections are made. The Owner's Consultant will provide verbal results to Owner within 1 business day of sampling. The Owner's Consultant will provide a written report summarizing abatement activities including laboratory results after the abatement project is complete.

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 Consultant will either proceed with inspection or advise the Contractor of unfilled requirements.

C. The Owner's Consultant 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. 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.

B. Glovebags

C. Miscellaneous Materials

1. Duct Tape

2. Spray Cement

3. Wetting Materials:

a. Amended Water

b. Removal Encapsulant

c. Garden Sprayer: For glove bag use provide a hand pump type pressure-can garden sprayer fabricated out of either metal or plastic, equipped with a metal wand at the end of a hose that can deliver a stream or spray of liquid under pressure.

2.02 EQUIPMENT

A. Additional Protective Equipment – Provide disposable coveralls, head covers, and footwear covers for use by the Owner's Consultant and other authorized representatives who may inspect the job site.

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 to contain asbestos. Perform all work necessary to remove ACM that is encountered during renovation.

D. Comply with Article 3.07 – 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 work area, begin prep of work area.

4. Pick up using wet methods 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 carried out. 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 center of sheet and pack in disposal bags. Keep material on sheet 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 3.08 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 ACCETPABLE REMOVAL METHODS

A. Use wet removal techniques for all ACM removal.

1. Thoroughly wet, to satisfaction of Owner's Consultant, 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 in order 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 disposal bags. Twist neck of bags, bend over and seal with minimum three (3) wraps of duct tape. Clean outside and move to wash down station adjacent to material decontamination unit.

B. Removal of pipe joint insulation and duct paper 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 joint insulation and duct paper: Perform removal of these materials in accordance with Article 3.04 Work Area Isolation and Article 3.06 Glovebag Removal.

C. Removal of floor tile, fire doors, light heat shield, window glazing, and transite siding is classified as "Class II asbestos work" under OSHA's 29 CFR 1926.1101 Asbestos in Construction.

1. Floor tile: Perform removal in a regulated area and in accordance with Article 3.04 Work Area Isolation.

a. Flooring and/or mastic shall not be sanded.

b. Floor tile shall be removed intact using wet methods and hand tools, such as wedges or spuds, to lift the material from the floor in as intact as possible.

c. The flooring pieces shall be placed in 6-mil thick polyethylene bags, which in turn, shall be placed in a second impermeable container (i.e., cardboard drum).

d. The floor area from which the flooring has been removed shall be cleaned by use of HEPA-filtered vacuum cleaners and wet mopping and wiping.

2. Light heat shield: Perform removal of these materials in accordance with Article 3.04 Work Area Isolation and Article 3.06 Glovebag Removal.

3. Window glazing: The area around the windows on the interior of the building should be cordoned with asbestos banner tape. Polyethylene drop cloths shall be placed under windows on the interior and exterior of the dwelling. First, debris on window sills and floors should be cleaned using wet methods. The entire window frames shall be removed intact and wrapped in polyethylene sheeting. Any debris shall be double bagged in 6-mil thick polyethylene bags.

4. Fire doors shall be removed intact from its hinges and double-wrapped in polyethylene sheeting before placing in the on-site dumpster. Any holes should be covered with duct tape prior to removal of the door.

5. Transite siding: The area around the removal area should be cordoned with asbestos banner tape. Polyethylene drop cloths shall be placed under siding removal area on exterior of the dwelling. The siding pieces shall be removed relatively intact using hand tools. The debris shall be double bagged in 6-mil thick polyethylene bags or in lined impermeable containers (i.e., cardboard drums).

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.

B. Background and Perimeter Area Air-Monitoring: The Owner's Consultant 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 Consultant.

2. Provide a microscope and technician at the project 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 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 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 3.08 – Respiratory Protection.

5. The Owner's or Contractor's Consultant 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 3.09 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 wood or metal studs 16-inch on center, securely anchored to prevent movement, covered with minimum 1/4-inch thick hardboard, 1/2-inch gypsum wall board, or 1/2-inch 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.

D. Construct the enclosure consisting of the following components:

1. Construct a personnel decontamination unit, which consists of a dirty room, shower and cleaner room. The decontamination unit shall be attached to the enclosure.

2. Enclosure: Construct an enclosure where the abatement work is to be performed in accordance with Article 3.05 Negative Pressure System Requirements for Enclosures.

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 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.

6. 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.

E. Entry to Work Room: Every time that a worker enters the Work Room, require adherence to the following procedure:

1. Outside of 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.

F. 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 a 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 Change Room, don clean disposable suit leaving respirator in place.

7. When exiting Change Room, be sure that entry to Change Room is completely closed.

8. At end of workday, decontaminate fully in accordance with Article 3.07 Worker Protection.

9. For work in enclosures, workers must exit through the decontamination unit and shower prior to entering the clean room/area.

G. 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 Mini-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 stores 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. Do not store bags outside of the Mini-Enclosure.

7. Transport all bags through the building in clean, sealed containers that have never been in an asbestos Work Area, Mini-Enclosure, or Decontamination Unit.

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 Consultant.

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.

3.05 NEGATIVE PRESSURE SYSTEM REQUIREMENTS FOR ENCLOSURES

E. Construction:

1. Walls shall be covered 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 potential for fire hazard exists.

3. If flooring materials are not scheduled for abatement, and after flooring material scheduled for abatement has been removed, floors shall be covered with three-layers of 6-mil (minimum) polyethylene sheeting.

4. Polyethylene sheeting shall be sized to minimize seams. If the floor area necessitates seams, those on successive layers of sheeting shall be sufficiently spaced 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 up the side walls of the work area.

6. Walls shall be covered 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, furring strips (or the equivalent) shall be used in addition to duct tape and/or spray glue to secure the wall plastic in place.

7. Critical barriers of 6-mil polyethylene sheeting shall be placed over penetrations to outside work areas (vents, windows, holes, etc.).

8. Polyethylene for walls shall be sized to minimize seams. Seams shall be staggered and separated by a distance of at least 6-feet where possible.

9. Polyethylene shall overlap 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, 2-inch by 4-inch studs shall be on 24-inch centers and covered with two (2) layers of 6-mil fire resistant polyethylene sheeting attached to the framing. If the attachment medium penetrates the sheeting, the penetration shall be sealed with duct tape.

B. 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 and Contractor's Consultant 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 be readily available on the outside of containment barriers at all times 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.

C. 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 (CFM) above 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 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 Consultant.

D. 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 which 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 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 and Contractor's Consultant.

3. Demonstrate Operation of the negative pressure system to the Owner's and Contractor's Consultant 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 building or outside.

   f. Modify the Negative Static Pressure System as necessary to successfully demonstrate the above.

E. 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 Contractor's Consultant is given.

F. 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.

3.06 GLOVEBAG REMOVAL

A. Glovebag

1. Use the glovebag technique for removal of roof drain pipe and pipe fitting insulation, steam pipe and pipe fitting insulation, hot water pipe and pipe fitting insulation, cold water pipe and pipe fitting insulation, city water pipe and pipe fitting insulation, condensate pipe and pipe fitting insulation, chilled water pipe fitting insulation, pipe fitting on fiberglass lines. 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" only technique - one bag to one spot of asbestos. Do not move the bag along the pipe. The Owner's Consultant has the authority to inspect and approve all glove bags proposed for use, before use on the job.

2. Use two persons 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 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. Lit the insulation off the pipe and lower 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 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.

3.07 WORKER PROTECTION

A. General

1. Provide worker protection as required by the most stringent LARA, MIOSHA 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.

2. Before beginning work with any material, provide workers with the required protective equipment.

3. Require that appropriate protective equipment be used at all times.

4. 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 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.

3.08 RESPIRATORY PROTECTION

A. General

1. Respiratory Protection Program: Comply with ANSI Z88.2 - 1980 "Practices for Respiratory Protection," OSHA 29 CFR 1910 and 1926 (also MIOSHA Part 451), and MIOSHA Part 602 Asbestos.

2. Require that respiratory protection be used at all times that 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 3.09 – Work Area Clearance.

4. Regardless of airborne fiber levels, require that the minimum level of respiratory protection used be 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 types of respirator to be actually 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 or ANSI Z88.2 (1980).

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.

E. Respiratory Protection Faction

Respirator Type	Protection Factor
Air purifying: Negative pressure respirator High efficiency filter Half face piece	10
Air purifying: Negative pressure respirator High efficiency filter Full-face piece	10-Qualitative 50-Quantitative

Powered-air purifying (PAPR): Positive pressure respirator High efficiency filter Half or full face piece	100
Type C supplied air: Positive pressure respirator Continuous-flow Half or full face piece	100
Type C supplied air: Positive pressure respirator Pressure demand Full-face piece	1000
Type C supplied air: Positive pressure respirator Pressure demand Full-face piece Equipped with an auxiliary positive pressure Self-contained breathing apparatus (SCBA)	over 1000
Self-contained breathing apparatus (SCBA) Positive pressure respirator Pressure demand Full-face piece	over 1000

F. 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 during the workday. Require that respirators be wet-rinsed and filters discarded each time a worker leaves the work area. Require that new filters be installed each time a worker re-enters the work area. Store respirators and filters at the project 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.

3.09 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 of 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 Consultant 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 3.04 – Work Area Isolation Enclosures.

B. Start of Work

1. Previous Work: During completion of the asbestos abatement work specified in other Articles, the 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: Carry out 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 one time 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: Carry out a final cleaning of all surfaces in the work area in the same manner as the first cleaning.

E. Visual Inspection

1. The Contractor's Consultant 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 Contractor's Consultant performing the abatement air monitoring.

F. Encapsulation: After a satisfactory visible inspection by the Contractor's Consultant, 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 Contractor's Consultant 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 Contractor's Consultant 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.

   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 or Contractor's Consultant 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 or Owner's Consultant.

   a. Upon receipt of the Certificate of Visual Inspection, the Contractor's Consultant 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 Contractor's Consultant 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 Consultant, 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 work site.

b. Dispose of all asbestos-containing waste material as specified in Article 3.10.

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 3.09.

I. Certificate of Visual Inspection: Complete the appended "Certificate of Visual Inspection" with the Contractor's Consultant 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, sheet plastic, etc.) in accordance with Article 3.09 E and has found no dust, debris or residue.

By: _____
(Signature)

Date: _____

(Print Name) _____

(Print Title) _____

CONTRACTOR'S CONSULTANT CERTIFICATION

The Contractor's Consultant 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: _____

(Print Name) _____

(Print Title) _____

(Print Company) _____

3.10 OFF-SITE TRANSPORTATION AND DISPOSAL

A. 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 shall be given to the Project Owner.

B. All vehicles hauling material to the disposal site shall comply with applicable Michigan Department of Transportation (MDOT) regulations. Vehicles shall be properly licensed under and comply with all applicable federal, state, and local laws and regulations.

C. 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.

D. 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.

E. 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.

F. Prior to loading, provide Owner's Consultant 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.

G. During loading, the Owner's Consultant will provide a manifest signed on behalf of the Owner for each load.

H. Transport contaminated material and excavated fill soil to a Type II landfill disposal facility licensed to accept asbestos for disposal.

I. 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.

J. Within 24 hours of the load leaving the site, provide to the Owner's Consultant an original manifest and any other documentation indicating receipt signed by the landfill.

K. 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 SECTION

SECTION 02 8400

POLYCHLORINATED BIPHENYL (PCB) REMEDIATION

PART 1 - GENERAL

1.01 SUMMARY OF WORK

A. Provide all labor, materials, equipment, transportation, packaging, sampling and testing, and incidentals required to remove and dispose of Polychlorinated Biphenyl (PCB)-containing materials or items in accordance with all applicable laws and regulations. PCB-containing materials include, but are not limited to fluorescent light ballasts and any and all other materials or items containing or suspected to contain PCBs.

B. Consider fluorescent light ballasts to be PCB-containing unless clearly labeled as non-PCB.

C. Information on PCB-containing materials found in the buildings listed in this specification document is presented in survey reports described in Article 1.04, Section C. Contractor shall verify all the information.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 02 8000: Hazardous Materials Remediation

B. Section 02 8200: Asbestos Abatement

1.03 GENERAL REQUIREMENTS

A. Contractor Responsibility: Assume full responsibility and liability for compliance with all applicable 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 regulations. Hold the Owner and Owner's Consultant 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 the Owner's and/or Owner's Consultant approval.

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. NTH Consultants, Ltd. conducted Hazardous Materials Surveys and the findings of these surveys are presented in the following reports:

1. Report on Hazardous Materials Survey of Dorothy Busch Branch Library – 23333 Ryan Road (NTH Project No. 62-130322-00), dated June 10, 2015.

2. Report on Hazardous Materials Survey of 23245 Ryan Road Property (NTH Project No. 61-160022-01), dated January 28, 2016.

It is the Contractor's responsibility to verify all information and to interpret all data and reports for removal purposes.

D. 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

E. STATE OF MICHIGAN

PA 451, PART 147	PCB compounds

1.05 SUBMITTALS

At least 2 weeks prior to beginning work, submit the following items. Do not begin work until they are acknowledged as received.

A. Work Plan

1. Submit a work plan describing the means, methods, and procedures proposed for removing, transporting and disposing of PCB containing materials.

2. The work plans shall address safety issues dealing with removal, handling, storing, and transporting the PCB containing materials and products used to remove PCB contamination, including methods of preventing cleanup materials from entering sewers.

3. Submit a health and safety plan in accordance with Michigan Occupational Safety and Health Act (MIOSHA) requirements.

B. 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's Consultant's review prior to Owner'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 Consultant will either return the Owner 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 Owner 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 site. The approval shall contain the facility's waste approval number.

5. Submit a sample waste disposal manifest filled out in accordance with the requirements of this Section.

C. Submit the name and address of any environmental testing laboratory to be utilized.

1.06 SAMPLING AND ANALYTICAL TESTING

A. Retain a laboratory which routinely provides analysis acceptable to the Michigan Department of Environmental Quality (MDEQ) 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 or Owner's Consultant 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.

1.07 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 to clean up all spills that occur during loading, hauling and final disposal at no cost to the Owner. Contractor shall immediately notify the Owner's Consultant 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.

D. If additional data is required to obtain disposal facility approval, collect and analyze appropriate samples. Notify the Owner's Consultant 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 Consultant will have the opportunity to collect co-located samples.

PART 2 - PRODUCTS

2.01 GENERAL

A. Use only products designed to remove PCBs from contaminated surfaces.

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 contamination removal or other activities if appropriate.

3. Make the work area safe for the Owner's Consultant and other authorized agents of the Owner.

4. Ensure that personnel conducing 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 REMOVAL

A. General 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 wastes 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. Ballasts shall be placed in a DOT-approved drum with adequate absorbent.

5. Properly label all containers prior to shipment in accordance with all MDOT and other applicable regulations.

6. Provide for the safe storage of waste on-site, prior to disposal. For security reasons, restrict access to waste storage areas.

7. Provide covered dumpsters and storage containers with appropriate hazard labels.

8. Do not place waste on the 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.

B. PCB Containing and Suspected PCB Materials and Items

1. Properly remove, segregate from other materials, and containerize PCB-containing ballasts, and other suspected PCB items and materials.

3.03 DISPOSAL AT A LICENSED DISPOSAL OR RECYCLING FACILITY

A. General

1. 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 Consultant. The Contractor shall be responsible for all costs and coordination for this testing.

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 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 Consultant. Report all spills immediately to the Owner's Consultant. Cleanup of vehicle fluids released to the ground is the Contractors' responsibility.

6. Prior to loading, provide Owner's Consultant 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 disposal facility, the name of the transporter, and the disposal facility approval number.

7. During loading, the Owner's Consultant will provide a manifest signed by the Owner or on behalf of the Owner for each load.

8. Transport PCBs waste to a licensed disposal facility or recycling facility.

9. Within 24 hours of the load arriving at the disposal or recycling facility the site, provide to the Owner's Consultant an original manifest and a corresponding disposal facility receipt ticket that have been signed by the disposal or recycling facility.

