CITY OF ANN ARBOR

INVITATION TO BID

ASBESTOS ABATEMENT PROJECT
2nd FLOOR
GUY C. LARCOM CITY HALL

ITB # 4340
Due Date: August 5, 2014 On or Before 10:00 A.M.

Fleet and Facility Services Unit, Public Services Area
Administering Service Unit

Issued By:

City of Ann Arbor
Procurement Unit
301 E. Huron Street
Ann Arbor, MI 48107

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ADVERTISEMENT TO BID
CITY OF ANN ARBOR

ITB #4340

Sealed Bids will be received by the City of Ann Arbor Procurement Unit, Fifth (5th) Floor, Guy Larcom City Hall, on or before Tuesday, August 5, 2014 at 10:00 AM (local time) for Guy C. Larcom City Hall Asbestos Abatement Project. Bids will be publicly opened and read aloud at this time.

Work includes the provision of all necessary permitting, construction, labor and materials to abate asbestos, re-apply fireproofing, and restore flooring and ceilings for a portion of the 2nd floor in the Guy C. Larcom City Hall building.

A mandatory pre-bid conference will be held Thursday, July 24, 2014 at 9:00 a.m. in the 2nd Floor Council Chambers, City Hall located at 301 E. Huron St., Ann Arbor, Michigan 48104.

Bid documents, specifications, and addendum shall be downloaded by bidders at either of the following web sites, Michigan Inter-governmental Trade Network (MITN) www.mitn.info or City of Ann Arbor web site www.a2gov.org.

Each Bid shall be accompanied by a certified check, or Bid Bond by a recognized surety, in the amount of 5% of the total of the bid price. A Bid, once submitted, becomes the property of the City. In the sole discretion of the City, the City reserves the right to allow a bidder to reclaim submitted documents provided the documents are requested and retrieved no later than 48 hours prior to the scheduled bid opening.

The successful Bidder will be required to furnish satisfactory performance and labor and material bonds in the amount of 100% of the bid price and satisfactory insurance coverage.

Precondition for entering into a contract with the City of Ann Arbor: (i) compliance with Chapter 112 of Title IX of the Code of the City of Ann Arbor. (ii) compliance with applicable prevailing wage and living wage requirements of Chapter 23 of Title I of the Code of the City of Ann Arbor. All bidders are required to complete and submit the City of Ann Arbor Conflict of Interest Disclosure Form with the bid. Further information is outlined in the contract documents.

After the time of opening, no Bid may be withdrawn for a period of sixty (60) days.

The City reserves the right to accept any Bid, to reject any or all Bids, to waive irregularities and/or informalities in any Bid, and to make the award in any manner the City believes to be in its best interest.

Any further information may be obtained from the Ann Arbor Procurement Office, (734) 794-6500.

NOTICE OF MANDATORY PRE-BID CONFERENCE

A **mandatory** pre-bid conference for this project will be held on Thursday, July 24, 2014 at 9:00 AM at the 2nd Floor Council Chambers, located at the Ann Arbor Guy C. Larcom City Hall, 301 E. Huron Street, Ann Arbor, Michigan 48107.

Attendance at this conference is required. Administrative and technical questions regarding this project will be answered at this time. The pre-bid meeting is for information only. Any answers furnished will not be official until verified in writing by the Financial Service Area, Procurement Unit. Answers that change or substantially clarify the bid will be affirmed in an addendum.

Failure to attend the meeting and sign the ITB #4340 sign-in sheet at the pre-bid meeting will automatically disqualify a bidder from submitting a valid bid. Any bid submitted by a party not attending and signing the roster at the pre-bid meeting will not be opened or considered.

INSTRUCTIONS TO BIDDERS

General

Work to be done under this Contract is generally described through the detailed specifications and must be completed fully in accordance with the contract documents. All work to be done under this Contract is located in or near the City of Ann Arbor.

The City shall make available to all prospective Bidders, prior to receipt of the Bids, access to the area in which the work is to be performed. Advance notice should be given to the Administering Service Area/Unit in cases where access to the site must be arranged by the City.

Any Bid which does not conform fully to these instructions may be rejected.

Preparation of Bids

Bids should be prepared providing a straight-forward, concise description of the Bidder's ability to meet the requirements of the ITB. Bids shall be written in ink or typewritten. No erasures are permitted. Mistakes may be crossed out and corrected and must be initialed and dated in ink by the person signing the Bid.

Bids must be submitted on Page Number BF-1 and on the "Bid Forms" provided with each blank properly filled in. If forms are not fully completed it may disqualify the bid.

Each person signing the Bid certifies that he/she is the person in the Bidder's firm/organization responsible for the decision as to the fees being offered in the Bid and has not and will not participated in any action contrary to the terms of this provision.

Questions or Clarification on ITB Specifications

All questions regarding this ITB shall be submitted via email. Emailed questions and inquires will be accepted from any and all prospective Bidders in accordance with the terms and conditions of the ITB.

All questions shall be due on or before Monday, July 28, 2014 at 12:00 PM and should be addressed as follows:

Specification/Scope of Work questions emailed to mjkulhanek@a2gov.org
Bid Process and HR Compliance questions emailed to mberryman@a2gov.org

Addenda

If it becomes necessary to revise any part of the ITB, notice of the Addendum will be posted to Michigan Inter-governmental Trade Network (MITN) www.mitn.info and/or City of Ann Arbor web site www.A2gov.org for all parties to download.

Each Bidder must in its Bid, to avoid any miscommunications, acknowledge all addenda which it has received, but the failure of a Bidder to receive, or acknowledge receipt of; any addenda shall not relieve the Bidder of the responsibility for complying with the terms thereof.

The City will not be bound by oral responses to inquiries or written responses other than written addenda.

Bid Submission

All Bids are due and must be delivered to the City of Ann Arbor Procurement Unit on or before **Tuesday, August 5, 2014 by 10:00 AM (local time)**. Bids submitted late or via oral, telephonic, telegraphic, electronic mail or facsimile **will not** be considered or accepted.

Each Bidder must submit one (1) original Bid and two (2) Bid copies in a sealed envelope clearly marked: **ITB 4340 – Larcom Asbestos Abatement**

Bids must be addressed and delivered to:

City of Ann Arbor
Procurement Unit, 5th Floor
301 East Huron Street
P.O. Box 8647
Ann Arbor, MI 48107

All Bids received on or before the Due Date will be publicly opened and recorded immediately. No immediate decisions are rendered.

Hand delivered bids will be date/time stamped/signed at the address above in order to be considered. Normal business hours are 8:00 a.m. to 4:00 p.m. Monday through Friday, excepting Holidays. The City will not be liable to any Bidder for any unforeseen circumstances, delivery or postal delays. Postmarking to the Due Date will not substitute for receipt of the Bid. Each Bidder is responsible for submission of their Bid.

Additional time will not be granted to a single Bidder; however, additional time may be granted to all Bidders when the City determines that circumstances warrant it.

Award

The City intends to award a contract(s) to the lowest responsible Bidder(s). On multi-divisional contracts, separate divisions may be awarded to separate Bidders. The City may also utilize alternatives offered in the Bid Forms, if any, to determine the lowest responsible Bidder on each division, and award multiple divisions to a single Bidder, so that the lowest total cost is achieved for the City. For unit price bids, the contract will be awarded based upon the unit prices and the lump sum prices stated by the bidder for the work items specified in the bid documents, with consideration given to any alternates selected by the City. If the City determines that the unit price for any item is materially different for the work item bid than either other bidders or the general market, the City, in its sole discretion, in addition to any other right it may have, may reject the bid as not responsible or non-conforming.

The acceptability of major subcontractors will be considered in determining if a Bidder is responsible. In comparing Bids, the City will give consideration to alternate Bids for items listed in the bid forms.

Official Documents

The City of Ann Arbor shall accept no alternates to the bid documents made by the Bidder unless those alternatives are set forth in the "Alternate" section of Bid form.

The City of Ann Arbor officially distributes bid documents from the Procurement Unit or through the Michigan Intergovernmental Trade Network (MITN). Copies of the bid documents obtained from any other source are not Official copies. Addenda and other bid information will only be posted to these official distribution sites. If you obtained City of Ann Arbor Bid documents from other sources, it is recommended that you register on www.MITN.info and obtain an official Bid.

Bid Security

Each bid must be accompanied by a certified check, or Bid Bond by a surety licensed and authorized to do business within the State of Michigan, in the amount of 5% of the total of the bid price.

Withdrawal of Bids

After the time of opening, no Bid may be withdrawn for the period of 60 days specified in the Advertisement.

Contract Time

Time is of the essence in the performance of the work under this Contract. The available time for work under this Contract is indicated on page C-1, Article III of the Contract. If these time requirements can not be met, the Bidder must stipulate on Bid Form Section 3 - Time Alternate its schedule for performance of the work. Consideration will be given to time in evaluating bids.

Liquidated Damages

A liquidated damages clause, as given on page C-2, Article III of the Contract, provides that the Contractor shall pay the City as liquidated damages, and not as a penalty, a sum certain per day for each and every day that the Contractor may be in default of completion of the specified work, within the time(s) stated in the Contract, or written extensions.

Liquidated damages clauses, as given in the General Conditions, provide further that the City shall be entitled to impose and recover liquidated damages for breach of the obligations under Chapter 112 of the City Code.

The liquidated damages are for the non-quantifiable aspects of any of the previously identified events and do not cover actual damages that can be shown or quantified nor are they intended to preclude recovery of actual damages in addition to the recovery of liquidated damages.

Human Rights Information

Section 5, beginning at page GC-3, outlines the requirements for fair employment practices under City of Ann Arbor Contracts. To establish compliance with this Ordinance, the Bidder must complete and return with its bid completed copies of the Human Rights Division Contract Compliance Forms (Attachments A and B) or an acceptable equivalent.

Wage Requirements

Section 4, beginning at page GC-1, outlines the requirements for payment of prevailing wages or of a "living wage" to employees providing service to the City under this contract. The successful bidder must comply with all applicable requirements and provide documentary proof of compliance when requested.

Conflict Of Interest Disclosure

The City of Ann Arbor Purchasing Policy requires that prospective Vendors complete a Conflict of Interest Disclosure form. A contract may not be awarded to the selected Vendor unless and until the Procurement Unit and the City Administrator have reviewed the Disclosure form and determined that no conflict exists under applicable federal, state, or local law or administrative regulation. Not every relationship or situation disclosed on the Disclosure Form may be a disqualifying conflict. Depending on applicable law and regulations, some contracts may awarded on the recommendation of the City Administrator after full disclosure, where such action is allowed by law, if demonstrated competitive pricing exists and/or it is determined the award is in the best interest of the City. A copy of the Vendor Conflict of Interest Disclosure Form is found in Attachment C.

Major Subcontractors

The Bidder shall identify each major subcontractor it expects to engage for this Contract if the work to be subcontracted is 15% or more of the bid sum or over $50,000, whichever is less. The Bidder also shall identify the work to be subcontracted to each major subcontractor.

Debarment

Submission of a Bid in response to this ITB is certification that the Bidder is not currently debarred, suspended, proposed for debarment, and declared ineligible or voluntarily excluded from participation in this transaction by any State or Federal departments or agency. Submission is also agreement that the City will be notified of any changes in this status.

Disclosures

After bids are opened, all information in a bidder's bid is subjected to disclosure under the provisions of Michigan Public Act No. 442 of 1976, as amended (MCL 15.231 et seq.) know as the "Freedom of Information Act." The Freedom of Information Act also

provides for the complete disclosure of contracts and attachments thereto except where specifically exempted.

Bid Protest

All Bid protests must be in writing and filed with the Purchasing Agent within five (5) business days of the award action. The bidder must clearly state the reasons for the protest. If a bidder contacts a City Service Area/Unit and indicates a desire to protest an award, the Service Area/Unit shall refer the bidder to the Purchasing Agent. The Purchasing Agent will provide the bidder with the appropriate instructions for filing the protest. The protest shall be reviewed by the City Administrator or designee whose decision shall be final.

Reservation of Rights

The City of Ann Arbor reserves the right to accept any bid or alternative bid proposed in whole or in part, to reject any or all bids or alternatives bids in whole or in part and to waive irregularity and/or informalities in any bid and to make the award in any manner deemed in the best interest of the City.

INVITATION TO BID

City of Ann Arbor
Guy C. Larcom Municipal Building
Ann Arbor, Michigan 48107

Ladies and Gentlemen:

The undersigned, as Bidder, declares that this Bid is made in good faith, without fraud or collusion with any person or persons bidding on the same Contract; that this Bidder has carefully read and examined the bid documents, including Advertisement, Human Rights Division Contract Compliance Forms, Vendor Conflict of Interest Disclosure Form, Notice of Pre-Bid Conference, Instructions to Bidders, Bid, Bid Forms, Contract, Bond Forms, General Conditions, Standard Specifications, Detailed Specifications, all Addenda, and the Plans and understands them. The Bidder declares that it conducted a full investigation at the site and of the work proposed and is fully informed as to the nature of the work and the conditions relating to the work's performance. The Bidder also declares that it has extensive experience in successfully completing projects similar to this one.

The Bidder acknowledges that it has not received or relied upon any representations or warrants of any nature whatsoever from the City of Ann Arbor, its agents or employees, and that this Bid is based solely upon the Bidder's own independent business judgment.