B. Liquid, Hazardous and/or PCB Waste Disposal:

1. Transport waste in accordance with the requirements of 40 CFR 263 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 the waste.

END OF SECTION

Hazardous Materials Survey

23245 Ryan Road Structures
Warren, Michigan

City of Warren
One City Square, Suite 300, Warren,Michigan 48093-2390

January 28, 2016
NTH Project No. 61-160022-01

NTH Consultants, Ltd.
41780 Six Mile Road
Northville, MI 48168

NTH Consultants, Ltd.

Infrastructure Engineering
and Environmental Services

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Ms. Donna Dordeski, P.E.
Environmental Compliance Engineer
City of Warren
One City Square, Suite 300
Warren, Michigan 48093-2390

January 28, 2016
NTH Project No. 61-160022-01

RE: Report on Hazardous Materials Survey
23245 Ryan Road Structures
Warren, Michigan

Dear Ms. Dordeski:

NTH Consultants, Ltd. (NTH) is pleased to submit this report on Hazardous Materials Survey (HMS) performed for the structures located at the above-referenced address. This study was performed in accordance with our current engineering services contract with the City of Warren (RFP-W-8755) and your email acceptance of the scope of work and fee for this project.

We are pleased to be of service to you. Should you have any questions or require additional assistance, please call one of the undersigned at 248.553.6300.

Sincerely,

NTH Consultants, Ltd.

Laura A. Willem
Assistant Project Scientist

Bhushan C. Modi
Vice President

LAW/BCM/mam

Attachments

cc: John Kosnak – NTH Consultants, Ltd.

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EXECUTIVE SUMMARY

This report presents the results of a Hazardous Materials Survey (HMS) conducted for the vacant residential dwelling and storage shed located at 23245 Ryan Road in Warren, Michigan.

The dwelling is approximately 1,633 square feet in size and was constructed in 1930. The shed is approximately 120 square feet in size and the date of construction is unknown. The dwelling and shed are scheduled for demolition.

The purpose of the HMS was to identify and quantify, to the extent possible, asbestos-containing materials (ACM), lead-based paint (LBP), cadmium-based paint (CBP), polychlorinated biphenyl (PCB)-containing equipment, mercury-containing devices/equipment, stored chemicals and certain potentially hazardous materials.

During the course of the asbestos evaluation, twenty-four (22) homogenous areas of suspect ACM were identified in the residential dwelling and two (2) homogenous areas were identified in the storage shed. Bulk samples were collected from these materials and were analyzed for asbestos using Polarized Light Microscopy (PLM) method. 9” x 9” tan floor tile, 1’ x 1’ brown mottle floor tile, duct paper, white old window glazing, and exterior transite siding were identified as ACM in the residential dwelling. ACM were not identified in the storage shed.

A survey was conducted in the structures to sample and analyze various colors of paint to determine the lead and cadmium content. Three (3) paint chips samples were collected from the residential dwelling and one (1) sample was collected from the storage shed. The samples were analyzed for lead and cadmium using atomic absorption spectroscopy (USEPA Method 7420 and 7130). In the residential dwelling, lead was detected in the paint chip samples collected from light blue plaster ceiling, white wood window sill and white brick wall. In the

shed, lead was detected in the paint chip collected from the gray wood surface. Cadmium was not detected in the paint chip samples.

Building components that typically contain hazardous materials, such as PCBs, mercury, Freon or CFCs, and stored chemicals were identified and inventoried. Suspect mercury-containing materials such as fluorescent light tubes, suspect PCB-containing light ballasts and other hazardous materials (smoke detector, television, central processing unit, tubes of caulking, and paint containers) were observed in the dwelling. No such hazardous materials were identified in the storage shed.

The Executive Summary should not be reviewed separately from the remainder of the report. The Executive Summary provides an overview and is not a substitute for a thorough review of the entire report.

1.0 INTRODUCTION

NTH Consultants, Ltd. (NTH) was retained by City of Warren to perform a Hazardous Materials Survey (HMS) of the residential dwelling and storage shed located at 23245 Ryan Road in Warren, Michigan.

The residential dwelling is a two-story structure with a basement. The dwelling is approximately 1,633 square feet in size and was constructed in 1930. The storage shed is a single-story structure with a soil-covered floor. The storage shed is approximately 120 square feet in size and the date of construction is unknown.

The dwelling and shed are scheduled for demolition; thus, the purpose of this HMS was to identify and quantify, to the extent possible, asbestos-containing materials (ACM), lead-based paint (LBP), cadmium-based paint (CBP), polychlorinated biphenyl (PCB)-containing equipment, mercury-containing devices, stored chemicals and potentially hazardous materials.

The following limiting conditions were encountered during the HMS study:

- The attic of the dwelling had roll-type fiberglass insulation which obstructed observations.

- Intrusive or destructive investigation and sampling was beyond the scope of the current study.

Laura Willem of NTH performed the HMS on January 12, 2016. Ms. Willem is a State of Michigan Accredited Asbestos Building Inspector (Accreditation No. 25682).

2.0 SCOPE OF SERVICES

This HMS comprised of evaluating the following hazardous materials within the residential dwelling and storage shed (i.e. structures):

Asbestos-Containing Materials (ACM)

- Conducted a walk-through survey of the accessible portions of the structures to identify, quantify and sample suspect ACM.

- Collected and analyzed bulk samples from suspect ACM in representative areas as determined by the accredited asbestos inspector.

Lead-Based Paint (LBP) and Cadmium-Based Paint (CBP)

- Performed a visual survey of the structures to document and test various painted building components for the presence of lead and cadmium in paint. Paint chip samples were collected and submitted for lead and cadmium analyses.

Potential Hazardous Materials / Stored Chemicals

- Performed a visual survey of the accessible portions of the structures to identify and quantify fluorescent light ballasts, light tubes, stored chemicals and other potentially hazardous materials that may require special handling/disposal prior to demolition.

3.0 SURVEY FINDINGS AND EVALUATIONS

The following sections of this report present the results of the HMS including a list of homogeneous areas identified as containing asbestos, along with an approximate quantity of each ACM homogeneous area; a list of painted surfaces identified as LBP and CBP; and any other potentially hazardous material requiring special handling prior to demolition activities.

3.1 ASBESTOS-CONTAINING MATERIALS

3.1.1 Background

Asbestos is a commercial term for a group of silicate minerals that readily separate into thin, strong fibers that are flexible, heat resistant, and chemically inert. These minerals include chrysotile, amosite, and crocidolite, and to a lesser extent, tremolite, anthophyllite, and actinolite; and any of these minerals that have been chemically treated or altered. An ACM is any material that contains more than 1% asbestos. Asbestos is considered to be an environmental and health concern because long-term exposure has been linked to three major respiratory diseases: asbestosis, lung cancer, and mesothelioma. ACM were widely used in the construction of buildings beginning in the 1870s and continuing through the early 1980s. In accordance with OSHA regulations 29 CFR 1910.1001, all buildings constructed prior to 1981 are presumed to contain asbestos, unless tested and found otherwise. However, ACM can be found in buildings built after 1981. In accordance with current National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations, all buildings, regardless of age, with planned renovations or demolitions require an asbestos inspection.

There are three main types of ACM:

Thermal System Insulation: ACM applied to pipes, fittings, boilers, tanks, ducts, or other HVAC components to prevent heat loss or gain.

Surfacing Material: ACM that is sprayed-on, troweled-on, or otherwise applied to surfaces, such as acoustical plaster and fireproofing materials on structural members, or other materials on surfaces for acoustical, decorative, fireproofing, or other purposes.

Miscellaneous Materials: All other ACM, including but not limited to, acoustical ceiling tile, resilient floor tile and coverings, concrete pipes, siding, and roofing materials. The ACMs are further classified as either friable or non-friable materials. Friable materials are those that can be crumbled, pulverized, or reduced to powder by hand pressure, when dry.

Non-friable materials can be further classified as Category I or Category II materials. Category I materials include packings, gaskets, resilient floor coverings and asphalt roofing products. Category II materials include all other non-friable materials.

3.1.2 Survey

NTH understands that the structures are slated for demolition. Therefore, in accordance with current United States Environmental Protection Agency (USEPA) 40 CFR Part 61 of the Federal Register, NESHAP revision; final rule effective November 20, 1990, the results of an asbestos evaluation are needed prior to the planned renovation or demolition activities in order to establish an appropriate response plan.

As a public and commercial structure, the building is governed by 29 CFR 1910.1001, Occupational Health Standards for Asbestos in General Industry, for the normal course of business activities by employees. During construction, renovation or demolition activities, the persons performing those activities would be governed by 29 CFR 1926.1101, Occupational Health Standards for Asbestos in Construction and EPA NESHAP.

The Asbestos Hazard Emergency Response Act (AHERA), 40 CFR 763, and its associated requirements, applies to schools or school-owned structures. Some portions of AHERA were used as guidelines for compliance with 29 CFR 1910.1001. In particular, 29 CFR 1910.1001(j)(1) requires owners of buildings constructed prior to 1981 to presume that certain types of building materials are ACM, unless the owner demonstrates that those materials are not ACM. To demonstrate the material is not ACM, 29 CFR 1910.1001(j)(8)(ii) states that the owner may complete an inspection conducted pursuant to the requirements of AHERA guidelines or perform tests of the material which demonstrate that no ACM is present. Such tests shall include analysis of bulk samples collected in the manner described in AHERA. The tests, evaluation and sample collection shall be conducted by an accredited inspector. Analysis of samples shall be performed by laboratories with proficiency demonstrated by accreditation or other voluntary testing programs.

Therefore, NTH performed those elements of AHERA that are referenced in 29 CFR 1910.1001(j)(8)(ii), but did not perform a full AHERA inspection, provide AHERA documentation, or write an AHERA report, since they do not apply to these structures.

Analytical services for asbestos were provided by APEX Research Laboratories (APEX) located in Whitmore Lake, Michigan. The bulk samples of suspect asbestos were analyzed by PLM method (EPA Method No. 600/R-93/116). APEX is accredited by the National Institute of Standards and Technology (NIST) and National Voluntary Laboratory Accreditation Program (NVLAP) for analysis of asbestos using PLM method.

The purpose of the asbestos survey was to identify, sample, and quantify suspect ACM, and to categorize the suspect ACM into individual homogeneous areas. For purposes of this report, a homogeneous area is defined as a material that appears similar in terms of color, texture, composition and/or date of application.

NTH identified twenty-two homogeneous areas of suspected ACM within the dwelling and two homogeneous areas within the storage shed. Bulk samples were collected from the materials identified as suspect ACM. Due to the physical characteristics of multi-layered materials such as floor tile and mastic and plaster finish coat and base coat, the analytical results of such multi-layered suspect ACM were reported for each layer, where applicable, and are regarded as separate materials. Laboratory data on asbestos analysis are included in Appendix A.

Table 1 identifies the material description, the friability of the material (friable = F, Category I non-friable = NF-I, and Category II non-friable = NF-II); the category of the material (surfacing = S, miscellaneous =M, or thermal system insulation = TSI); the results of analytical testing, and sample locations. If analysis indicated the presence of asbestos in the first analyzed sample, then the remaining samples of that homogenous area were not analyzed, and are listed as “not analyzed.”

TABLE 1 ACM DATA						
HA No.	**Material Description**	**Sample No.**	**Location**	**F/NF**	**Category**	**Asbestos?**
Residential Dwelling						
1	1’ x 1’ black and white square pattern floor tile and associated mastic	FT-1A	1st floor – Kitchen	NF-I	M	Floor tile: No Mastic: No
		FT-1B	1st floor – Kitchen			Floor tile: No Mastic: No
2	Floor material under HA #1 (description not known), associated mastic atop tile and filler under tile	FT-2A	1st floor – Kitchen	NF-I	M	Floor material: No Mastic: No Filler: No
		FT-2B	1st floor – Kitchen			Floor material: No Mastic: No Filler: No
3	1’ x 1’ decorative floor tile and associated mastic	FT-3A	1st floor – cupboard off of kitchen	NF-I	M	Floor tile: No Mastic: No
		FT-3B	1st floor – cupboard off of kitchen			Floor tile: No Mastic: No
4	Floor tile under HA #3	FT-4A	1st floor – cupboard off of kitchen	NF-I	M	Floor tile: No Mastic: No
		FT-4B	1st floor – cupboard off of kitchen			Floor tile: No Mastic: No
5	2’ x 4’ ceiling tile, white with fissures and pinholes	CT-1A	1st floor – bathroom	F	M	No
		CT-1B	1st floor – bathroom			No
6	1’ x 2’ ceiling tile, white and smooth texture	CT-2A	1st floor – southeast living room	F	M	No
		CT-2B	1st floor – southeast living room			No
7	Plaster: Finish coat and base coat	PL-1A	1st floor – kitchen, wall	F	S	Finish coat: No Base coat: No
		PL-1B	1st floor – kitchen, wall			Finish coat: No Base coat: No
		PL-1C	1st floor – north bedroom, ceiling			Finish coat: No Base coat: No - <1% Chrysotile
		PL-1D	2nd floor – main room, ceiling			Finish coat: No Base coat: No - <1% Chrysotile
		PL-1E	2nd floor- north bathroom, wall			Finish coat: No Base coat: No - <1% Chrysotile
		PL-1F	2nd floor – northeast bedroom, ceiling			Finish coat: No Base coat: No
		PL-1G	2nd floor – northeast bedroom, ceiling			Finish coat: No Base coat: No

TABLE 1 ACM DATA						
HA No.	**Material Description**	**Sample No.**	**Location**	**F/NF**	**Category**	**Asbestos?**
8	1’ x 1’ ceiling tile, white with smooth texture	CT-3A	1st floor – north bedroom	F	M	No
		CT-3B	1st floor – north bedroom			No
9	1’ x 1’ beige square pattern and associated mastic (under carpet and HA #10)	FT-5A	2nd floor – main room	NF-I	M	Floor tile: No Mastic: No
		FT-5B	2nd floor – main room			Floor tile: No Mastic: No
10	1’ x 1’ off-white linoleum tile (under carpet and over HA #9)	FT-6A	2nd floor – main room	NF-I	M	Floor tile: No Mastic: No
		FT-6B	2nd floor – main room			Floor tile: No Mastic: No
11	9” x 9” tan with black streaks floor tile and associated mastic (under carpet)	FT-7A	2nd floor – southeast bedroom	NF-I	M	Floor tile: Yes – 10% Chrysotile Mastic: No
		FT-7B	2nd floor – southeast bedroom			Floor tile: Not analyzed Mastic: No
12	Roll floor material	FM-1A	2nd floor – north bathroom	NF-I	M	No
		FM-1B	2nd floor – north bathroom			No
13	1’ x 1’ off-white and blue floor tile and associated mastic (under HA #12)	FT-8A	2nd floor – north bathroom	NF-I	M	Floor tile: No Mastic: No
		FT-8B	2nd floor – north bathroom			Floor tile: No Mastic: No
14	Textured paint	TP-1A	2nd floor – northeast bedroom	F	S	No
		TP-1B	2nd floor – northeast bedroom			No
		TP-1C	2nd floor – northeast bedroom			No
15	1’ x 1’ brown mottle floor tile and associated mastic	FT-9A	Basement	NF-I	M	Floor tile: Yes – 1.75% Chrysotile *(point count result)* Mastic: No
		FT-9B	Basement			Floor tile: Not analyzed Mastic: No
16	Duct paper	DP-1A	Basement, just southwest of water heater	F	TSI	Yes – 50% Chrysotile
		DP-1B	Basement, just southwest of water heater			Not analyzed

TABLE 1 ACM DATA						
HA No.	**Material Description**	**Sample No.**	**Location**	**F/NF**	**Category**	**Asbestos?**
17	Light brown window glazing, porch windows	WG-1A	Porch	NF-II	M	No
		WG-1B	Porch			No
18	White old window glazing	WG-2A	2nd floor – main room, west side	NF-II	M	Yes – 1.5% Chrysotile *(point count result)*
		WG-2B	2nd floor – main room, west side			Not analyzed
19	Drywall	DW-1A	1st floor – kitchen	NF-II	M	No
		DW-1B	1st floor – kitchen			No
20	Exterior transite siding	T-1A	Exterior – west side	NF-II	M	Yes – 20% Chrysotile
		T-1B	Exterior – west side			Not analyzed
21	Black paper under HA #20	P-1A	Exterior – west side	NF-II	M	No
		P-1B	Exterior – west side			No
22	Roofing material	RM-1A	Exterior – south side	NF-I	M	No
		RM-1B	Exterior – south side			No
Storage Shed						
23	Roofing material	RM-2A	Roof	NF-I	M	No
		RM-2B	Roof			No
24	Black paper	P-2A	Interior	NF-II	M	No
		P-2B	Interior			No

According to the USEPA regulations, if the analytical data result via PLM method identifies less than 10% asbestos, then the sample result may be verified by the point-counting method. Additionally, if the result obtained by point counting is different from the PLM data, then the point count result must be used.