The undersigned proposes to perform all work shown on the plans or described in the bid documents, including any addenda issued, and to furnish all necessary machinery, tools, apparatus, and other means of construction to do all the work, furnish all the materials, and complete the work in strict accordance with all terms of the Contract of which this Bid is one part.

In accordance with these bid documents, and Addenda numbered _____, the undersigned, as Bidder, proposes to perform at the sites in and/or around Ann Arbor, Michigan, all the work included herein for the amounts set forth in the Bid Forms.

The Bidder declares that it has become fully familiar with the liquidated damage clauses for completion times and for compliance with City Code Chapter 112, understands and agrees that the liquidated damages are for the non-quantifiable aspects of non-compliance and do not cover actual damages that may be shown and agrees that if awarded the Contract, all liquidated damage clauses form part of the Contract.

The Bidder declares that it has become fully familiar with the provisions of Chapter 14, Section 1:319 (Prevailing wages) and Chapter 23 (Living Wage) of the Code of the City of Ann Arbor and that it understands and agrees to comply, to the extent applicable to employees providing services to the City under this Contract, with the wage and

reporting requirements stated in the City Code provisions cited. Bidder further agrees that the cited provisions of Chapter 14 and Chapter 23 form a part of this Contract.

The Bidder encloses a certified check or Bid Bond in the amount of 5% of the total of the Bid Price. The Bidder agrees both to contract for the work and to furnish the necessary Bonds and insurance documentation within 10 days after being notified of the acceptance of the Bid.

If this Bid is accepted by the City and the Bidder fails to contract and furnish the required Bonds and insurance documentation within 10 days after being notified of the acceptance of this Bid, then the Bidder shall be considered to have abandoned the Contract and the certified check or Bid Bond accompanying this Bid shall become due and payable to the City.

If the Bidder enters into the Contract in accordance with this Bid, or if this Bid is rejected, then the accompanying check or Bid Bond shall be returned to the Bidder.

In submitting this Bid, it is understood that the right is reserved by the City to accept any Bid, to reject any or all Bids, to waive irregularities and/or informalities in any Bid, and to make the award in any manner the City believes to be in its best interest.

SIGNED THIS _____ DAY OF _____, 2014.

_____
Bidder's Name

_____ _____
Official Address Authorized Signature of Bidder

_____ _____
Telephone Number (Print Name of Signer Above)

LEGAL STATUS OF BIDDER

(The Bidder shall fill out the appropriate form and strike out the other two.)

Bidder declares that it is:

- A corporation organized and doing business under the laws of the state of _____, for whom _____ bearing the office title of _____, whose signature is affixed to this bid, is authorized to execute contracts on behalf of Bidder.*

  *If not incorporated in Michigan, please attach the corporation's Certificate of Authority

- A limited liability company doing business under the laws of the state of _____, whom _____ bearing the title of _____ whose signature is affixed to this bid, is authorized to execute contract on behalf of the LLC.

- A partnership organized under the laws of the state of _____ and filed with the county of _____ , whose members are (attach list including street and mailing address for each.)

- An individual, whose signature with address, is affixed to this bid.

BID FORM
Section 1 - Schedule of Prices

Company: _____

Project: **Larcom Asbestos Abatement Project – 2nd Floor ITB – 4340**

Base Bid

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

_____.....Dollars ($_____)

BID FORM

Section 2 - Material and Equipment Alternates

The Base Bid price shall include materials and equipment selected from the designated items and manufacturers listed in the bidding documents. This is done to establish uniformity in bidding and to establish standards of quality for the items named.

If the Contractor wishes to quote alternate items for consideration by the City, it may do so under this Section. A complete description of the item and the proposed price differential must be provided. Unless approved at the time of award, substitutions where items are specifically named will be considered only as a negotiated change in Contract Sum.

Item Number	Description	Add/Deduct Amount

If the Bidder does not suggest any material or equipment alternate, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT propose any material or equipment alternate under the contract.

Signature of Authorized Representative of Bidder: _____

Section 3 - Time Alternate

If the Bidder takes exception to the time stipulated in Article III of the Contract, Time of Completion, page C-1, it is requested to stipulate below its proposed time for performance of the work. Consideration will be given to time in evaluating bids.

If the Bidder does not suggest any time alternate, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT propose any time alternate under the contract.

Signature of Authorized Representative of Bidder

BID FORM

Section 4 - Subcontractors

For purposes of this contract, a Subcontractor is anyone (other than the Contractor) who performs work (other than or in addition to the furnishing of materials, plans or equipment) at or about the construction site, directly or indirectly for or on behalf of the Contractor (and whether or not in privity of contract with the Contractor), but shall not include any individual who furnishes merely the individual's own personal labor or services.

Subcontractor (Name and Address)	Work	Amount

If the Bidder does not expect to engage any major subcontractor, the Bidder **MUST** complete the following statement:

For the work outlined in this request for bid, the bidder does NOT expect to engage any major subcontractor to perform work under the contract.

Signature of Authorized Representative of Bidder

_____

CONTRACT

THIS AGREEMENT is made on the _____ day of _____, 2014, between the CITY OF ANN ARBOR, a Michigan Municipal Corporation, 301 E. Huron Street, Ann Arbor, Michigan 48104 ("City") and _____ ("Contractor")

_____ _____

(An individual/partnership/corporation, include state of incorporation) (Address)

Based upon the mutual promises below, the Contractor and the City agree as follows:

ARTICLE I - Scope of Work

The Contractor agrees to furnish all of the materials, equipment and labor necessary; and to abide by all the duties and responsibilities applicable to it for the project titled "Larcom Asbestos Abatement – 2nd Floor" in accordance with the requirements and provisions of the following documents, including all written modifications incorporated into any of the documents, which are incorporated as part of this Contract:

Human Rights Division Contract Compliance Forms
Living Wage Declaration of Compliance Forms (if applicable)
Vendor Conflict of Interest Disclosure Form
Bid Forms
Contract and Exhibits
Bonds
General Conditions
Standard Specifications
Detailed Specifications
Plans
Addenda

ARTICLE II - Definitions

Administering Service Area/Unit means Public Services Area/Fleet & Facilities Services Unit

Supervising Professional means Fleet & Facilities Unit Manager or other persons acting under the authorization of the Administrator/Manager of the Administering Service Area/Unit.

Project means Larcom Asbestos Abatement Project -2nd Floor Bid No. ITB-4340

ARTICLE III - Time of Completion

(A) The work to be completed under this Contract shall begin immediately on the date specified in the Notice to Proceed issued by the City.

(B) The entire work for this Contract shall be completed within 46 consecutive calendar days. Shorter completion times for certain portions of the work are specified in the Detailed Specifications.

(C) Failure to complete all the work within the time specified above, including any extension granted in writing by the Supervising Professional, shall obligate the Contractor to pay the City, as liquidated damages and not as a penalty, an amount equal to $500.00 for each calendar day of delay in the completion of all

the work. If any liquidated damages are unpaid by the Contractor, the City shall be entitled to deduct these unpaid liquidated damages from the monies due the Contractor.

As an independent requirement, where the Detailed Specifications identify certain portions of the work to be completed within a shorter period of time and the Contractor fails to complete each portion within the shorter period specified for each portion, including any extension granted in writing by the Project Supervisor, the City is entitled to deduct from the monies due the Contractor, as liquidated damages and not as a penalty, the amount identified in the Detailed Specifications for each portion of the work not timely completed for each calendar day of delay in completion of each portion of the work.

The liquidated damages are for the non-quantifiable aspects of any of the previously identified events and do not cover actual damages that can be shown or quantified nor are they intended to preclude recovery of actual damages in addition to the recovery of liquidated damages.

Liquidated damages under this section are in addition to any liquidated damages due under Section 5 of the General Conditions.

ARTICLE IV - The Contract Sum

(A) The City shall pay to the Contractor for the performance of the Contract, the base price as given in the Bid Forms for the estimated total of:

_____ Dollars
($_____)

(B) The amount paid shall be equitably adjusted to cover changes in the work ordered by the Supervising Professional but not required by the contract documents.

ARTICLE V - Assignment

This Contract may not be assigned or subcontracted without the written consent of the City.

ARTICLE VI - Choice of Law

This Contract shall be construed, governed, and enforced in accordance with the laws of the State of Michigan. By executing this agreement, the Contractor and the City agree to venue in a court of appropriate jurisdiction sitting within Washtenaw County for purposes of any action arising under this Contract. The parties stipulate that the venue referenced in this Contract is for convenience and waive any claim of non-convenience.

Whenever possible, each provision of the contract will be interpreted in a manner as to be effective and valid under applicable law. The prohibition or invalidity, under applicable law, of any provision will not invalidate the remainder of the contract.

ARTICLE VII - Relationship of the Parties

The parties of the Contract agree that it is not a contract of employment but is a contract to accomplish a specific result. Contractor is an independent contractor performing services for the City. Nothing contained in this Contract shall be deemed to constitute any other relationship between the City and the Contractor.

Contractor certifies that it has no personal or financial interest in the project other than the compensation it is to receive under the Contract. Contractor certifies that it is not, and shall not become, overdue or in default to the City for any contract, debt, or any other obligation to the City including real or personal property taxes. City shall have the right to set off any such debt against compensation awarded for services under this agreement.

ARTICLE VIII - Notice

All notices given under this contract shall be in writing, and shall be by personal delivery or by certified mail with return receipt requested to the parties at their respective addresses as specified in the contract documents or other address the Contractor may specify in writing.

ARTICLE IX - Indemnification

To the fullest extent permitted by law, Contractor shall indemnify, defend and hold harmless the City, its officers, employees and agents harmless from all suits, claims, judgments and expenses including attorney's fees resulting or alleged to result, in whole or in part, from any act or omission, which is in any way connected or associated with this contract, by the Contractor or anyone acting on the Contractor's behalf under this contract. Contractor shall not be responsible to indemnify the City for losses or damages caused by or resulting from the City's sole negligence.

ARTICLE X - Entire Agreement

This Contract represents the entire understanding between the City and the Contractor and it supersedes all prior representations or agreements whether written or oral. Neither party has relied on any prior representations in entering into this Contract. This Contract may be altered, amended or modified only by written amendment signed by the City and the Contractor.

FOR CONTRACTOR

By_____

Its: _____

FOR THE CITY OF ANN ARBOR

By_____
John Hieftje, Mayor

By_____
Jacqueline Beaudry, City Clerk

Approved as to substance

By_____
Steven D. Powers, City Administrator

By_____
Craig Hupy, Public Service Area Administrator

Approved as to form and content

_____
Stephen K. Postema, City Attorney

PERFORMANCE BOND

(1) _____ of (referred to as "Principal"), and _____, a corporation duly authorized to do business in the State of Michigan (referred to as "Surety"), are bound to the City of Ann Arbor, Michigan (referred to as "City"), for $ _____, the payment of which Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, by this bond.

(2) The Principal has entered a written contract with the City dated _____, 2014, for: and this bond is given for that contract in compliance with Act No. 213 of the Michigan Public Acts of 1963, as amended, being MCL 129.201 et seq.

(3) Whenever the Principal is declared by the City to be in default under the contract, the Surety may promptly remedy the default or shall promptly:

(a) complete the contract in accordance with its terms and conditions; or

(b) obtain a bid or bids for submission to the City for completing the contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsible bidder, arrange for a contract between such bidder and the City, and make available, as work progresses, sufficient funds to pay the cost of completion less the balance of the contract price; but not exceeding, including other costs and damages for which Surety may be liable hereunder, the amount set forth in paragraph 1.

(4) Surety shall have no obligation to the City if the Principal fully and promptly performs under the contract.

(5) Surety agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder, or the specifications accompanying it shall in any way affect its obligations on this bond, and waives notice of any such change, extension of time, alteration or addition to the terms of the contract or to the work, or to the specifications.

SIGNED AND SEALED this _____ day of _____, 2014.

(Name of Surety Company)

By
(Signature)

Its
(Title of Office)

(Name of Principal)

By
(Signature)

Its
(Title of Office)

Name and address of agent:

Approved as to form:

Stephen K. Postema, City Attorney

LABOR AND MATERIAL BOND

(1) _____ of _____, (referred to as "Principal"), and _____, a corporation duly authorized to do business in the State of Michigan, (referred to as "Surety"), are bound to the City of Ann Arbor, Michigan (referred to as "City"), for the use and benefit of claimants as defined in Act 213 of Michigan Public Acts of 1963, as amended, being MCL 129.201 et seq., in the amount of

$ _____, for the payment of which Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, by this bond.

(2) The Principal has entered a written contract with the City, dated _____, 2014, for _____; and this bond is given for that contract in compliance with Act No. 213 of the Michigan Public Acts of 1963 as amended;

(3) If the Principal fails to promptly and fully repay claimants for labor and material reasonably required under the contract, the Surety shall pay those claimants.

(4) Surety's obligations shall not exceed the amount stated in paragraph 1, and Surety shall have no obligation if the Principal promptly and fully pays the claimants.

SIGNED AND SEALED this _____ day of _____, 2014.

(Name of Surety Company)

By
(Signature)

Its
(Title of Office)

(Name of Principal)

By
(Signature)

Its
(Title of Office)

Approved as to form:

Stephen K. Postema, City Attorney

Name and address of agent:

GENERAL CONDITIONS

Section 1 - Execution, Correlation and Intent of Documents

The contract documents shall be signed in 2 copies by the City and the Contractor.