Samples of 1’ x 1’ brown mottle floor tile (HA #15) and white old window glazing (HA #18) were analyzed using point counting methods. The results of the point counting analysis are reflected in the Table 1 and are included in Appendix A.

3.1.3 Asbestos Quantities and Locations

Table 2 presents a description of each identified ACM along with the location, condition and quantity. ***It should be noted that the asbestos quantities listed in the table are approximate and should not be relied upon by contractors for bidding purposes.***

TABLE 2

ACM LOCATION AND CONDITION

HA #	Material Description	Location	Condition/Notes	Estimated Quantity
11	9" x 9" tan with black streaks floor tile	2nd floor – southeast bedroom, under carpet	The material was noted to be in good condition. Asbestos was not detected in the mastic.	150 s.f.
15	1' x 1' brown mottle floor tile	Basement – east side	The material was noted to be in fair condition. Asbestos was not detected in the mastic.	360 s.f.
16	Duct paper	Basement – just southwest of the water heater, near ceiling	The material was noted to be in poor condition.	1 s.f.
18	White old window glazing	White wood windows located on the north and west side of the dwelling	The material was noted to be in fair to poor condition.	3 windows
20	Exterior transite siding	Exterior of dwelling	The material was noted to be in good condition with some areas of localized damage.	3,000 s.f.

No ACM were identified in the storage shed.

3.2 LEAD-BASED PAINT AND CADMIUM-BASED PAINT

A visual survey was performed to document and test various types and colors of paint on painted building components for the presence of lead and cadmium. Three paint chip samples were collected from the dwelling, and one paint chip sample was collected from the storage shed. These samples were submitted to APEX for lead and cadmium analyses using atomic absorption spectroscopy (USEPA Methods 7420 and 7130).

For purposes of this study, and considering that the structures are scheduled for demolition, the contractor performing the demolition activities will need to comply with Michigan Occupational Safety and Health Administration (MIOSHA) Part 603 (Lead Exposure in

Construction) and MIOSHA Part 309 (Cadmium Exposure in Construction). Therefore, the paint chip results were compared to MIOSHA standards, which states that LBP and CBP is paint with any detectable level of lead and cadmium, or for the purpose of this report, any detectable level of lead and cadmium at or above the laboratory method detection limit (0.01%). Results of the lead and cadmium laboratory analysis are included in Appendix B.

Lead was detected in all four paint chip samples above the laboratory method detection limit (MDL). Cadmium was not detected in the paint chip samples. Table 3 presents descriptions of the tested surfaces and analytical results.

TABLE 3

PAINT CHIP DATA

Sample #	Color / Description	Material/Location	Lead Results (%)	Cadmium Results (%)
Residential Dwelling				
PC-1	Light blue with orange below	Plaster ceiling / 2nd floor – main room	0.11	<0.01
PC-2	White	Wood window sill / 2nd floor – main room	2.38	<0.01
PC-3	White	Brick wall / Basement – southwest room	0.02	<0.01
Storage Shed				
PC-4	Gray	Painted wood surface	2.00	<0.01

3.3 POLYCHLORINATED BIPHENYLS

The structures were surveyed to identify liquid-cooled electrical units (transformers and capacitors). Such units are of possible environmental concern because they may be potential PCB sources. PCB units may subject the owner/operator to various regulatory requirements under the Toxic Substances Control Act (TSCA). The release of PCB fluids or their combustion products (in case of spill or fire) are potential environmental liabilities. The presence or absence of PCBs within electrical equipment is typically determined based on the type and age of equipment, and any labels or placards identifying the PCB status. No such electrical equipment were observed in the dwelling and shed.

In accordance with the USEPA Federal Regulations (40 CFR 761), nearly all fluorescent light ballasts manufactured prior to 1979 are assumed to contain PCBs, unless tested and found otherwise. The light ballasts manufactured after July 1, 1978 that does not contain PCBs are required to be clearly marked "No PCBs." A light fixture was randomly accessed and the "No PCBs" marking/label was observed on the ballasts. Approximately six ballasts were noted in the residential dwelling. No ballasts were observed in the storage shed.

3.4 MERCURY

The survey also included observations for equipment suspected of containing mercury. Approximately six 4-foot fluorescent light tubes were noted in the residential dwelling. No fluorescent lights or suspect mercury-containing devices were observed in the storage shed.

3.5 POTENTIALLY HAZARDOUS MATERIALS

The structures were surveyed to identify certain potentially be hazardous materials and stored chemicals that will have to be removed prior to demolition of the structures. Table 4 lists the potentially hazardous materials and chemical containers noted in the residential dwelling. No such materials were observed in the storage shed.

TABLE 4

POTENTIALLY HAZARDOUS MATERIALS

Item/Material	Possible Contaminant	Approximate Quantity
Smoke Detector	Lead, acid, or radioactive source	1
Computer - Central Processing Unit (CPU)	Metals	1
Television	Cathode ray tubes (CRTs) and metals	1

Chemical Containers

Two 5-gallon containers of paint, three 1-gallon containers of paint and three 10-ounce containers of caulking compound were observed in the residential dwelling. No chemical containers were noted in the storage shed.

4.0 SUMMARY OF FINDINGS AND OPINIONS

The HMS of the structures at 23245 Ryan Road in Warren entailed evaluation or identification of ACM, LBP, CBP, PCB and mercury-containing equipment, stored chemicals and certain potentially hazardous materials.

The results of the asbestos survey identified 9” x 9” tan floor tile, 1’ x 1’ brown mottle floor tile, duct paper, white old window glazing and exterior transite siding as ACM in the residential dwelling. No ACM were identified in the storage shed.

Lead was detected in the paint chip samples collected from light blue plaster ceiling, white wood window sill and white brick wall in the residential dwelling, and also in the paint chip sample collected from the gray wood surface of the storage shed. Cadmium was not detected in analyzed samples.

Suspect mercury-containing fluorescent light tubes, suspect PCB-containing ballasts, equipment containing potentially hazardous materials (i.e. smoke detector, television, CPU), paint containers and tubes of caulking compound were observed in the residential dwelling. No such materials were noted in the storage shed.

Technical Specifications

Concurrently with this study, NTH is also preparing technical specifications for removal of hazardous materials identified in this report. These specifications are issued under a separate cover.

Abatement Contractor and Air Quality Monitoring

A licensed asbestos abatement contractor, as required by current federal and state laws and regulations, should perform the removal and disposal of the identified ACM.

NTH also recommends that visual observations, verification of removal and cleanup and air monitoring for asbestos fibers be performed by the City of Warren's environmental consultant.

If suspect ACM other than those identified during this study are encountered during demolition of the structures, then such materials should be sampled and analyzed for asbestos using PLM method.

5.0 LIMITATIONS

The findings and opinions presented in this report are based on the scope of services defined herein. The results of this study are intended to provide City of Warren with reasonably ascertainable information regarding the presence or absence of hazardous materials within the residential dwelling and storage shed located at 23245 Ryan Road in Warren, Michigan. This study was performed in accordance with standard of care and diligence considered to be representative of industrial hygiene practices in this region at the present time.

The results of this study cannot and should not be construed as a certification of the absence of any hazardous or regulated substances from the property, but rather a diligent and prudent review of available data within an established work scope, and time and budgetary restraints.

This report is intended for the exclusive use of City of Warren. The results of this study may not be relied upon by parties other than those identified above or without the prior knowledge and written consent of NTH Consultants, Ltd.

Through the course any HMS, there are a number of obstacles and limitations that can affect the final outcome of the report. These limitations include, but are not limited to, the following factors: access concerns; presence of stored items; materials that are damaged or cannot be intrusively sampled; and materials that have been replaced during past renovation activities.

Due to these limitations, suspect materials uncovered during demolition activities and not mentioned in this report should be sampled and analyzed to establish an appropriate response action.

APPENDIX A

ASBESTOS DATA

Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

Project: 23245 Ryan Rd.
Project # 61-160022-01

Report To:
Ms. Laura Willem
NTH Consultants, LTD
41780 Six Mile Road
Northville, MI 48168

ARI Report # 16-62512
Date Collected: 01/12/16
Date Received: 01/15/16
Date Analyzed: 01/20/16
Date Reported: 01/20/16

Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 62512 - 01 Cust. #: FT-1A Material: 1x1 Black/White Sq. Pattern Floor Tile Location: 1st Floor - Kitchen Appearance: white,nonfibrous,homogenous Layer: 1 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 62512 - 01a Cust. #: FT-1A Material: Mastic Location: 1st Floor - Kitchen Appearance: clear,nonfibrous,homogenous Layer: 2 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 62512 - 02 Cust. #: FT-1B Material: 1x1 Black/White Sq. Pattern Floor Tile Location: 1st Floor - Kitchen Appearance: black,nonfibrous,homogenous Layer: 1 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

Test Method EPA 600/R-93/116 was used to analyze the above samples. Matrix interference and/or resolution limits may yield false/negative results in certain circumstances. Suspect floor tiles containing <1% should be tested with SEM or TEM. This certificate of analysis relates only to the samples tested and to insure the integrity of the results, may only be reproduced in full. This certificate may not be used by the customer to claim product endorsement by NVLAP or any agency of the US Government. APEX Research Inc. is not responsible for the accuracy of the results for layered samples or samples comprising multiple materials. Liability limited to cost of analysis.

NVLAP Lab Code 102118-0

Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

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Project # 61-160022-01

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Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 62512 - 02a Cust. #: FT-1B Material: Mastic Location: 1st Floor - Kitchen Appearance: clear,nonfibrous,homogenous Layer: 2 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 62512 - 03 Cust. #: FT-2A Material: Floor Material under FT-1 Location: 1st Floor - Kitchen Appearance: beige,nonfibrous,homogenous Layer: 1 of 3	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 62512 - 03a Cust. #: FT-2A Material: Mastic Location: 1st Floor - Kitchen Appearance: clear,nonfibrous,homogenous Layer: 2 of 3	Asbestos Present: **NO** No Asbestos Observed	Other - 100%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

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ARI Report # 16-62512
Date Collected: 01/12/16
Date Received: 01/15/16
Date Analyzed: 01/20/16
Date Reported: 01/20/16

Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 62512 - 03b Cust. #: FT-2A Material: Filler Location: 1st Floor - Kitchen Appearance: grey,nonfibrous,homogenous Layer: 3 of 3	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 62512 - 04 Cust. #: FT-2B Material: Floor Material under FT-1 Location: 1st Floor - Kitchen Appearance: beige,nonfibrous,homogenous Layer: 1 of 3	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 62512 - 04a Cust. #: FT-2B Material: Mastic Location: 1st Floor - Kitchen Appearance: clear,nonfibrous,homogenous Layer: 2 of 3	Asbestos Present: **NO** No Asbestos Observed	Other - 100%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

Test Method EPA 600/R-93/116 was used to analyze the above samples. Matrix interference and/or resolution limits may yield false/negative results in certain circumstances. Suspect floor tiles containing <1% should be tested with SEM or TEM. This certificate of analysis relates only to the samples tested and to insure the integrity of the results, may only be reproduced in full. This certificate may not be used by the customer to claim product endorsement by NVLAP or any agency of the US Government. APEX Research Inc. is not responsible for the accuracy of the results for layered samples or samples comprising multiple materials. Liability limited to cost of analysis.

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Date Analyzed: 01/20/16
Date Reported: 01/20/16

Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 62512 - 04b Cust. #: FT-2B Material: Filler Location: 1st Floor - Kitchen Appearance: grey,fibrous,homogenous Layer: 3 of 3	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 1% Other - 99%
Lab ID #: 62512 - 05 Cust. #: FT-3A Material: 1x1 Decorative Floor Tile Location: 1st Floor - Cupboard Appearance: grey,fibrous,homogenous Layer: 1 of 2	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 1% Other - 99%
Lab ID #: 62512 - 05a Cust. #: FT-3A Material: Mastic Location: 1st Floor - Cupboard Appearance: clear,nonfibrous,homogenous Layer: 2 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%

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Robert T. Letarte Jr., Laboratory Director

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Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

Project: 23245 Ryan Rd.
Project # 61-160022-01

Report To:
Ms. Laura Willem
NTH Consultants, LTD
41780 Six Mile Road
Northville, MI 48168

ARI Report # 16-62512
Date Collected: 01/12/16
Date Received: 01/15/16
Date Analyzed: 01/20/16
Date Reported: 01/20/16

Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 62512 - 06 Cust. #: FT-3B Material: 1x1 Decorative Floor Tile Location: 1st Floor - Cupboard Appearance: white,nonfibrous,homogenous Layer: 1 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 62512 - 06a Cust. #: FT-3B Material: Mastic Location: 1st Floor - Cupboard Appearance: clear,nonfibrous,homogenous Layer: 2 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 62512 - 07 Cust. #: FT-4A Material: Floor Tile Under FT-3 Location: 1st Floor - Cupboard Appearance: yellow,nonfibrous,homogenous Layer: 1 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%

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Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 62512 - 07a Cust. #: FT-4A Material: Mastic Location: 1st Floor - Cupboard Appearance: clear,nonfibrous,homogenous Layer: 2 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 62512 - 08 Cust. #: FT-4B Material: Floor Tile Under FT-3 Location: 1st Floor - Cupboard Appearance: yellow,nonfibrous,homogenous Layer: 1 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 62512 - 08a Cust. #: FT-4B Material: Mastic Location: 1st Floor - Cupboard Appearance: clear,nonfibrous,homogenous Layer: 2 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%

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Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 62512 - 09 Cust. #: CT-1A Material: 2x4 Ceiling Tile w/Fissures, Pinholes Location: 1st Floor Bath Appearance: beige,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 40% Mineral Wool - 30% Other - 30%
Lab ID #: 62512 - 10 Cust. #: CT-1B Material: 2x4 Ceiling Tile w/Fissures, Pinholes Location: 1st Floor Bath Appearance: beige,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 40% Mineral Wool - 30% Other - 30%
Lab ID #: 62512 - 11 Cust. #: CT-2A Material: 1x2 Ceiling Tile - Smooth Texture Location: 1st Floor Living Room Appearance: brown,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 70% Other - 30%

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Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 62512 - 12 Cust. #: CT-2B Material: 1x2 Ceiling Tile - Smooth Texture Location: 1st Floor Living Room Appearance: brown,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 80% Other - 20%
Lab ID #: 62512 - 13 Cust. #: PL-1A Material: Plaster - Finish Coat Location: 1st Floor Kitchen Wall Appearance: white,nonfibrous,homogenous Layer: 1 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 62512 - 13a Cust. #: PL-1A Material: Base Coat Location: 1st Floor Kitchen Wall Appearance: grey,fibrous,homogenous Layer: 2 of 2	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 5% Other - 95%