The contract documents are complementary and what is called for by any one shall be binding. The intention of the documents is to include all labor and materials, equipment and transportation necessary for the proper execution of the work. Materials or work described in words which so applied have a well-known technical or trade meaning have the meaning of those recognized standards.

In case of a conflict among the contract documents listed below in any requirement(s), the requirement(s) of the document listed first shall prevail over any conflicting requirement(s) of a document listed later.

(1) Addenda in reverse chronological order; (2) Detailed Specifications; (3) Standard Specifications; (4) Plans; (5) General Conditions; (6) Contract; (7) Bid Forms; (8) Bond Forms; (9) Bid.

Section 2 - Order of Completion

The Contractor shall submit with each invoice, and at other times reasonably requested by the Supervising Professional, schedules showing the order in which the Contractor proposes to carry on the work. They shall include the dates at which the Contractor will start the several parts of the work, the estimated dates of completion of the several parts, and important milestones within the several parts.

Section 3 - Familiarity with Work

The Bidder or its representative shall make personal investigations of the site of the work and of existing structures and shall determine to its own satisfaction the conditions to be encountered, the nature of the ground, the difficulties involved, and all other factors affecting the work proposed under this Contract. The Bidder to whom this Contract is awarded will not be entitled to any additional compensation unless conditions are clearly different from those which could reasonably have been anticipated by a person making diligent and thorough investigation of the site.

The Bidder shall immediately notify the City upon discovery and in every case prior to submitting its Bid, of every error or omission in the bidding documents that would be identified by a reasonably competent, diligent Bidder. In no case will a Bidder be allowed the benefit of extra compensation or time to complete the work under this Contract for extra expenses or time spent as a result of the error or omission.

Under this Contract, the Contractor shall conform to Chapter 14 of Title I of the Code of the City of Ann Arbor as amended; which in part states "...that all craftsmen, mechanics and laborers employed directly on the site in connection with said improvements, including said employees of subcontractors, shall receive the prevailing wage for the corresponding classes of craftsmen, mechanics and laborers, as determined by statistics for the Ann Arbor area compiled by the United States Department of Labor. At the request of the City, any contractor or subcontractor shall provide satisfactory proof of compliance with the contract provisions required by the Section."

Where the Contract and the Ann Arbor City Ordinance are silent as to definitions of terms required in determining contract compliance with regard to prevailing wages, the definitions provided in the Davis-Bacon Act as amended (40 U.S.C. 278-a to 276-a-7) for the terms shall be used.

Further, to the extent that any employees of the Contractor providing services under this contract are not part of the class of craftsmen, mechanics and laborers who receive a prevailing wage in conformance with Section 1:319 of Chapter 14 of Title I of the Code of the City of Ann Arbor, the Contractor agrees to conform to Chapter 23 of Title I of the Code of the City of Ann Arbor, as amended, which in part states:

1:814. Applicability.

(1) This Chapter shall apply to any person that is a contractor/vendor or grantee as defined in Section 1:813 that employs or contracts with five (5) or more individuals; provided, however, that this Chapter shall not apply to a non-profit contractor/vendor or non-profit grantee unless it employs or contracts with ten (10) or more individuals.

(2) This Chapter shall apply to any grant, contract, or subcontract or other form of financial assistance awarded to or entered into with a contractor/vendor or grantee after the effective date of this Chapter and to the extension or renewal after the effective date of this Chapter of any grant, contract, or subcontract or other form of financial assistance with a contractor/vendor or grantee.

1:815. Living Wages Required.

(1) Every contractor/vendor or grantee, as defined in Section 1:813, shall pay its covered employees a living wage as established in this Section.

(a) For a covered employer that provides employee health care to its employees, the living wage shall be $9.42 an hour or the adjusted amount hereafter established under Section 1:815(3).

(b) For a covered employer that does not provide health care to its employees, the living wage shall be $10.91 an hour, or the adjusted amount hereafter established under Section 1:815(3).

(2) In order to qualify to pay the living wage rate for covered employers providing employee health care under subsection 1:815(1)(a), a covered employer shall furnish proof of said health care coverage and payment therefor to the City Administrator or his/her designee.

(3) The amount of the living wage established in this Section shall be adjusted upward no later than April 30, 2002, and every year thereafter by a percentage equal to the percentage increase, if any, in the federal poverty guidelines as published by the United States Department of Health and Human Services for the years 2001 and 2002. Subsequent annual adjustments shall be based upon the percentage increase, if any, in the United States Department of Health and Human Services poverty guidelines when comparing the prior calendar year's poverty guidelines to the present calendar year's guidelines. The applicable percentage amount will be converted to an amount in cents by multiplying the existing wage under Section 1.815(1)(b) by said percentage, rounding upward to the next cent, and adding this amount of cents to the existing living wage levels established under Sections 1:815(1)(a) and 1:815(1)(b). Prior to April 1 of each calendar year, the City will notify any covered employer of this adjustment by posting a written notice in a prominent place in City Hall, and, in the case of a covered employer that has provided an address of record to the City, by a written letter to each such covered employer.

Contractor agrees that all subcontracts entered into by the Contractor shall contain similar wage provision covering subcontractor's employees who perform work on this contract.

Section 5 - Non-Discrimination

The Contractor agrees to comply, and to require its subcontractor(s) to comply, with the nondiscrimination provisions of Section 209 of the Elliot-Larsen Civil Rights Act (MCL 37.2209). The Contractor further agrees to comply with the nondiscrimination provisions of Chapter 112 of the Ann Arbor City Code and to assure that applicants are employed and that employees are treated during employment in a manner which provides equal employment opportunity The Contractor agrees to comply with the provisions of Section 9:161 of Chapter 112 of the Ann Arbor City Code and in particular the following excerpts:

9:161 NONDISCRIMINATION BY CITY CONTRACTORS

(1) All contractors proposing to do business with the City of Ann Arbor shall satisfy the nondiscrimination administrative policy adopted by the City Administrator in accordance with the guidelines of this section. All contractors shall receive approval from the Director prior to entering into a contract with the City, unless specifically exempted by administrative policy. All City contractors shall take affirmative action to insure that applicants are employed and that employees are treated during employment in a manner which provides equal employment opportunity and tends to eliminate inequality based upon race, national origin or sex.