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Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 62512 - 14 Cust. #: PL-1B Material: Plaster - Finish Coat Location: 1st Floor Kitchen Wall Appearance: white,nonfibrous,homogenous Layer: 1 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 62512 - 14a Cust. #: PL-1B Material: Base Coat Location: 1st Floor Kitchen Wall Appearance: grey,fibrous,homogenous Layer: 2 of 2	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 5% Other - 95%
Lab ID #: 62512 - 15 Cust. #: PL-1C Material: Plaster - Finish Coat Location: 1st Floor North Bedroom Ceiling Appearance: white,nonfibrous,homogenous Layer: 1 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%

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Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 62512 - 15a Cust. #: PL-1C Material: Base Coat Location: 1st Floor North Bedroom Ceiling Appearance: grey,fibrous,homogenous Layer: 2 of 2	Asbestos Present: **NO** Chrysotile - < 1%	Cellulose - 5% Other - 95%
Lab ID #: 62512 - 16 Cust. #: PL-1D Material: Plaster - Finish Coat Location: 2nd Floor Main Room Ceiling Appearance: white,nonfibrous,homogenous Layer: 1 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 62512 - 16a Cust. #: PL-1D Material: Base Coat Location: 2nd Floor Main Room Ceiling Appearance: grey,fibrous,homogenous Layer: 2 of 2	Asbestos Present: **NO** Chrysotile - < 1%	Cellulose - 2% Other - 98%

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Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 62512 - 17 Cust. #: Pl-1E Material: Plaster - Finish Coat Location: 2nd Floor Bath Wall Appearance: white,nonfibrous,homogenous Layer: 1 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 62512 - 17a Cust. #: PL-1E Material: Base Coat Location: 2nd Floor Bath Wall Appearance: grey,fibrous,homogenous Layer: 2 of 2	Asbestos Present: **NO** Chrysotile - < 1%	Cellulose - 2% Other - 98%
Lab ID #: 62512 - 18 Cust. #: PL-1F Material: Plaster - Finish Coat Location: 2nd Floor NE Bedroom Ceiling Appearance: white,nonfibrous,homogenous Layer: 1 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%

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Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 62512 - 18a Cust. #: PL-1F Material: Base Coat Location: 2nd Floor NE Bedroom Ceiling Appearance: grey,fibrous,homogenous Layer: 2 of 2	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 5% Other - 95%
Lab ID #: 62512 - 19 Cust. #: PL-1G Material: Plaster - Finish Coat Location: 2nd Floor NE Bedroom Ceiling Appearance: white,nonfibrous,homogenous Layer: 1 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 62512 - 19a Cust. #: PL-1G Material: Base Coat Location: 2nd Floor NE Bedroom Ceiling Appearance: grey,fibrous,homogenous Layer: 2 of 2	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 2% Other - 98%

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Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 62512 - 20 Cust. #: CT-3A Material: 1x1 Ceiling Tile w/Smooth Texture Location: 1st Floor North Bedroom Appearance: brown,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 70% Other - 30%
Lab ID #: 62512 - 21 Cust. #: CT-3B Material: 1x1 Ceiling Tile w/Smooth Texture Location: 1st Floor North Bedroom Appearance: brown,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 70% Other - 30%
Lab ID #: 62512 - 22 Cust. #: FT-5A Material: 1x1 Beige Sq. Pattern Floor Tile Location: Under FT-6, 2nd Floor Main Appearance: beige,nonfibrous,homogenous Layer: 1 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%

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Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 62512 - 22a Cust. #: FT-5A Material: Mastic Location: Under FT-6, 2nd Floor Main Appearance: clear,nonfibrous,homogenous Layer: 2 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 62512 - 23 Cust. #: FT-5B Material: 1x1 Beige Sq. Pattern Floor Tile Location: Under FT-6, 2nd Floor Main Appearance: beige,nonfibrous,homogenous Layer: 1 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 62512 - 23a Cust. #: FT-5B Material: Mastic Location: Under FT-6. 2nd Floor Main Appearance: clear,nonfibrous,homogenous Layer: 2 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%

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Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 62512 - 24 Cust. #: FT-6A Material: 1x1 Off-White Floor Tile Location: 2nd Floor Main Room Appearance: white,nonfibrous,homogenous Layer: 1 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 62512 - 24a Cust. #: FT-6A Material: Mastic Location: 2nd Floor Main Room Appearance: yellow,nonfibrous,homogenous Layer: 2 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 62512 - 25 Cust. #: FT-6B Material: 1x1 Off-White Floor Tile Location: 2nd Floor Main Room Appearance: white,nonfibrous,homogenous Layer: 1 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%

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Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 62512 - 25a Cust. #: FT-6B Material: Mastic Location: 2nd Floor Main Room Appearance: yellow,nonfibrous,homogenous Layer: 2 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 62512 - 26 Cust. #: FT-7A Material: 9x9 Tan w/Black Streaks Floor Tile Location: 2nd Floor SE Bedroom Appearance: brown,fibrous,homogenous Layer: 1 of 2	Asbestos Present: **YES** Chrysotile - 10%	Other - 90%
Lab ID #: 62512 - 26a Cust. #: FT-7A Material: Mastic Location: 2nd Floor SE Bedroom Appearance: black,nonfibrous,homogenous Layer: 2 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%

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Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 62512 - 27 Cust. #: FT-7B Material: 9x9 Tan w/Black Streaks Floor Tile Location: 2nd Floor SE Bedroom Appearance: Layer: 1 of 2	Asbestos Present: NOT ANALYZED	
Lab ID #: 62512 - 27a Cust. #: FT-7B Material: Mastic Location: 2nd Floor SE Bedroom Appearance: black,nonfibrous,homogenous Layer: 2 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 62512 - 28 Cust. #: FM-1A Material: Roll Linoleum Flooring Location: 2nd Floor Bathroom Appearance: beige,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Fiberglass - 10% Other - 90%

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Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 62512 - 29 Cust. #: FM-1B Material: Roll Linoleum Flooring Location: 2nd Floor Bathroom Appearance: beige,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Fiberglass - 10% Other - 90%
Lab ID #: 62512 - 30 Cust. #: TP-1A Material: Textured Paint Location: 2nd Floor NE Bedroom Appearance: white,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 1% Other - 99%
Lab ID #: 62512 - 31 Cust. #: TP-1B Material: Textured Paint Location: 2nd Floor NE Bedroom Appearance: white,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 1% Other - 99%

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Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 62512 - 32 Cust. #: TP-1C Material: Textured Paint Location: 2nd Floor NE Bedroom Appearance: white,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 1% Other - 99%
Lab ID #: 62512 - 33 Cust. #: FT-9A Material: 1x1 Brown Mottle Floor Tile Location: Basement, SE Room Appearance: brown,fibrous,homogenous Layer: 1 of 2	Asbestos Present: **YES** Chrysotile - 5%	Other - 95%
Lab ID #: 62512 - 33a Cust. #: FT-9A Material: Mastic Location: Basement, SE Room Appearance: black,nonfibrous,homogenous Layer: 2 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

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NVLAP Lab Code 102118-0

Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

Project: 23245 Ryan Rd.
Project # 61-160022-01

Report To:
Ms. Laura Willem
NTH Consultants, LTD
41780 Six Mile Road
Northville, MI 48168

ARI Report # 16-62512
Date Collected: 01/12/16
Date Received: 01/15/16
Date Analyzed: 01/20/16
Date Reported: 01/20/16

Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 62512 - 34 Cust. #: FT-9B Material: 1x1 Brown Mottle Floor Tile Location: Basement, SE Room Appearance: Layer: 1 of 2	Asbestos Present: NOT ANALYZED	
Lab ID #: 62512 - 34a Cust. #: FT-9B Material: Mastic Location: Basement, SE Room Appearance: black,nonfibrous,homogenous Layer: 2 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 62512 - 35 Cust. #: DP-1A Material: Duct Paper Location: Basement Appearance: beige,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **YES** Chrysotile - 50%	Cellulose - 10% Other - 40%

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Robert T. Letarte Jr., Laboratory Director

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Northville, MI 48168

ARI Report # 16-62512
Date Collected: 01/12/16
Date Received: 01/15/16
Date Analyzed: 01/20/16
Date Reported: 01/20/16

Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 62512 - 36 Cust. #: DP-1B Material: Duct Paper Location: Basement Appearance: Layer: of	Asbestos Present: NOT ANALYZED	
Lab ID #: 62512 - 37 Cust. #: WG-1A Material: Light Brown Window Glaze Location: Porch Appearance: beige,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 1% Other - 99%
Lab ID #: 62512 - 38 Cust. #: WG-1B Material: Light Brown Window Glaze Location: Porch Appearance: beige,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 1% Other - 99%

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Robert T. Letarte Jr., Laboratory Director

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Test Method, Polarized Light Microscopy (PLM)

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Project # 61-160022-01

Report To:
Ms. Laura Willem
NTH Consultants, LTD
41780 Six Mile Road
Northville, MI 48168

ARI Report # 16-62512
Date Collected: 01/12/16
Date Received: 01/15/16
Date Analyzed: 01/20/16
Date Reported: 01/20/16

Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 62512 - 39 Cust. #: WG-2A Material: White Window Glazing Location: 2nd Floor Main Room, West Side Appearance: grey,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **YES** Chrysotile - 5%	Other - 95%
Lab ID #: 62512 - 40 Cust. #: WG-2B Material: White Window Glazing Location: 2nd Floor Main Room, West Side Appearance: Layer: of	Asbestos Present: NOT ANALYZED	
Lab ID #: 62512 - 41 Cust. #: DW-1A Material: Drywall Location: 1st Floor Kitchen Appearance: white,fibrous,nonhomogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 20% Other - 80%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

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Test Method, Polarized Light Microscopy (PLM)

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Project # 61-160022-01

Report To:
Ms. Laura Willem
NTH Consultants, LTD
41780 Six Mile Road
Northville, MI 48168

ARI Report # 16-62512
Date Collected: 01/12/16
Date Received: 01/15/16
Date Analyzed: 01/20/16
Date Reported: 01/20/16

Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 62512 - 42 Cust. #: DW-1B Material: Drywall Location: Basement Bathroom Appearance: white,fibrous,nonhomogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 20% Other - 80%
Lab ID #: 62512 - 43 Cust. #: T-1A Material: Transite Exterior Siding Location: West Side Appearance: grey,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **YES** Chrysotile - 20%	Other - 80%
Lab ID #: 62512 - 44 Cust. #: T-1B Material: Transite Exterior Siding Location: West Side Appearance: Layer: of	Asbestos Present: NOT ANALYZED	

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

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Project: 23245 Ryan Rd.
Project # 61-160022-01

Report To:
Ms. Laura Willem
NTH Consultants, LTD
41780 Six Mile Road
Northville, MI 48168

ARI Report # 16-62512
Date Collected: 01/12/16
Date Received: 01/15/16
Date Analyzed: 01/20/16
Date Reported: 01/20/16

Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 62512 - 45 Cust. #: P-1A Material: Black Paper Under Transite Location: Exterior - West Side Appearance: black,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 50% Other - 50%
Lab ID #: 62512 - 46 Cust. #: P-1B Material: Black Paper Under Transite Location: Exterior - West Side Appearance: black,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 50% Other - 50%
Lab ID #: 62512 - 47 Cust. #: RM-1A Material: Roof of Main House Location: Exterior - South Side Appearance: black,fibrous,homogenous Layer: 1 of 2	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 40% Other - 60%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

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Project: 23245 Ryan Rd.
Project # 61-160022-01

Report To:
Ms. Laura Willem
NTH Consultants, LTD
41780 Six Mile Road
Northville, MI 48168

ARI Report # 16-62512
Date Collected: 01/12/16
Date Received: 01/15/16
Date Analyzed: 01/20/16
Date Reported: 01/20/16

Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 62512 - 47a Cust. #: RM-1A Material: Felt Location: Exterior - South Side Appearance: black,fibrous,homogenous Layer: 2 of 2	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 50% Other - 50%
Lab ID #: 62512 - 48 Cust. #: RM-1B Material: Roof of Main House Location: Exterior - South Side Appearance: black,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 40% Other - 60%
Lab ID #: 62512 - 49 Cust. #: RM-2A Material: Roof of Shed Location: Shed Appearance: black,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 40% Other - 60%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

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Project # 61-160022-01

Report To:
Ms. Laura Willem
NTH Consultants, LTD
41780 Six Mile Road
Northville, MI 48168

ARI Report # 16-62512
Date Collected: 01/12/16
Date Received: 01/15/16
Date Analyzed: 01/20/16
Date Reported: 01/20/16

Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 62512 - 50 Cust. #: RM-2B Material: Roof of Shed Location: Shed Appearance: black,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 40% Other - 60%
Lab ID #: 62512 - 51 Cust. #: P-2A Material: Black Paper Location: Shed Appearance: black,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 50% Other - 50%
Lab ID #: 62512 - 52 Cust. #: P-2B Material: Black Paper Location: Shed Appearance: black,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 50% Other - 50%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

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Project # 61-160022-01

Report To:
Ms. Laura Willem
NTH Consultants, LTD
41780 Six Mile Road
Northville, MI 48168

ARI Report # 16-62512
Date Collected: 01/12/16
Date Received: 01/15/16
Date Analyzed: 01/20/16
Date Reported: 01/20/16

Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 62512 - 53 Cust. #: FT-8A Material: 1x1 Off-White /Blue Floor Tile Location: Under FM-1 - 2nd Floor Bath Appearance: white,fibrous,homogenous Layer: 1 of 2	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 1% Other - 99%
Lab ID #: 62512 - 53a Cust. #: FT-8A Material: Mastic Location: Under FM-1 - 2nd Floor Bath Appearance: clear,nonfibrous,homogenous Layer: 2 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 62512 - 54 Cust. #: FT-8B Material: 1x1 Off-White/Blue Floor Tile Location: Under FM-1 - 2nd Floor Bath Appearance: white,fibrous,homogenous Layer: 1 of 2	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 1% Other - 99%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

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Project # 61-160022-01

Report To:
Ms. Laura Willem
NTH Consultants, LTD
41780 Six Mile Road
Northville, MI 48168

ARI Report # 16-62512
Date Collected: 01/12/16
Date Received: 01/15/16
Date Analyzed: 01/20/16
Date Reported: 01/20/16

Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 62512 - 54a Cust. #: FT-8B Material: Mastic Location: Under FM-1 - 2nd Floor Bath Appearance: clear,nonfibrous,homogenous Layer: 2 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: Cust. #: Material: Location: Appearance: Layer: of	Asbestos Present:	
Lab ID #: Cust. #: Material: Location: Appearance: Layer: of	Asbestos Present:	

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NVLAP Lab Code 102118-0

Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

Project: 23245 Ryan Rd.
Project # 61-160022-01
Supplemental Report

Report To:
Ms. Laura Willem
NTH Consultants, LTD
41780 Six Mile Road
Northville, MI 48168

ARI Report # 16-62512pc
Date Collected: 01/12/16
Date Received: 01/15/16
Date Analyzed: 01/26/16
Date Reported: 01/26/16

Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 62512 - 33 Cust. #: FT-9A Material: 1x1 Brown Mottle Floor Tile Location: Basement, SE Room Appearance: brown,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **YES** Chrysotile - 1.75% POINT COUNT RESULT	Other - 98.25%
Lab ID #: 62512 - 34 Cust. #: FT-9B Material: 1x1 Brown Mottle Floor Tile Location: Basement, SE Room Appearance: Layer: of	Asbestos Present: NOT ANALYZED	
Lab ID #: 62512 - 39 Cust. #: WG-2A Material: White Window Glazing Location: 2nd Floor Main Room, West Side Appearance: grey,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **YES** Chrysotile - 1.5% POINT COUNT RESULT	Other - 98.5%

For Layered Samples, each component will be analyzed and reported separately.

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41780 Six Mile Road
Northville, MI 48168

ARI Report # 16-62512pc
Date Collected: 01/12/16
Date Received: 01/15/16
Date Analyzed: 01/26/16
Date Reported: 01/26/16

Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 62512 - 40 Cust. #: WG-2B Material: White Window Glazing Location: 2nd Floor Main Room, West Side Appearance: Layer: of	Asbestos Present: NOT ANALYZED	
Lab ID #: Cust. #: Material: Location: Appearance: Layer: of	Asbestos Present:	
Lab ID #: Cust. #: Material: Location: Appearance: Layer: of	Asbestos Present:	

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

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NVLAP Lab Code 102118-0

Apex # **62512**

CHAIN-OF-CUSTODY RECORD & ANALYSIS WORK ORDER FOR ASBESTOS SAMPLING

PROJECT No. 61-160022-01	PROJECT NAME: 23245 Ryan Road
SUBMIT	
REPORT TO: Laura Willem – NTH	

TURNAROUND TIME

- [ ] 6 HOURS
- [ ] 24 HOURS
- [X] 3 DAYS
- [ ] 5 DAYS
- [ ] 12 HOURS
- [ ] 48 HOURS
- [ ] 4 DAYS
- [ ] 6-10 DAYS

SAMPLER'S SIGNATURE:

DATE	SAMPLE ID #	DESCRIPTION / LOCATION	ANALYSIS TYPE REQUESTED										REMARKS / SPECIAL INSTRUCTIONS
			AHERA	EPA LEVEL II	BULK SAMPLING					AIR SAMPLING			
					PLM	SEM	XRD	TEM		PCM	SEM	TEM	
1/12/2016 1	FT-1A	1' x 1' black and white square pattern floor tile / 1st floor - kitchen			X								
2	FT-1B	1' x 1' black and white square pattern floor tile / 1st floor - kitchen			X								
3	FT-2A	Floor material under FT-1 / 1st floor - kitchen			X								
4	FT-2B	Floor material under FT-1 / 1st floor - kitchen			X								
5	FT-3A	1' x 1' decorative floor tile / 1st floor - cupboard			X								
6	FT-3B	1' x 1' decorative floor tile / 1st floor - cupboard			X								
7	FT-4A	Floor tile under FT-3 / 1st floor - cupboard			X								
8	FT-4B	Floor tile under FT-3 / 1st floor - cupboard			X								Stop at first positive
9	CT-1A	2' x 4' ceiling tile, white with fissures and pinholes / 1st floor bath			X								
10	CT-1B	2' x 4' ceiling tile, white with fissures and pinholes / 1st floor bath			X								
11	CT-2A	1' x 2' ceiling tile, white and smooth texture / 1st floor living room			X								
12	CT-2B	1' x 2' ceiling tile, white and smooth texture / 1st floor living room			X								
13	PL-1A	Plaster and skim coat / 1st floor Kitchen wall			X								
14	PL-1B	Plaster and skim coat / 1st floor Kitchen wall			X								
15	PL-1C	Plaster and skim coat / 1st floor – North bedroom ceiling			X								
		TOTAL NO. OF SAMPLES:			15/54								

LABORATORY: APEX

RECEIVED
JAN 15 2016
APEX RESEARCH

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
	1/14/2016						
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY:

NTH CONSULTANTS, LTD.
41780 SIX MILE RD.
NORTHVILLE, MICHIGAN
(248) 553 - 6300
FAX (248) 324 - 5179

62512

CHAIN-OF-CUSTODY RECORD & ANALYSIS WORK ORDER FOR ASBESTOS SAMPLING

PROJECT No. 61-160022-01	PROJECT NAME: 23245 Ryan Road
SUBMIT	
REPORT TO: Laura Willem – NTH	

TURNAROUND TIME

- [ ] 6 HOURS
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- [X] 3 DAYS
- [ ] 5 DAYS
- [ ] 12 HOURS
- [ ] 48 HOURS
- [ ] 4 DAYS
- [ ] 6-10 DAYS

SAMPLER'S SIGNATURE:

DATE	SAMPLE ID #	DESCRIPTION / LOCATION	ANALYSIS TYPE REQUESTED										REMARKS / SPECIAL INSTRUCTIONS
			AHERA	EPA LEVEL II	BULK SAMPLING					AIR SAMPLING			
					PLM	SEM	XRD	TEM		PCM	SEM	TEM	
1/12/2016	PL-1D	Plaster and skim coat / 2nd floor – Main room, ceiling			X								
17	PL-1E	Plaster and skim coat / 2nd floor – bath, wall			X								
18	PL-1F	Plaster and skim coat / 2nd floor – NE bed, ceiling			X								
19	PL-1G	Plaster and skim coat / 2nd floor – NE bed, ceiling			X								
20	CT-3A	1' x 1' ceiling tile, white and smooth texture / 1st floor- N. bedroom			X								
21	CT-3B	1' x 1' ceiling tile, white and smooth texture / 1st floor- N. bedroom			X								
22	FT-5A	1' x 1' beige square pattern floor tile under FT-6/ 2nd floor - main			X								
23	FT-5B	1' x 1' beige square pattern floor tile under FT-6/ 2nd floor - main			X								
24	FT-6A	1' x 1' off-white floor tile / 2nd floor – main room			X								
25	FT-6B	1' x 1' off-white floor tile / 2nd floor – main room			X								Stop at first positive
26	FT-7A	9" x 9" tan with black streaks floor tile / 2nd floor – SE bedroom			X								
27	FT-7B	9" x 9" tan with black streaks floor tile / 2nd floor – SE bedroom			X								
28	FM-1A	Roll linoleum flooring / 2nd floor - bathroom			X								
29	FM-1B	Roll linoleum flooring / 2nd floor - bathroom			X								
		TOTAL NO. OF SAMPLES:			14/54								

RECEIVED
JAN 15 2016
APEX RESEARCH

LABORATORY: APEX

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
	1/14/2016		
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
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NTH CONSULTANTS, LTD.
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NORTHVILLE, MICHIGAN
(248) 553 - 6300
FAX (248) 324 - 5179

62512

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PROJECT No. 61-160022-01	PROJECT NAME: 23245 Ryan Road
SUBMIT	
REPORT TO: Laura Willem – NTH	

TURNAROUND TIME

- ☐ 6 Hours
- ☐ 12 Hours
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- ☐ 48 Hours
- ☒ 3 Days
- ☐ 4 Days
- ☐ 5 Days
- ☐ 6-10 Days

SAMPLER'S SIGNATURE:

DATE	SAMPLE ID #	DESCRIPTION / LOCATION	ANALYSIS TYPE REQUESTED: AHERA	EPA LEVEL II	BULK SAMPLING: PLM	SEM	XRD	TEM		AIR SAMPLING: PCM	SEM	TEM		REMARKS / SPECIAL INSTRUCTIONS
1/12/2016 30	TP-1A	Textured paint / 2nd floor – NE bedroom			X									
31	TP-1B	Textured paint / 2nd floor – NE bedroom			X									
32	TP-1C	Textured paint / 2nd floor – NE bedroom			X									
33	FT-9A	1' x 1' brown mottle floor tile / basement, SE room			X									
34	FT-9B	1' x 1' brown mottle floor tile / basement, SE room			X									
35	DP-1A	Duct paper / Basement			X									Stop at first positive
36	DP-1B	Duct paper / Basement			X									
37	WG-1A	Light brown window glazing / Porch			X									
38	WG-1B	Light brown window glazing / Porch			X									
39	WG-2A	White window glazing / 2nd floor – main room, west side			X									
40	WG-2B	White window glazing / 2nd floor – main room, west side			X									
41	DW-1A	Drywall / 1st floor - kitchen			X									
42	DW-1B	Drywall / Basement bathroom			X									
43	T-1A	Transite exterior siding / West side			X									
44	T-1B	Transite exterior siding / West side			X									
		TOTAL NO. OF SAMPLES:			15/54									

LABORATORY: APEX

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JAN 5 2016
APEX RESEARCH

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	1/14/2016		
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:

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RELINQUISHED BY:	DATE	TIME	RECEIVED BY:

NTH CONSULTANTS, LTD.
41780 Six Mile Rd.
Northville, Michigan
(248) 553 - 6300
Fax (248) 324 - 5179

62512

CHAIN-OF-CUSTODY RECORD & ANALYSIS WORK ORDER FOR ASBESTOS SAMPLING

PROJECT No. 61-160022-01	PROJECT NAME: 23245 Ryan Road
SUBMIT	
REPORT TO: Laura Willem – NTH	

TURNAROUND TIME

- ☐ 6 HOURS
- ☐ 24 HOURS
- ☒ 3 DAYS
- ☐ 5 DAYS
- ☐ 12 HOURS
- ☐ 48 HOURS
- ☐ 4 DAYS
- ☐ 6-10 DAYS

SAMPLER'S SIGNATURE:

DATE	SAMPLE ID #	DESCRIPTION / LOCATION	ANALYSIS TYPE REQUESTED: AHERA	EPA LEVEL II	BULK SAMPLING: PLM	SEM	XRD	TEM		AIR SAMPLING: PCM	SEM	TEM		REMARKS / SPECIAL INSTRUCTIONS
1/12/2016 45	P-1A	Black paper under transite / Exterior – west side			X									
46	P-1B	Black paper under transite / Exterior – west side			X									
47	RM-1A	Roof of main house / Exterior – south side			X									
48	RM-1B	Roof of main house / Exterior – south side			X									
49	RM-2A	Roof of shed / Shed			X									
50	RM-2B	Roof of shed / Shed			X									
51	P-2A	Black paper – shed / Shed			X									
52	P-2B	Black paper – shed / Shed			X									
53	FT-8A	1' x 1' off-white and blue floor tile under FM-1 / 2nd floor bath			X									
54	FT-8B	1' x 1' off-white and blue floor tile under FM-1 / 2nd floor bath			X									
														Stop at first positive
		TOTAL NO. OF SAMPLES:			8/54									

LABORATORY: APEX

RECEIVED
JAN 15 2016
APEX RESEARCH

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
	1/14/2016						
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY:

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APPENDIX B

LEAD AND CADMIUM-BASED PAINT DATA

Certificate of Laboratory Analysis

Test Method, Metals Analysis

Project: 23245 Ryan Road
Project # 62-160022-01

Report to:
Ms. Laura Willem
NTH Consultants, LTD
41780 Six Mile Rd.
Northville, MI

ARL Report # 16-L12732
Date Collected: 01/14/16
Date Received: 01/15/16
Date Analyzed: 01/18/16
Date Reported: 01/18/16

Sample Information	Method/MDL	Metal Type/Percent	Date/Analyst
Lab ID # L12732-01 Client #: PC-1 Material: Lt blue w/ orange below plaster 2nd flr main rm.	SW846 - 7420 MDL - 0.01%	Pb - 0.11%	01/18/16 ST
Lab ID # L12732-02 Client #: PC-2 Material: White wood window sill/2nd floor main room west side	SW846 - 7420 MDL - 0.01%	Pb - 2.38%	01/18/16 ST
Lab ID # L12732-03 Client #: PC-3 Material: White brick wall / basement - SW room	SW846 - 7420 MDL - 0.01%	Pb - 0.02%	01/18/16 ST
Lab ID # L12732-04 Client #: PC-4 Material: Gray wood / shed	SW846 - 7420 MDL - 0.01%	Pb - 2.00%	01/18/16 ST
Lab ID # L12732-01 Client #: PC-1 Material: Lt blue w/ orange below plaster 2nd flr main rm.	SW846 - 7130 MDL - 0.01%	Cd - < 0.01%	01/18/16 ST
Lab ID # L12732-02 Client #: PC-2 Material: White wood window sill/2nd floor main room west side	SW846 - 7130 MDL - 0.01%	Cd - < 0.01%	01/18/16 ST

For Layer samples, each component will be analyzed and reported separately. MDL = Minimum Detection Limit. Apex Research, Inc. participates in the AIHA ELPAT program.

Robert T. Letarte Jr., Laboratory Director

Certificate of Laboratory Analysis

Test Method, Metals Analysis

Project: 23245 Ryan Road
Project # 62-160022-01

Report to:
Ms. Laura Willem
NTH Consultants, LTD
41780 Six Mile Rd.
Northville, MI

ARL Report # 16-L12732
Date Collected: 01/14/16
Date Received: 01/15/16
Date Analyzed: 01/18/16
Date Reported: 01/18/16

Sample Information	Method/MDL	Metal Type/Percent	Date/Analyst
Lab ID # L12732-03 Client #: PC-3 Material: White brick wall / basement - SW room	SW846 - 7130 MDL - 0.01%	Cd - < 0.01%	01/18/16 ST
Lab ID # L12732-04 Client #: PC-4 Material: Gray wood / shed	SW846 - 7130 MDL - 0.01%	Cd - < 0.01%	01/18/16 ST
Lab ID # Client #: Material:			
Lab ID # Client #: Material:			
Lab ID # Client #: Material:			
Lab ID # Client #: Material:			

For Layer samples, each component will be analyzed and reported separately. MDL = Minimum Detection Limit. Apex Research, Inc. participates in the AIHA ELPAT program.

Robert T. Letarte Jr., Laboratory Director

Apex # **L12732**

CHAIN-OF-CUSTODY RECORD & ANALYSIS WORK ORDER FOR LEAD AND CADMIUM SAMPLING

PROJECT No. 62-160022-01	PROJECT NAME: 23245 Ryan Road
SUBMIT REPORT TO: Laura Willem - NTH	

TURNAROUND TIME

- [ ] 6 HOURS
- [X] 24 HOURS
- [ ] 3 DAYS
- [ ] 5 DAYS
- [ ] 12 HOURS
- [ ] 48 HOURS
- [ ] 4 DAYS
- [ ] 6-10 DAYS

SAMPLER'S SIGNATURE:

DATE	SAMPLE ID #	STATION / LOCATION	ANALYSIS TYPE REQUESTED: PAINT CHIP % / WT	PAINT CHIP PPM	PAINT CHIP	WIPE SAMPLE µG	WIPE SAMPLE	WIPE SAMPLE	AIR SAMPLE µG	AIR SAMPLE	AIR SAMPLE	REMARKS / SPECIAL INSTRUCTIONS
01/12/2016	PC-1	Light blue with orange below plaster ceiling / 2nd floor Main room	X									
2	PC-2	White wood window sill / 2nd floor – Main room, west side	X									
3	PC-3	White brick wall / basement – SW room	X									
4	PC-4	gray wood / shed										
												Please analyze for both Lead and Cadmium.
		TOTAL NO. OF SAMPLES:	3/3									

LABORATORY: APEX

RECEIVED
JAN 15 2016
APEX RESEARCH

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
[signature]	1/14/16		[signature]				
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY:

NTH CONSULTANTS, LTD.
41780 SIX MILE ROAD
NORTHVILLE MICHIGAN
(248) 553 - 6300
FAX (248) 324-5179

Report

Hazardous Materials Survey
Dorothy Busch Branch Library-23333 Ryan Road
Warren, Michigan

City of Warren
One City Square, Suite 300
Warren, Michigan 48093

June 10, 2013
NTH Project No. 62-130322-00

NTH Consultants, Ltd.
41780 Six Mile Road
Northville, MI 48168

NTH Consultants, Ltd.
Infrastructure Engineering
and Environmental Services

41780 Six Mile Road
Northville, MI 48168-3459
248.553.6300
248.324.5178 Fax

Ms. Donna Dordeski, P.E.
Environmental Compliance Engineer
City of Warren
One City Square, Suite 300
Warren, Michigan 48093-2390

June 10, 2013
NTH Project No. 62-130322-00

RE: Report on Hazardous Materials Survey
Dorothy Busch Branch Library – 23333 Ryan Road
Warren, Michigan

Dear Ms. Dordeski:

NTH Consultants, Ltd. (NTH) is pleased to submit this report on Hazardous Materials Survey (HMS) performed at the above-referenced building. This study was performed in accordance with our accepted proposal (NTH Proposal No. 62-130322) dated May 1, 2013.

We are pleased to be of service to you. Should you have any questions or require additional assistance, please call one of the undersigned at 248.553.6300.

Sincerely,

NTH Consultants, Ltd.