(2) Each prospective contractor shall submit to the City data showing current total employment by occupational category, sex and minority group. If, after verifying this data, the Director concludes that it indicates total minority and female employment commensurate with their availability within the contractor's labor recruitment area, i.e., the area from which the contractor can reasonably be expected to recruit, said contractor shall be accepted by the Director as having fulfilled affirmative action requirements for a period of one year at which time the Director shall conduct another review. Other contractors shall develop an affirmative action program in conjunction with the Director. Said program shall include specific goals and timetables for the hiring and promotion of minorities and females. Said goals shall reflect the availability of minorities and females

within the contractor's labor recruitment area. In the case of construction contractors, the Director shall use for employment verification the labor recruitment area of the Ann Arbor-Ypsilanti standard metropolitan statistical area. Construction contractors determined to be in compliance shall be accepted by the Director as having fulfilled affirmative action requirements for a period of six (6) months at which time the Director shall conduct another review.

(3) In hiring for construction projects, contractors shall make good faith efforts to employ local persons, so as to enhance the local economy.

(4) All contracts shall include provisions through which the contractor agrees, in addition to any other applicable Federal or State labor laws:

(a) To set goals, in conference with the Human Resources Director, for each job category or division of the work force used in the completion of the City work;

(b) To provide periodic reports concerning the progress the contractor has made in meeting the affirmative action goals it has agreed to;

(c) To permit the Director access to all books, records and accounts pertaining to its employment practices for the purpose of determining compliance with the affirmative action requirements.

(5) The Director shall monitor the compliance of each contractor with the nondiscrimination provisions of each contract. The Director shall develop procedures and regulations consistent with the administrative policy adopted by the City Administrator for notice and enforcement of non-compliance. Such procedures and regulations shall include a provision for the posting of contractors not in compliance.

(6) All City contracts shall provide further that breach of the obligation not to discriminate shall be a material breach of the contract for which the City shall be entitled, at its option, to do any or all of the following:

(a) To cancel, terminate, or suspend the contract in whole or part and/or refuse to make any required periodic payments under the contract;

(b) Declare the contractor ineligible for the award of any future contracts with the City for a specified length of time;

(c) To recover liquidated damages of a specified sum, said sum to be that percentage of the labor expenditure for the time period involved which would have accrued to minority group members had the affirmative action not been breached;

(d) Impose for each day of non-compliance, liquidated damages of a specified sum, based upon the following schedule:

Contract Amount	Assessed Damages Per Day of Non-Compliance
$ 10,000 - 24,999	$ 25.00
25,000 - 99,999	50.00
100,000 - 199,999	100.00
200,000 - 499,999	150.00
500,000 - 1,499,999	200.00
1,500,000 - 2,999,999	250.00
3,000,000 - 4,999,999	300.00
5,000,000 - and above	500.00

(e) In addition the contractor shall be liable for any costs or expenses incurred by the City of Ann Arbor in obtaining from other sources the work and services to be rendered or performed or the goods or properties to be furnished or delivered to the City under this contract.

Section 6 - Materials, Appliances, Employees

Unless otherwise stipulated, the Contractor shall provide and pay for all materials, labor, water, tools, equipment, light, power, transportation, and other facilities necessary or used for the execution and completion of the work. Unless otherwise specified, all materials incorporated in the permanent work shall be new, and both workmanship and materials shall be of the highest quality. The Contractor shall, if required, furnish satisfactory evidence as to the kind and quality of materials.

The Contractor shall at all times enforce strict discipline and good order among its employees, and shall seek to avoid employing on the work any unfit person or anyone not skilled in the work assigned.

Adequate sanitary facilities shall be provided by the Contractor.

Section 7 - Qualifications for Employment

The Contractor shall employ competent laborers and mechanics for the work under this Contract. For work performed under this Contract, employment preference shall be given to qualified local residents.

Section 8 - Royalties and Patents

The Contractor shall pay all royalties and license fees. It shall defend all suits or claims for infringements of any patent rights and shall hold the City harmless from loss on account of infringement except that the City shall be responsible for all infringement loss when a particular process or the product of a particular manufacturer or manufacturers is specified, unless the City has notified the Contractor prior to the signing of the Contract that the particular process or product is patented or is believed to be patented.

Section 9 - Permits and Regulations

The Contractor must secure and pay for all permits, permit or plan review fees and licenses necessary for the prosecution of the work. These include but are not limited to City building permits, right-of-way permits, lane closure permits, right-of-way occupancy permits, and the like. The City shall secure and pay for easements shown on the plans unless otherwise specified.

The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified. If the Contractor observes that the contract documents are at variance with those requirements, it shall promptly notify the Supervising Professional in writing, and any necessary changes shall be adjusted as provided in the Contract for changes in the work.

Section 10 - Protection of the Public and of Work and Property

The Contractor is responsible for the means, methods, sequences, techniques and procedures of construction and safety programs associated with the work contemplated by this contract. The Contractor, its agents or sub-contractors, shall comply with the "General Rules and Regulations for the Construction Industry" as published by the Construction Safety Commission of the State of Michigan and to all other local, State and National laws, ordinances, rules and regulations pertaining to safety of persons and property.

The Contractor shall take all necessary and reasonable precautions to protect the safety of the public. It shall continuously maintain adequate protection of all work from damage, and shall take all necessary and reasonable precautions to adequately protect all public and private property from injury or loss arising in connection with this Contract. It shall make good any damage, injury or loss to its work and to public and private property resulting from lack of reasonable protective precautions, except as may be due to errors in the contract documents, or caused by agents or employees of the City. The Contractor shall obtain and maintain sufficient insurance to cover damage to any City property at the site by any cause.

In an emergency affecting the safety of life, or the work, or of adjoining property, the Contractor is, without special instructions or authorization from the Supervising Professional, permitted to act at its discretion to prevent the threatened loss or injury. It shall also so act, without appeal, if authorized or instructed by the Supervising Professional.

Any compensation claimed by the Contractor for emergency work shall be determined by agreement or in accordance with the terms of Claims for Extra Cost - Section 15.

Section 11 - Inspection of Work

The City shall provide sufficient competent personnel for the inspection of the work.

The Supervising Professional shall at all times have access to the work whenever it is in preparation or progress, and the Contractor shall provide proper facilities for access and for inspection.

If the specifications, the Supervising Professional's instructions, laws, ordinances, or any public authority require any work to be specially tested or approved, the Contractor shall give the Supervising Professional timely notice of its readiness for inspection, and if the inspection is by an authority other than the Supervising Professional, of the date fixed for the inspection. Inspections by the Supervising Professional shall be made promptly, and where practicable at the

source of supply. If any work should be covered up without approval or consent of the Supervising Professional, it must, if required by the Supervising Professional, be uncovered for examination and properly restored at the Contractor's expense.

Re-examination of any work may be ordered by the Supervising Professional, and, if so ordered, the work must be uncovered by the Contractor. If the work is found to be in accordance with the contract documents, the City shall pay the cost of re-examination and replacement. If the work is not in accordance with the contract documents, the Contractor shall pay the cost.

Section 12 - Superintendence

The Contractor shall keep on the work site, during its progress, a competent superintendent and any necessary assistants, all satisfactory to the Supervising Professional. The superintendent will be responsible to perform all on-site project management for the Contractor. The superintendent shall be experienced in the work required for this Contract. The superintendent shall represent the Contractor and all direction given to the superintendent shall be binding as if given to the Contractor. Important directions shall immediately be confirmed in writing to the Contractor. Other directions will be confirmed on written request. The Contractor shall give efficient superintendence to the work, using its best skill and attention.

Section 13 - Changes in the Work

The City may make changes to the quantities of work within the general scope of the Contract at any time by a written order and without notice to the sureties. If the changes add to or deduct from the extent of the work, the Contract Sum shall be adjusted accordingly. All the changes shall be executed under the conditions of the original Contract except that any claim for extension of time caused by the change shall be adjusted at the time of ordering the change.

In giving instructions, the Supervising Professional shall have authority to make minor changes in the work not involving extra cost and not inconsistent with the purposes of the work, but otherwise, except in an emergency endangering life or property, no extra work or change shall be made unless in pursuance of a written order by the Supervising Professional, and no claim for an addition to the Contract Sum shall be valid unless the additional work was ordered in writing.

The Contractor shall proceed with the work as changed and the value of the work shall be determined as provided in Claims for Extra Cost - Section 15.

Section 14 - Extension of Time

Extension of time stipulated in the Contract for completion of the work will be made if and as the Supervising Professional may deem proper under any of the following circumstances:

(1) When work under an extra work order is added to the work under this Contract;

(2) When the work is suspended as provided in Section 20;

(3) When the work of the Contractor is delayed on account of conditions which could not have been foreseen, or which were beyond the control of the Contractor, and which were not the result of its fault or negligence;

(4) Delays in the progress of the work caused by any act or neglect of the City or of its employees or by other Contractors employed by the City;

(5) Delay due to an act of Government;

(6) Delay by the Supervising Professional in the furnishing of plans and necessary information;

(7) Other cause which in the opinion of the Supervising Professional entitles the Contractor to an extension of time.

The Contractor shall notify the Supervising Professional within 7 days of an occurrence or conditions which, in the Contractor's opinion, entitle it to an extension of time. The notice shall be in writing and submitted in ample time to permit full investigation and evaluation of the Contractor's claim. The Supervising Professional shall acknowledge receipt of the Contractor's notice within 7 days of its receipt. Failure to timely provide the written notice shall constitute a waiver by the Contractor of any claim.

In situations where an extension of time in contract completion is appropriate under this or any other section of the contract, the Contractor understands and agrees that the only available adjustment for events that cause any delays in contract completion shall be extension of the required time for contract completion and that there shall be no adjustments in the money due the Contractor on account of the delay.

Section 15 - Claims for Extra Cost

If the Contractor claims that any instructions by drawings or other media issued after the date of the Contract involved extra cost under this Contract, it shall give the Supervising Professional written notice within 7 days after the receipt of the instructions, and in any event before proceeding to execute the work, except in emergency endangering life or property. The procedure shall then be as provided for Changes in the Work-Section l3. No claim shall be valid unless so made.

If the Supervising Professional orders, in writing, the performance of any work not covered by the contract documents, and for which no item of work is provided in the Contract, and for which no unit price or lump sum basis can be agreed upon, then the extra work shall be done on a Cost-Plus-Percentage basis of payment as follows:

(1) The Contractor shall be reimbursed for all reasonable costs incurred in doing the work, and shall receive an additional payment of 15% of all the reasonable costs to cover both its indirect overhead costs and profit;

(2) The term "Cost" shall cover all payroll charges for employees and supervision required under the specific order, together with all worker's compensation, Social Security, pension and retirement allowances and social insurance, or other regular payroll charges on same; the cost of all material and supplies required of either temporary or permanent character; rental of all power-driven equipment at agreed upon rates, together with cost of fuel and supply charges for the equipment; and any costs incurred by the Contractor as a direct result of executing the order, if approved by the Supervising Professional;

(3) If the extra is performed under subcontract, the subcontractor shall be allowed to compute its charges as described above. The Contractor shall be permitted to add an additional charge of 5% percent to that of the subcontractor for the Contractor's supervision and contractual responsibility;

(4) The quantities and items of work done each day shall be submitted to the Supervising Professional in a satisfactory form on the succeeding day, and shall be approved by the Supervising Professional and the Contractor or adjusted at once;

(5) Payments of all charges for work under this Section in any one month shall be made along with normal progress payments. Retainage shall be in accordance with Progress Payments-Section 16.

No additional compensation will be provided for additional equipment, materials, personnel, overtime or special charges required to perform the work within the time requirements of the Contract.

When extra work is required and no suitable price for machinery and equipment can be determined in accordance with this Section, the hourly rate paid shall be 1/40 of the basic weekly rate listed in the Rental Rate Blue Book published by Dataquest Incorporated and applicable to the time period the equipment was first used for the extra work. The hourly rate will be deemed to include all costs of operation such as bucket or blade, fuel, maintenance, "regional factors", insurance, taxes, and the like, but not the costs of the operator.

Section 16 - Progress Payments

The Contractor shall submit each month, or at longer intervals, if it so desires, an invoice covering work performed for which it believes payment, under the Contract terms, is due. The submission shall be to the City's Finance Department - Accounting Division. The Supervising Professional will, within 10 days following submission of the invoice, prepare a certificate for payment for the work in an amount to be determined by the Supervising Professional as fairly representing the acceptable work performed during the period covered by the Contractor's invoice. To insure the proper performance of this Contract, the City will retain a percentage of the estimate in accordance with Act 524, Public Acts of 1980. The City will then, following the receipt of the Supervising Professional's Certificate, make payment to the Contractor as soon as feasible, which is anticipated will be within 15 days.

An allowance may be made in progress payments if substantial quantities of permanent material have been delivered to the site but not incorporated in the completed work if the Contractor, in the opinion of the Supervising Professional, is diligently pursuing the work under this Contract. Such materials shall be properly stored and adequately protected. Allowance in the estimate shall be at the invoice price value of the items. Notwithstanding any payment of any allowance, all risk of loss due to vandalism or any damages to the stored materials remains with the Contractor.

In the case of Contracts which include only the Furnishing and Delivering of Equipment, the payments shall be; 60% of the Contract Sum upon the delivery of all equipment to be furnished, or in the case of delivery of a usable portion of the equipment in advance of the total equipment delivery, 60% of the estimated value of the portion of the equipment may be paid upon its delivery in advance of the time of the remainder of the equipment to be furnished; 30% of the Contract Sum upon completion of erection of all equipment furnished, but not later than 60 days after the date of delivery of all of the equipment to be furnished; and payment of the final 10% on final completion of erection, testing and acceptance of all the equipment to be furnished; but not later than l80 days after the date of delivery of all of the equipment to be furnished, unless testing has been completed and shows the equipment to be unacceptable.