Laura A. Willem
Assistant Project Scientist

Bhushan C. Modi
Vice President

LAW/BCM/kg

Attachments

cc: John Kosnak - NTH

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Asbestos Data	APPENDIX A
Lead and Cadmium-Based Paint Data	APPENDIX B

EXECUTIVE SUMMARY

This report presents the results of a Hazardous Materials Survey (HMS) conducted for the Dorothy Busch Branch Library located at 23333 Ryan Road in Warren, Michigan. The fieldwork was conducted on May 22, 2013.

The building is a single-story, slab-on-grade brick and masonry block structure, approximately 4,200 square feet in size. The building consists of main library area, public restroom, staff office area, staff restroom and furnace room. We understand the building is scheduled for renovation or demolition.

The purpose of the HMS was to identify and quantify, to the extent possible, asbestos-containing materials (ACM), lead-based paint (LBP), cadmium-based paint (CBP), polychlorinated biphenyl (PCB)-containing equipment, mercury-containing devices/equipment, stored chemicals and potentially hazardous materials.

During the course of the asbestos evaluation, **seventeen (17)** homogenous areas of suspect ACM were identified in the building. Bulk samples were collected from these materials and were analyzed for asbestos using Polarized Light Microscopy (PLM) method. 9" x 9" floor tile and pipe joints on fiberglass lines were identified as ACM in the building. Fire doors, light heat shields and roofing materials were assumed to contain asbestos.

A survey was conducted in the building to sample and analyze various colors of paint to determine the lead and cadmium content. **Six (6)** paint chips samples collected from the building were analyzed for lead and cadmium using atomic absorption spectroscopy (USEPA Method 7420 and 7130, respectively). Lead was detected in the paint chip sample collected from white plaster ceiling. Cadmium was not detected in the paint chip samples.

Building components that typically contain hazardous materials, such as PCBs, mercury, Freon or CFCs, and stored chemicals were identified and inventoried in the building. Suspect mercury-containing materials such as fluorescent light tubes and vapor lights and suspect PCB-containing light ballasts were observed in the building. Additionally, other hazardous materials (exit signs, drinking fountain, smoke detectors, emergency light units, fire extinguisher, computers, monitors, keyboards, printers, copy machine, shredder, microwave, refrigerator, scanner, and air-handling unit) were also observed in the building.

The Executive Summary should not be reviewed separately from the remainder of the report. The Executive Summary provides an overview and is not a substitute for a thorough review of the entire report.

1.0 INTRODUCTION

NTH Consultants, Ltd. (NTH) was retained by City of Warren to perform a Hazardous Materials Survey (HMS) of the Dorothy Busch Branch Library located at 23333 Ryan in Warren, Michigan.

The building is a single-story, slab-on-grade brick and masonry block structure, approximately 4,200 square feet in size. The building consists of main library area, public restroom, staff office area, staff restroom and furnace room.

We understand the building is scheduled for renovation or demolition; thus, the purpose of this HMS was to identify and quantify, to the extent possible, asbestos-containing materials (ACM), lead-based paint (LBP), cadmium-based paint (CBP), polychlorinated biphenyl (PCB)-containing equipment, mercury-containing devices, stored chemicals and potentially hazardous materials.

The following limiting conditions were encountered during the HMS study:

- Pipe joint insulation could not be accurately tracked above ceilings and in walls as building drawings were not provided; therefore, quantities are estimated in this report are approximate.

- The furnace room contained stored items, which limited access and visual observations.

- Intrusive or destructive investigation and sampling was beyond the scope of the current study; however, areas above the metal pan ceiling were accessed where feasible.

Laura Willem of NTH performed the HMS on May 22, 2013. Ms. Willem is a State of Michigan Accredited Asbestos Building Inspector (Accreditation No. 25682).

2.0 SCOPE OF SERVICES

This HMS comprised of evaluating the following hazardous materials within the building:

Asbestos-Containing Materials (ACM)

- Conducted a walk-through survey of the accessible portions of the building to identify, quantify and sample suspect ACM.

- Collected and analyzed bulk samples from suspect ACM in representative areas as determined by the accredited asbestos inspectors.

Lead-Based Paint (LBP) and Cadmium-Based Paint (CBP)

- Performed a visual survey of the building to document and test various painted building components for the presence of lead and cadmium in paint. Paint chip samples were collected and submitted for lead and cadmium analyses.

Potential Hazardous Materials / Stored Chemicals

- Performed a visual survey of the accessible portions of the building to identify and quantify fluorescent light ballasts, light tubes, stored chemicals and other potentially hazardous materials that may require special handling/disposal prior to renovation.

3.0 SURVEY FINDINGS AND EVALUATIONS

The following sections of this report present the results of the HMS including a list of homogeneous areas identified as containing asbestos, along with an approximate quantity of each ACM homogeneous area; a list of painted surfaces identified as LBP and CBP; and any other potentially hazardous material requiring special handling prior to renovation or demolition activities.

3.1 ASBESTOS-CONTAINING MATERIALS

3.1.1 Background

Asbestos is a commercial term for a group of silicate minerals that readily separate into thin, strong fibers that are flexible, heat resistant, and chemically inert. These minerals include chrysotile, amosite, and crocidolite, and to a lesser extent, tremolite, anthophyllite, and actinolite; and any of these minerals that have been chemically treated or altered. An ACM is any material that contains more than 1% asbestos. Asbestos is considered to be an environmental and health concern because long-term exposure has been linked to three major respiratory diseases: asbestosis, lung cancer, and mesothelioma. ACM were widely used in the construction of buildings beginning in the 1870s and continuing through the early 1980s. In accordance with OSHA regulations 29 CFR 1910.1001, all buildings constructed prior to 1981 are presumed to contain asbestos, unless tested and found otherwise. However, ACM can be found in buildings built after 1981. In accordance with current National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations, all buildings, regardless of age, with planned renovations or demolitions require an asbestos inspection.

There are three main types of ACM:

Thermal System Insulation: ACM applied to pipes, fittings, boilers, tanks, ducts, or other HVAC components to prevent heat loss or gain.

Surfacing Material: ACM that is sprayed-on, troweled-on, or otherwise applied to surfaces, such as acoustical plaster and fireproofing materials on structural members, or other materials on surfaces for acoustical, decorative, fireproofing, or other purposes.

Miscellaneous Materials: All other ACM, including but not limited to, acoustical ceiling tile, resilient floor tile and coverings, concrete pipes, siding, and roofing materials. The ACMs are further classified as either friable or non-friable materials. Friable materials are those that can be crumbled, pulverized, or reduced to powder by hand pressure, when dry. Non-friable materials can be further classified as Category I or Category II materials.

Category I materials include packings, gaskets, resilient floor coverings and asphalt roofing products. Category II materials include all other non-friable materials.

3.1.2 Survey

NTH understands that the building is slated for renovation or demolition. Therefore, in accordance with current United States Environmental Protection Agency (USEPA) 40 CFR Part 61 of the Federal Register, NESHAP revision; final rule effective November 20, 1990, the results of an asbestos evaluation are needed prior to the planned renovation or demolition activities in order to establish an appropriate response plan.

As a public and commercial structure, the building is governed by 29 CFR 1910.1001, Occupational Health Standards for Asbestos in General Industry, for the normal course of business activities by employees. During construction, renovation or demolition activities, the persons performing those activities would be governed by 29 CFR 1926.1101, Occupational Health Standards for Asbestos in Construction and EPA NESHAP.

The Asbestos Hazard Emergency Response Act (AHERA), 40 CFR 763, and its associated requirements, applies to schools or school-owned structures. Some portions of AHERA were used as guidelines for compliance with 29 CFR 1910.1001. In particular, 29 CFR 1910.1001(j)(1) requires owners of buildings constructed prior to 1981 to presume that certain types of building materials are ACM, unless the owner demonstrates that those materials are not ACM. To demonstrate the material is not ACM, 29 CFR 1910.1001(j)(8)(ii) states that the owner may complete an inspection conducted pursuant to the requirements of AHERA guidelines or perform tests of the material which demonstrate that no ACM is present. Such tests shall include analysis of bulk samples collected in the manner described in AHERA. The tests, evaluation and sample collection shall be conducted by an accredited inspector. Analysis of samples shall be performed by laboratories with proficiency demonstrated by accreditation or other voluntary testing programs.

Therefore, NTH performed those elements of AHERA that are referenced in 29 CFR 1910.1001(j)(8)(ii), but did not perform a full AHERA inspection, provide AHERA documentation, or write an AHERA report, since they do not apply to this structure.

Analytical services for asbestos were provided by APEX Research Laboratories (APEX) located in Whitmore Lake, Michigan. The bulk samples of suspect asbestos were analyzed by PLM method (EPA Method No. 600/R-93/116). APEX is accredited by the National Institute of Standards and Technology (NIST) and National Voluntary Laboratory Accreditation Program (NVLAP) for analysis of asbestos using PLM method.

The purpose of the asbestos survey was to identify, sample, and quantify suspect ACM, and to categorize the suspect ACM into individual homogeneous areas. For purposes of this report, a homogeneous area is defined as a material that appears similar in terms of color, texture, composition and/or date of application. Bulk samples were collected from the materials identified as suspect ACM. Due to the physical characteristics of multi-layered materials such as floor tile and mastic, the analytical results of such multi-layered suspect ACM were reported for each layer, where applicable, and are regarded as separate materials. Laboratory data on asbestos analysis are included in **Appendix A**.

Table 1 identifies the material description, the friability of the material (friable = F, Category I non-friable = NF-I, and Category II non-friable = NF-II); the category of the material (surfacing = S, miscellaneous =M, or thermal system insulation = TSI); the results of analytical testing, and sample locations.

NTH identified **seventeen (17)** homogeneous areas of suspected ACM within the building.

TABLE 1
ACM RESULTS

HA No.	Material Description	Sample No.	Location	F/NF	Category	Asbestos?
1	1' x 1' pink floor tile and associated mastic	FT-1A	West entrance	NF-I	M	Floor tile: No Mastic: No
		FT-1B	West entrance			Floor tile: No Mastic: No
2	1' x 1' white ceiling tile	CT-1A	Public restroom	F	M	No
		CT-1B	Public restroom			No
3	9" x 9" beige floor tile and associated mastic	FT-2A	Staff office area – doorway to furnace room	NF-I	M	Floor tile: No - 1% Chrysotile Mastic: No
		FT-2B	Staff office area – doorway to furnace room			Floor tile: Yes – 1.5% Chrysotile
4	Fire doors	Not sampled	Throughout building	NF-II	M	Assumed
5	White sink undercoating	SU-1A	Staff office	NF-II	M	No - <1% Chrysotile
		SU-1B	Staff office			No - <1% Chrysotile
6	1'x 1' blue floor tile	FT-3A	Furnace room, doorway	NF-I	M	No
		FT-3B	Furnace room, doorway			No
7	Pipe joint insulation on fiberglass lines	PJ-1A	Furnace room, northwest corner – 2" line	F	TSI	Yes – 10% Chrysotile
		PJ-1B	Furnace room, northwest corner – 2" line			Yes – 10% Chrysotile
		PJ-1C	Furnace room, northwest corner – 4" line			Yes – 10% Chrysotile
8	Plaster board	PL-1A	Staff restroom	NF-II	M	No
		PL-1B	Staff restroom			No
		PL-1C	Staff restroom			No
9	Ceiling material, fibrous	CM-1A	Furnace room	NF-II	M	No
		CM-1B	Furnace room			No
10	Drywall	DW-1A	Furnace room, above duct work	NF-II	M	No
		DW-1B	Furnace room, above duct work			No
11	Light heat shield	Not sampled	Staff restroom	F	M	Assumed
12	Roofing materials	Not sampled	Roof	NF-I	M	Assumed

TABLE 1 ACM RESULTS						
HA No.	**Material Description**	**Sample No.**	**Location**	**F/NF**	**Category**	**Asbestos?**
13	Window glazing adhering pane to metal frame	WG-1A	West side of building, 1st window north of door	NF-II	M	No
		WG-1B	Northwest window unit			No
14	Window caulking adhering window frame to brick	WC-1A	West side of building, 1st window north of door	NF-II	M	No
		WC-1B	Northwest window unit			No
15	Caulking between metal siding	C-1A	West side of building, ~16' south of door	NF-II	M	No
		C-1B	West side of building, ~16' south of door			No
16	Cement overhang	OH-1A	West side of building, ~16' south of door	NF-II	M	No
		OH-1B	West side of building, ~16' south of door			No
17	Caulking at base of windows	C-2A	Northwest window unit	NF-II	M	No
		C-2B	Northwest window unit			No

According to the USEPA regulations, if the asbestos result via PLM method is less than 10% asbestos, the sample result may be verified by the point-counting method. As defined by USEPA regulations, if the result obtained by point counting is different from the result obtained from PLM analysis, the point count result must be used. Samples of floor tile (HA #3) were analyzed using point counting methods. The results of the point counting analysis are reflected in the tables above and are included in Appendix A.

3.1.3 Asbestos Quantities and Locations

Table 2 presents a description of each identified ACM along with the location, condition and quantity. ***It should be noted that the asbestos quantities listed in the table are approximate and should not be relied upon by contractors for bidding purposes.***

TABLE 2 ACM LOCATION AND CONDITION				
HA #	**Material Description**	**Location**	**Condition/Notes**	**Estimated Quantity**
3	9" x 9" beige floor tile	Staff office area	The Category I, non-friable material was noted to be in good condition. Asbestos was not detected in the mastic.	600 s.f.
4	Fire doors	Furnace room and staff office.	The category II, non-friable material was in good condition. The material was not sampled due to the destructive nature of bulk sampling.	3 doors
7	Pipe joint insulation on fiberglass lines	Throughout building	The observed friable material was noted to be in good condition with areas of localized damage	70 joints
11	Light heat shield	Staff restroom	The light head shield was inaccessible; therefore it is assumed to contain asbestos.	1 heat shield
12	Roofing materials	Roof of building	The category I, non-friable material was in good condition. The roofing materials were not sampled due to the destructive nature of bulk sampling. Roofing materials are not required to be removed prior to demolition	4,200 s.f.

3.2 LEAD-BASED PAINT AND CADMIUM-BASED PAINT

A visual survey was performed to document and test various types and colors of paint on painted building components for the presence of lead and cadmium.

Six (6) paint chips collected from the building were submitted to APEX for lead analyses using atomic absorption spectroscopy (USEPA Method 7420 and 7130, respectively).

For purposes of this study, and considering that the building is scheduled for renovation or demolition, the contractor performing the renovation or demolition activities will need to comply with Michigan Occupational Safety and Health Administration (MIOSHA) Part 603 (Lead Exposure in Construction) and MIOSHA Part 309 (Cadmium Exposure in Construction). Therefore, the paint chip results were compared to MIOSHA standards, which

states that LBP and CBP is paint with any detectable level of lead and cadmium, or for the purpose of this report, any detectable level of lead and cadmium at or above the laboratory method detection limit (0.01%). Results of the lead and cadmium laboratory analysis are included in **Appendix B**.

Lead was detected in one of the six paint chip samples above the laboratory method detection limit (MDL). Cadmium was not detected in the paint chip samples.

Table 3 presents descriptions of the tested surfaces and analytical results.

TABLE 3
PAINT CHIP RESULTS

Sample #	Color / Description	Material/Location	Lead Results (%)	Cadmium Results (%)
PC-1	White	Plaster ceiling / Staff restroom	0.10	<0.01
PC-2	White	Masonry block wall / Southeast corner of building	<0.01	<0.01
PC-3	White	Metal beam / Furnace room	<0.01	<0.01
PC-4	White	Metal window frame, interior / East side of building	<0.01	<0.01
PC-5	Brown	Metal handrail, exterior / West side of building	<0.01	<0.01
PC-6	Silver	Metal window frame, exterior / West side of building	<0.01	<0.01

3.3 POLYCHLORINATED BIPHENYLS

The building was surveyed to identify liquid-cooled electrical units (transformers and capacitors). Such units are of possible environmental concern because they may be potential PCB sources. PCB units may subject the owner/operator to various regulatory requirements under the Toxic Substances Control Act (TSCA). The release of PCB fluids or their combustion products (in case of spill or fire) are potential environmental liabilities. The suspected presence of PCBs within electrical equipment was determined based on the type and age of equipment, and the lack of any labels present on the equipment. Capacitors and other electrical equipment suspect of containing PCBs were not observed in the building; however, two pole-mounted transformers were observed on the southwest corner of the library's parking lot.

In accordance with the USEPA Federal Regulations (40 CFR 761), nearly all fluorescent light ballasts manufactured prior to 1979 are assumed to contain PCBs, unless tested and found otherwise. All light ballasts manufactured after July 1, 1978 that do not contain PCBs are required to be clearly marked "No PCBs." Some of the light fixtures were randomly accessed and the "No PCBs" marking/label was observed on these ballasts. Approximately **200** ballasts were noted in the building.

3.4 MERCURY

The survey also included observations for equipment suspected of containing mercury. Table 4 identifies potential mercury-containing materials observed within the building.

TABLE 4
SUSPECT MERCURY-CONTAINING MATERIALS

Materials	Estimated Quantity
4' fluorescent light tubes	290
Mercury vapor lights	5

3.5 POTENTIALLY HAZARDOUS MATERIALS

The building was surveyed for the presence of other materials that may potentially be hazardous and/or require special handling for offsite disposal purposes. Table 5 lists the potentially hazardous materials noted in the building.

TABLE 5
POTENTIALLY HAZARDOUS MATERIALS

Item/Material	Possible Contaminant	Approximate Quantity
Fire extinguishers	Chemical content and compressed gas	1
Air-handling unit	Freon, Chlorofluorocarbons (CFCs), or other coolant	1
Emergency light units	Lead, nickel, cadmium, and/or acid	3
Exit signs	Lead, nickel, cadmium, and/or acid	2
Smoke detectors	Lead, acid, or radioactive source	4
Central processing unit	Metals	15
Monitors	Cathode ray tubes (CRTs) and metals	15
Keyboards	Metals	15
Printers	CRTs and metals	2
Copy machines	CRTs and metals	1
Shredder	Metals	1
Microwave	Radioactive source and metals	1
Refrigerator	Freon, CFCs, or other refrigerant	1

TABLE 5 POTENTIALLY HAZARDOUS MATERIALS		
Item/Material	**Possible Contaminant**	**Approximate Quantity**
Scanner	CRTs and metals	1
Drinking fountain	Freon, CFCs, or other refrigerant	2

3.6 STORED CHEMICALS

The building was surveyed for the presence of stored chemicals that may potentially be hazardous and/or require special handling for offsite disposal purposes. Stored chemicals were not observed in the building, other than janitorial products.

4.0 RECOMMENDATIONS

Specifications

NTH recommends that technical specifications be developed for removal of ACM and other hazardous materials identified in this report. These documents should consider applicable local, state and federal laws and regulations with respect to the removal and handling of identified hazardous materials.

Abatement Contractor and Air Quality Monitoring

A licensed asbestos abatement contractor, as required by current federal and state laws and regulations, should perform the removal and disposal of the identified ACM.

NTH also recommends that visual observations, verification of removal and cleanup, and air monitoring for asbestos fibers be performed by the building owner's environmental consultant to demonstrate compliance with applicable regulations.

If suspect ACM other than those identified during this study are encountered during renovation/demolition then such materials should be sampled and analyzed using PLM method to verify the asbestos content.

NTH can assist City of Warren in development of technical specifications, retaining an appropriate abatement contractor, and provide air monitoring and project oversight services during asbestos abatement and hazardous materials removal from the subject building.

5.0 LIMITATIONS

The findings and opinions presented in this report are based on the scope of services defined herein and have been made to assist City of Warren in making a reasonable assessment of risk with respect to the possible presence of hazardous materials within Dorothy Busch Branch Library in Warren, Michigan. This study was performed in accordance with standard of care and diligence considered to be representative of industrial hygiene practices in this region at the present time.

The results of this assessment cannot and should not be construed as a certification of the absence of any hazardous or regulated substances from the property, but rather a diligent and prudent review of available data within an established work scope, and time and budgetary restraints.

This report is intended for the exclusive use of City of Warren. The results of this study may not be relied upon by parties other than those identified above or without the prior knowledge and written consent of NTH Consultants, Ltd.

Through the course of this survey or any hazardous materials building survey, there are a number of obstacles and limitations that can affect the final outcome of the report. These limitations include, but are not limited to, the following factors: access concerns; presence of stored items; materials that are damaged or can not be intrusively sampled; and materials that

have been replaced during renovation activities. Due to these limitations, suspect building materials uncovered during renovation activities and not mentioned in this report should be sampled, analyzed, and dealt with based on the findings, in accordance with the regulations governing such materials.

APPENDIX A

ASBESTOS DATA

Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

Project: Busch Library
Project # 62-130322-0

Report To:
Ms. Laura Willem
NTH Consultants, LTD
41780 Six Mile Road
Northville, MI 48168

ARI Report # 13-45840
Date Collected: 05/22/13
Date Received: 05/23/13
Date Analyzed: 05/29/13
Date Reported: 05/29/13

Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 45840 - 01 Cust. #: FT-1A Material: 1x1' Pink Floor Tile Location: West Entrance Appearance: pink,nonfibrous,homogenous Layer: 1 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 45840 - 01a Cust. #: FT-1A Material: Mastic Location: West Entrance Appearance: yellow,nonfibrous,homogenous Layer: 2 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 45840 - 02 Cust. #: FT-1B Material: 1x1' Pink Floor Tile Location: West Entrance Appearance: pink,nonfibrous,homogenous Layer: 1 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

Test Method EPA 600/R-93/116 was used to analyze the above samples. Matrix interference and/or resolution limits may yield false results in certain circumstances. Suspect floor tiles containing <1% should be tested with SEM or TEM. This certificate of analysis relates only to the samples tested and to insure the integrity of the results, may only be reproduced in full. This certificate may not be used by the customer to claim product endorsement by NVLAP or any agency of the US Government. APEX Research Inc. is not responsible for the accuracy of the results for layered samples or samples comprising multiple materials. Liability limited to cost of analysis.

NVLAP Lab Code 102118-0

Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

Project: Busch Library
Project # 62-130322-0

Report To:
Ms. Laura Willem
NTH Consultants, LTD
41780 Six Mile Road
Northville, MI 48168

ARI Report # 13-45840
Date Collected: 05/22/13
Date Received: 05/23/13
Date Analyzed: 05/29/13
Date Reported: 05/29/13

Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 45840 - 02a Cust. #: FT-1B Material: Mastic Location: West Entrance Appearance: yellow,nonfibrous,homogenous Layer: 2 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 45840 - 03 Cust. #: CT-1A Material: 1x1' White Ceiling Tile Location: Public Restroom Appearance: grey,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 25% Mineral Wool - 25% Perlite - 25% Other - 25%
Lab ID #: 45840 - 04 Cust. #: CT-1B Material: 1x1' White Ceiling Tile Location: Public Restroom Appearance: grey,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 25% Mineral Wool - 25% Perlite - 25% Other - 25%

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Robert T. Letarte Jr., Laboratory Director

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Project: Busch Library
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Northville, MI 48168

ARI Report # 13-45840
Date Collected: 05/22/13
Date Received: 05/23/13
Date Analyzed: 05/29/13
Date Reported: 05/29/13

Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 45840 - 05 Cust. #: FT-2A Material: 9x9" Beige Floor Tile Location: Staff Office, Doorway to Furnace Room Appearance: beige,fibrous,homogenous Layer: 1 of 2	Asbestos Present: **YES** Chrysotile - 2%	Other - 98%
Lab ID #: 45840 - 05a Cust. #: FT-2A Material: Mastic Location: Staff Office, Doorway to Furnace Room Appearance: black,nonfibrous,homogenous Layer: 2 of 2	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 45840 - 06 Cust. #: FT-2B Material: 9x9" Beige Floor Tile Location: Staff Office, Doorway to Furnace Room Appearance: beige,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **YES** Chrysotile - 2%	Other - 98%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

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NVLAP Lab Code 102118-0

Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

Project: Busch Library
Project # 62-130322-0

Report To:
Ms. Laura Willem
NTH Consultants, LTD
41780 Six Mile Road
Northville, MI 48168

ARI Report # 13-45840
Date Collected: 05/22/13
Date Received: 05/23/13
Date Analyzed: 05/29/13
Date Reported: 05/29/13

Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 45840 - 07 Cust. #: SU-1A Material: Sink Undercoating, White Location: Staff Office Appearance: pink,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** Chrysotile - <1%	Cellulose - 5% Other - 95%
Lab ID #: 45840 - 08 Cust. #: SU-1B Material: Sink Undercoating, White Location: Staff Office Appearance: pink,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** Chrysotile - <1%	Cellulose - 2% Other - 98%
Lab ID #: 45840 - 09 Cust. #: FT-3A Material: 1x1' Blue Floor Tile Location: Furnace Room, Doorway Appearance: grey,nonfibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Other - 100%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

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Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

Project: Busch Library
Project # 62-130322-0

Report To:
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NTH Consultants, LTD
41780 Six Mile Road
Northville, MI 48168

ARI Report # 13-45840
Date Collected: 05/22/13
Date Received: 05/23/13
Date Analyzed: 05/29/13
Date Reported: 05/29/13

Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 45840 - 10 Cust. #: FT-3B Material: 1x1' Blue Floor Tile Location: Furnace Room, Doorway Appearance: grey,nonfibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 45840 - 11 Cust. #: PJ-1A Material: Pipe Joints on Fiberglass Lines Location: NW Corner - 2" Line Appearance: white,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **YES** Chrysotile - 10%	Mineral Wool - 15% Other - 75%
Lab ID #: 45840 - 12 Cust. #: PJ-1B Material: Pipe Joints on Fiberglass Lines Location: NW Corner - 2" Line Appearance: grey,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **YES** Chrysotile - 10%	Mineral Wool - 15% Other - 75%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

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NVLAP Lab Code 102118-0

Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

Project: Busch Library
Project # 62-130322-0

Report To:
Ms. Laura Willem
NTH Consultants, LTD
41780 Six Mile Road
Northville, MI 48168

ARI Report # 13-45840
Date Collected: 05/22/13
Date Received: 05/23/13
Date Analyzed: 05/29/13
Date Reported: 05/29/13

Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 45840 - 13 Cust. #: PJ-1C Material: Pipe Joints on Fiberglass Lines Location: NW Corner - 4" Line Appearance: white,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **YES** Chrysotile - 15%	Mineral Wool - 15% Other - 70%
Lab ID #: 45840 - 14 Cust. #: CM-1A Material: Ceiling Material Location: Furnace Room Appearance: brown,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 80% Other - 20%
Lab ID #: 45840 - 15 Cust. #: CM-1B Material: Ceiling Material Location: Furnace Room Appearance: brown,fibrous,nonhomogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 80% Other - 20%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

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Test Method, Polarized Light Microscopy (PLM)

Project: Busch Library
Project # 62-130322-0

Report To:
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NTH Consultants, LTD
41780 Six Mile Road
Northville, MI 48168

ARI Report # 13-45840
Date Collected: 05/22/13
Date Received: 05/23/13
Date Analyzed: 05/29/13
Date Reported: 05/29/13

Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 45840 - 16 Cust. #: PL-1A Material: Plaster Board Location: Staff Restrooms Appearance: white,nonfibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 45840 - 17 Cust. #: PL-1B Material: Plaster Board Location: Staff Restrooms Appearance: white,nonfibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 45840 - 18 Cust. #: PL-1C Material: Plaster Board Location: Staff Restrooms Appearance: white,nonfibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Other - 100%

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Robert T. Letarte Jr., Laboratory Director

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NVLAP Lab Code 102118-0

Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

Project: Busch Library
Project # 62-130322-0

Report To:
Ms. Laura Willem
NTH Consultants, LTD
41780 Six Mile Road
Northville, MI 48168

ARI Report # 13-45840
Date Collected: 05/22/13
Date Received: 05/23/13
Date Analyzed: 05/29/13
Date Reported: 05/29/13

Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 45840 - 19 Cust. #: DW-1A Material: Drywall Location: Furnace Room above Duct Work Appearance: white,fibrous,nonhomogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 10% Other - 90%
Lab ID #: 45840 - 20 Cust. #: DW-1B Material: Drywall Location: Furnace Room above Duct Work Appearance: white,fibrous,nonhomogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 2% Other - 98%
Lab ID #: 45840 - 21 Cust. #: WG-1A Material: Window Glazing - Exterior, White Location: West Side of Building Appearance: white,fibrous,nonhomogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 2% Other - 98%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

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NVLAP Lab Code 102118-0

Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

Project: Busch Library
Project # 62-130322-0

Report To:
Ms. Laura Willem
NTH Consultants, LTD
41780 Six Mile Road
Northville, MI 48168

ARI Report # 13-45840
Date Collected: 05/22/13
Date Received: 05/23/13
Date Analyzed: 05/29/13
Date Reported: 05/29/13

Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 45840 - 22 Cust. #: WG-1A Material: Window Glazing - Exterior, White Location: NW Window Unit Appearance: grey,nonfibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 45840 - 23 Cust. #: WC-1A Material: Window Caulking Location: West Side of Building Appearance: grey,nonfibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 45840 - 24 Cust. #: WC-1B Material: Window Caulking Location: NW Window Unit Appearance: grey,nonfibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Other - 100%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

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NVLAP Lab Code 102118-0

Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

Project: Busch Library
Project # 62-130322-0

Report To:
Ms. Laura Willem
NTH Consultants, LTD
41780 Six Mile Road
Northville, MI 48168

ARI Report # 13-45840
Date Collected: 05/22/13
Date Received: 05/23/13
Date Analyzed: 05/29/13
Date Reported: 05/29/13

Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 45840 - 25 Cust. #: C-1A Material: Caulking Location: Between Metal Siding Appearance: grey,nonfibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 45840 - 26 Cust. #: C-1B Material: Caulking Location: Between Metal Siding Appearance: grey,fibrous,nonhomogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Cellulose - 2% Other - 98%
Lab ID #: 45840 - 27 Cust. #: OH-1A Material: Cement Overhang Location: West Side of Building Appearance: grey,nonfibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Other - 100%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

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NVLAP Lab Code 102118-0

Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

Project: Busch Library
Project # 62-130322-0

Report To:
Ms. Laura Willem
NTH Consultants, LTD
41780 Six Mile Road
Northville, MI 48168

ARI Report # 13-45840
Date Collected: 05/22/13
Date Received: 05/23/13
Date Analyzed: 05/29/13
Date Reported: 05/29/13

Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 45840 - 28 Cust. #: OH-1B Material: Cement Overhang Location: West Side of Building Appearance: grey,nonfibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 45840 - 29 Cust. #: C-2A Material: Caulking at Base of Windows & Sills Location: NW Window Unit Appearance: grey,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Wollastonite - 2% Other - 98%
Lab ID #: 45840 - 30 Cust. #: C-2B Material: Caulking at Base of Windows & Sills Location: NW Window Unit Appearance: grey,nonfibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Other - 100%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

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NVLAP Lab Code 102118-0

Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

Project: Busch Library
Project # 62-130322-0
Supplemental Report

Report To:
Ms. Laura Willem
NTH Consultants, LTD
41780 Six Mile Road
Northville, MI 48168

ARI Report # 13-45840pc
Date Collected: 05/22/13
Date Received: 05/23/13
Date Analyzed: 05/31/13
Date Reported: 05/31/13

Sample Information	Asbestos Type/Percent	Non-Asbestos
Lab ID #: 45840 - 05 Cust. #: FT-2A Material: 9x9" Beige Floor Tile Location: Staff Office, Doorway to Furnace RM Appearance: beige,fibrous,nonhomogenous Layer: 1 of 1	Asbestos Present: **NO** Chrysotile - 1.0% POINT COUNT RESULT	Other - 99.0%
Lab ID #: 45840 - 06 Cust. #: FT-2B Material: 9x9" Beige Floor Tile Location: Staff Office, Doorway to Furnace RM Appearance: beige,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **YES** Chrysotile - 1.5% POINT COUNT RESULT	Other - 98.5%
Lab ID #: Cust. #: Material: Location: Appearance: Layer: of	Asbestos Present:	

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

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NVLAP Lab Code 102118-0

APEX # **45840**

CHAIN-OF-CUSTODY RECORD & ANALYSIS WORK ORDER FOR ASBESTOS SAMPLING

PROJECT No. 62-130322-0	PROJECT NAME: Busch Library
SUBMIT	
REPORT TO: Laura Willem – NTH	

TURNAROUND TIME

- ☐ 6 Hours
- ☐ 24 Hours
- ☒ 3 Days
- ☐ 5 Days
- ☐ 12 Hours
- ☐ 48 Hours
- ☐ 4 Days
- ☐ 6-10 Days

SAMPLER'S SIGNATURE:

DATE	SAMPLE ID #	DESCRIPTION / LOCATION	ANALYSIS TYPE REQUESTED: AHERA	EPA LEVEL II	BULK SAMPLING: PLM	SEM	XRD	TEM		AIR SAMPLING: PCM	SEM	TEM		REMARKS / SPECIAL INSTRUCTIONS
05/22/2013	1 FT-1A	1'x 1' pink floor tile / West entrance			X									
	2 FT-1B	1'x 1' pink floor tile / West entrance			X									
	3 CT-1A	1' x 1' white ceiling tile / Public restroom			X									
	4 CT-1B	1' x 1' white ceiling tile / Public restroom			X									
	5 FT-2A	9" x 9" beige floor tile / Staff office, doorway to Furnace room			X									
	6 FT-2B	9" x 9" beige floor tile / Staff office, doorway to Furnace room			X									
	7 SU-1A	Sink undercoating, white / Staff office			X									
	8 SU-1B	Sink undercoating, white / Staff office			X									
	9 FT-3A	1' x 1' blue floor tile / Furnace room, doorway			X									
	10 FT-3B	1' x 1' blue floor tile / Furnace room, doorway			X									
	11 PJ-1A	Pipe joints on fiberglass lines / NW corner – 2" line			X									
	12 PJ-1B	Pipe joints on fiberglass lines / NW corner – 2" line			X									
	13 PJ-1C	Pipe joints on fiberglass lines / NW corner – 4" line			X									
	14 CM-1A	Ceiling material / Furnace room			X									
	15 CM-1B	Ceiling material / Furnace room			X									
		TOTAL NO. OF SAMPLES:			15/30									

LABORATORY: APEX

RECEIVED

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
	05/22/2013		23 2013
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
			APEX RESEARCH

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:

NTH CONSULTANTS, LTD.
41780 Six Mile Rd.
Northville, Michigan
(248) 553-6300
Fax (248) 324-5179

45840

CHAIN-OF-CUSTODY RECORD & ANALYSIS WORK ORDER FOR ASBESTOS SAMPLING

PROJECT No. 62-130322-01	PROJECT NAME: Burnette Library
SUBMIT	
REPORT TO: Laura Willem – NTH	

TURNAROUND TIME

- [ ] 6 Hours
- [ ] 24 Hours
- [X] 3 Days
- [ ] 5 Days
- [ ] 12 Hours
- [ ] 48 Hours
- [ ] 4 Days
- [ ] 6-10 Days

SAMPLER'S SIGNATURE:

DATE	SAMPLE ID #		DESCRIPTION / LOCATION	ANALYSIS TYPE REQUESTED: AHERA	EPA LEVEL II	BULK SAMPLING: PLM	SEM	XRD	TEM		AIR SAMPLING: PCM	SEM	TEM		REMARKS / SPECIAL INSTRUCTIONS
05/22/2013	16	PL-1A	Plaster board / Staff restroom			X									
	17	PL-1B	Plaster board / Staff restroom			X									
	18	PL-1C	Plaster board / Staff restroom			X									
	19	DW-1A	Drywall / Furnace room above duct work			X									
	20	DW-1B	Drywall / Furnace room above duct work			X									
	21	WG-1A	Window glazing – exterior, white / West side of building			X									
	22	WG-1B	Window glazing – exterior, white / NW window unit			X									
	23	WC-1A	Window caulking / West side of building			X									
	24	WC-1B	Window caulking / NW window unit			X									
	25	C-1A	Caulking between metal siding			X									
	26	C-1B	Caulking between metal siding			X									
	27	OH-1A	Cement overhang / West side of building			X									
	28	OH-1B	Cement overhang / West side of building			X									
	29	C-2A	Caulking at base of windows and sills / NW window unit			X									
	30	C-2B	Caulking at base of windows and sills / NW window unit			X									
			TOTAL NO. OF SAMPLES:			15/30									

LABORATORY: APEX

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
	05/22/2013		RECEIVED MAY 23 2013 APEX RESEARCH				
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY:

NTH CONSULTANTS, LTD.
41780 Six Mile Rd.
Northville, Michigan
(248) 553-6300
Fax (248) 324-5179

APEX # **45839**

CHAIN-OF-CUSTODY RECORD & ANALYSIS WORK ORDER FOR ASBESTOS SAMPLING

PROJECT No. 62-130322-01	PROJECT NAME: Burnette Library
SUBMIT	
REPORT TO: Laura Willem – NTH	

TURNAROUND TIME

- [ ] 6 Hours
- [ ] 24 Hours
- [X] 3 Days
- [ ] 5 Days
- [ ] 12 Hours
- [ ] 48 Hours
- [ ] 4 Days
- [ ] 6-10 Days

SAMPLER'S SIGNATURE:

DATE	SAMPLE ID #	DESCRIPTION / LOCATION	ANALYSIS TYPE REQUESTED: AHERA	EPA LEVEL II	BULK SAMPLING: PLM	SEM	XRD	TEM		AIR SAMPLING: PCM	SEM	TEM		REMARKS / SPECIAL INSTRUCTIONS
05/21/2013	1 FT-1A	1'x 1' tan floor tile / west entrance			X									
	2 FT-1B	1'x 1' tan floor tile / west entrance			X									
	3 WG-1A	Window glazing- white, exterior / West side			X									
	4 WG-1B	Window glazing- white, exterior / North side, west end			X									
	5 FT-2A	9" x 9" gray floor tile / Staff area, SE corner			X									
	6 FT-2B	9" x 9" gray floor tile / Staff area, SE corner			X									
	7 DC-1A	Duct covering (canvas and paper) / Furnace room – SE corner			X									
	8 DC-1B	Duct covering (canvas and paper) / Furnace room – SE corner			X									
	9 DC-1C	Duct covering (canvas and paper) / Furnace room – SE corner			X									
	10 PJ-1A	Pipe joint on fiberglass line / Furnace room - E wall @ valve			X									
	11 PJ-1B	Pipe joint on fiberglass line / Furnace Room - E wall @ valve			X									
	12 PJ-1C	Pipe joint on fiberglass line / Furnace room at hot water tank			X									
	13 CM-1A	Ceiling material / Furnace room			X									
	14 CM-1B	Ceiling material / Furnace room			X									
		TOTAL NO. OF SAMPLES:			14/25									

LABORATORY: APEX

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
	05/22/2013		RECEIVED				
RELINQUISHED BY:	DATE	TIME	RECEIVED BY: MAY 23 2013	RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
			APEX RESEARCH				

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45839

CHAIN-OF-CUSTODY RECORD & ANALYSIS WORK ORDER FOR ASBESTOS SAMPLING

PROJECT No. 62-130322-01	PROJECT NAME: Burnette Library
SUBMIT	
REPORT TO: Laura Willem – NTH	

TURNAROUND TIME

- [ ] 6 Hours
- [ ] 24 Hours
- [X] 3 Days
- [ ] 5 Days
- [ ] 12 Hours
- [ ] 48 Hours
- [ ] 4 Days
- [ ] 6-10 Days

SAMPLER'S SIGNATURE:

DATE	SAMPLE ID #		DESCRIPTION / LOCATION	ANALYSIS TYPE REQUESTED: AHERA	EPA LEVEL II	BULK SAMPLING: PLM	SEM	XRD	TEM		AIR SAMPLING: PCM	SEM	TEM		REMARKS / SPECIAL INSTRUCTIONS
05/21/2013	15	PL-1A	Plaster board / Staff restroom			X									
	16	PL-1B	Plaster board / Staff restroom			X									
	17	PL-1C	Plaster board / Staff restroom			X									
	18	LHS-1A	Light heat shield / Staff restroom			X									
	19	LHS-1B	Light heat shield / Staff restroom			X									
	20	WC-1A	Window caulking, exterior / West side of building			X									
	21	WC-1B	Window caulking, exterior / North side of building, west end			X									
	22	C-1A	Caulking between metal siding / West side of building			X									
	23	C-1B	Caulking between metal siding / West side of building			X									
	24	OH-1A	Cement overhang / west side of building			X									
	25	OH-1B	Cement overhang / west side of building			X									
			TOTAL NO. OF SAMPLES:			11/25									

LABORATORY: APEX

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
	05/22/2013		RECEIVED MAY 23 2013
RELINQUISHED BY:	DATE	TIME	RECEIVED BY: APEX RESEARCH

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:

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APEX # **45838**

CHAIN-OF-CUSTODY RECORD & ANALYSIS WORK ORDER FOR ASBESTOS SAMPLING

PROJECT No. 62-130233-00	PROJECT NAME: Millender Center
SUBMIT	
REPORT TO: Laura Willem – NTH	

TURNAROUND TIME

- [ ] 6 Hours
- [ ] 24 Hours
- [X] 3 Days
- [ ] 5 Days
- [ ] 12 Hours
- [ ] 48 Hours
- [ ] 4 Days
- [ ] 6-10 Days

SAMPLER'S SIGNATURE:

DATE	SAMPLE ID #	DESCRIPTION / LOCATION	ANALYSIS TYPE REQUESTED: AHERA	EPA LEVEL II	BULK SAMPLING: PLM	SEM	XRD	TEM		AIR SAMPLING: PCM	SEM	TEM		REMARKS / SPECIAL INSTRUCTIONS
1 05/22/2013	T-1A	Transite			X									
2	T-1B	Transite			X									
		TOTAL NO. OF SAMPLES:			2/2									

LABORATORY: APEX

RECEIVED
MAR 13 2013
APEX RESEARCH

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
	05/22/2013		
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:

NTH CONSULTANTS, LTD.
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Northville, Michigan
(248) 553-6300
Fax (248) 324-5179

APPENDIX B

LEAD AND CADMIUM-BASED PAINT DATA

Certificate of Laboratory Analysis

Test Method, Metals Analysis

Project: Busch Library
Project #62-130322-00

Report to:
Ms. Laura Willem
NTH Consultants, LTD
41780 Six Mile Rd.
Northville, MI

ARL Report # 13-L11068
Date Collected: 05/21/13
Date Received: 05/23/13
Date Analyzed: 05/24/13
Date Reported: 05/24/13

Sample Information	Method/MDL	Metal Type/Percent	Date/Analyst
Lab ID # L11068-01 Client #: PC-1 Material: Paint, White Plaster Ceiling - Staff Restrm	SW846 - 7420 MDL - 0.01%	Pb 0.10%	RTL 5-24-13
Lab ID # L11068-02 Client #: PC-2 Material: Paint, White Masonry Block - SE Cr Bldg.	SW846 - 7420 MDL - 0.01%	Pb <0.01%	RTL 5-24-13
Lab ID # L11068-03 Client #: PC-3 Material: Paint, White Metal Beam - Furnace Rm	SW846 - 7420 MDL - 0.01%	Pb <0.01%	RTL 5-24-13
Lab ID # L11068-04 Client #: PC-4 Material: Paint, White Win. Frame Int. E Side Bldg.	SW846 - 7420 MDL - 0.01%	Pb <0.01%	RTL 5-24-13
Lab ID # L11068-05 Client #: PC-5 Material: Paint, Brown Metal Handrail, Ext. W Side.	SW846 - 7420 MDL - 0.01%	Pb <0.01%	RTL 5-24-13
Lab ID # L11068-06 Client #: PC-6 Material: Paint, Silver Metal Window Frame	SW846 - 7420 MDL - 0.01%	Pb <0.01%	RTL 5-24-13

For Layer samples, each component will be analyzed and reported separately. MDL = Minimum Detection Limit. Apex Research, Inc. participates in the AIHA ELPAT program.

Robert T. Letarte Jr., Laboratory Director

Certificate of Laboratory Analysis
Test Method, Metals Analysis

Project: Busch Library
Project #62-130322-00

Report to:
Ms. Laura Willem
NTH Consultants, LTD
41780 Six Mile Rd.
Northville, MI

ARL Report # 13-L11068
Date Collected: 05/21/13
Date Received: 05/23/13
Date Analyzed: 05/24/13
Date Reported: 05/24/13

Sample Information	Method/MDL	Metal Type/Percent	Date/Analyst
Lab ID # L11068-01 Client #: PC-1 Material: Paint, White Plaster Ceiling - Staff Restrm	SW846 - 7130 MDL - 0.01%	Cd - <0.01%	RTL 5-24-13
Lab ID # L11068-02 Client #: PC-2 Material: Paint, White Masonry Block - SE Cr Bldg.	SW846 - 7130 MDL - 0.01%	Cd - <0.01%	RTL 5-24-13
Lab ID # L11068-03 Client #: PC-3 Material: Paint, White Metal Beam - Furnace Rm	SW846 - 7130 MDL - 0.01%	Cd - <0.01%	RTL 5-24-13
Lab ID # L11068-04 Client #: PC-4 Material: Paint, White Window Frame- Int. E Side	SW846 - 7130 MDL - 0.01%	Cd - <0.01%	RTL 5-24-13
Lab ID # L11068-05 Client #: PC-5 Material: Paint, Brown Metal Handrail, Ext. W Side	SW846 - 7130 MDL - 0.01%	Cd - <0.01%	RTL 5-24-13
Lab ID # L11068-06 Client #: PC-6 Material: Paint, Silver Metal Window Frame	SW846 - 7130 MDL - 0.01%	Cd - <0.01%	RTL 5-24-13

For Layer samples, each component will be analyzed and reported separately. MDL = Minimum Detection Limit. Apex Research, Inc. participates in the AIHA ELPAT program.

Robert T. Letarte Jr., Laboratory Director

L 11068

CHAIN-OF-CUSTODY RECORD & ANALYSIS WORK ORDER FOR LEAD AND CADMIUM SAMPLING

PROJECT No. 62-130322-00	PROJECT NAME: Busch Library
SUBMIT REPORT TO: Laura Willem - NTH	

TURNAROUND TIME

- [ ] 6 HOURS
- [x] 24 HOURS
- [ ] 3 DAYS
- [ ] 5 DAYS
- [ ] 12 HOURS
- [ ] 48 HOURS
- [ ] 4 DAYS
- [ ] 6-10 DAYS

SAMPLER'S SIGNATURE:

DATE	SAMPLE ID #	STATION / LOCATION	ANALYSIS TYPE REQUESTED: PAINT CHIP % / WT	PAINT CHIP PPM		WIPE SAMPLE µG			AIR SAMPLE µG			REMARKS / SPECIAL INSTRUCTIONS
05/22/2013	1 PC-1	White plaster ceiling / Staff restroom	X									
	2 PC-2	White masonry block / SE corner of building	X									
	3 PC-3	White metal beam / Furnace room	X									
	4 PC-4	White window frame, interior / East side of building	X									
	5 PC-5	Brown metal handrail, exterior / west side of building	X									
	6 PC-6	Silver metal window frame	X									
		TOTAL NO. OF SAMPLES:	6/6									

LABORATORY: APEX

RECEIVED
MAY 2 2013

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
	5/22/13		
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
			APEX RESEARCH

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:

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