With each invoice for periodic payment, the Contractor shall enclose a Contractor's Declaration - Section 43, and an updated project schedule per Order of Completion - Section 2.

Section 17 - Deductions for Uncorrected Work

If the Supervising Professional decides it is inexpedient to correct work that has been damaged or that was not done in accordance with the Contract, an equitable deduction from the Contract price shall be made.

Section 18 - Correction of Work Before Final Payment

The Contractor shall promptly remove from the premises all materials condemned by the Supervising Professional as failing to meet Contract requirements, whether incorporated in the work or not, and the Contractor shall promptly replace and re-execute the work in accordance with the Contract and without expense to the City and shall bear the expense of making good all work of other contractors destroyed or damaged by the removal or replacement.

If the Contractor does not remove the condemned work and materials within l0 days after written notice, the City may remove them and, if the removed material has value, may store the material at the expense of the Contractor. If the Contractor does not pay the expense of the removal within 10 days thereafter, the City may, upon 10 days written notice, sell the removed materials at auction or private sale and shall pay to the Contractor the net proceeds, after deducting all costs and expenses that should have been borne by the Contractor. If the removed material has no value, the Contractor must pay the City the expenses for disposal within 10 days of invoice for the disposal costs.

The inspection or lack of inspection of any material or work pertaining to this Contract shall not relieve the Contractor of its obligation to fulfill this Contract and defective work shall be made good. Unsuitable materials may be rejected by the Supervising Professional notwithstanding that the work and materials have been previously overlooked by the Supervising Professional and accepted or estimated for payment or paid for. If the work or any part shall be found defective at any time before the final acceptance of the whole work, the Contractor shall forthwith make good the defect in a manner satisfactory to the Supervising Professional. The judgment and the decision of the Supervising Professional as to whether the materials supplied and the work done under this Contract comply with the requirements of the Contract shall be conclusive and final.

Section 19 - Acceptance and Final Payment

Upon receipt of written notice that the work is ready for final inspection and acceptance, the Supervising Professional will promptly make the inspection. When the Supervising Professional finds the work acceptable under the Contract and the Contract fully performed, the Supervising Professional will promptly sign and issue a final certificate stating that the work required by this Contract has been completed and is accepted by the City under the terms and conditions of the Contract. The entire balance found to be due the Contractor, including the retained percentage, shall be paid to the Contractor by the City within 30 days after the date of the final certificate.

Before issuance of final certificates, the Contractor shall file with the City:

(1) The consent of the surety to payment of the final estimate;
(2) The Contractor's Affidavit in the form required by Section 44.

In case the Affidavit or consent is not furnished, the City may retain out of any amount due the Contractor, sums sufficient to cover all lienable claims.

The making and acceptance of the final payment shall constitute a waiver of all claims by the City except those arising from:

(1) unsettled liens;
(2) faulty work appearing within 12 months after final payment;
(3) hidden defects in meeting the requirements of the plans and specifications;
(4) manufacturer's guarantees.

It shall also constitute a waiver of all claims by the Contractor, except those previously made and still unsettled.

Section 20 - Suspension of Work

The City may at any time suspend the work, or any part by giving 5 days notice to the Contractor in writing. The work shall be resumed by the Contractor within 10 days after the date fixed in the written notice from the City to the Contractor to do so. The City shall reimburse the Contractor for expense incurred by the Contractor in connection with the work under this Contract as a result of the suspension.

If the work, or any part, shall be stopped by the notice in writing, and if the City does not give notice in writing to the Contractor to resume work at a date within 90 days of the date fixed in the written notice to suspend, then the Contractor may abandon that portion of the work suspended and will be entitled to the estimates and payments for all work done on the portions abandoned, if any, plus 10% of the value of the work abandoned, to compensate for loss of overhead, plant expense, and anticipated profit.

Section 21 - Delays and The City's Right to Terminate Contract

If the Contractor refuses or fails to prosecute the work, or any separate part of it, with the diligence required to insure completion, ready for operation, within the allowable number of consecutive calendar days specified plus extensions, or fails to complete the work within the required time, the City may, by written notice to the Contractor, terminate its right to proceed with the work or any part of the work as to which there has been delay. After providing the notice the City may take over the work and prosecute it to completion, by contract or otherwise, and the Contractor and its sureties shall be liable to the City for any excess cost to the City. If the Contractor's right to proceed is terminated, the City may take possession of and utilize in completing the work, any materials, appliances and plant as may be on the site of the work and useful for completing the work. The right of the Contractor to proceed shall not be terminated or the Contractor charged with liquidated damages where an extension of time is granted under Extension of Time - Section 14.

If the Contractor is adjudged a bankrupt, or if it makes a general assignment for the benefit of creditors, or if a receiver is appointed on account of its insolvency, or if it persistently or repeatedly refuses or fails except in cases for which extension of time is provided, to supply enough properly skilled workers or proper materials, or if it fails to make prompt payments to subcontractors or for material or labor, or persistently disregards laws, ordinances or the instructions of the Supervising Professional, or otherwise is guilty of a substantial violation of any provision of the Contract, then the City, upon the certificate of the Supervising Professional that sufficient cause exists to justify such action, may, without prejudice to any other right or remedy and after giving the Contractor 3 days written notice, terminate this Contract. The City may then take possession of the premises and of all materials, tools and appliances thereon and without prejudice to any other remedy it may have, make good the deficiencies or finish the

work by whatever method it may deem expedient, and deduct the cost from the payment due the Contractor. The Contractor shall not be entitled to receive any further payment until the work is finished. If the expense of finishing the work, including compensation for additional managerial and administrative services exceeds the unpaid balance of the Contract Sum, the Contractor and its surety are liable to the City for any excess cost incurred. The expense incurred by the City, and the damage incurred through the Contractor's default, shall be certified by the Supervising Professional.

Section 22 - Contractor's Right to Terminate Contract

If the work should be stopped under an order of any court, or other public authority, for a period of 3 months, through no act or fault of the Contractor or of anyone employed by it, then the Contractor may, upon 7 days written notice to the City, terminate this Contract and recover from the City payment for all acceptable work executed plus reasonable profit.

Section 23 - City's Right To Do Work

If the Contractor should neglect to prosecute the work properly or fail to perform any provision of this Contract, the City, 3 days after giving written notice to the Contractor and its surety may, without prejudice to any other remedy the City may have, make good the deficiencies and may deduct the cost from the payment due to the Contractor.

Section 24 - Removal of Equipment and Supplies

In case of termination of this Contract before completion, from any or no cause, the Contractor, if notified to do so by the City, shall promptly remove any part or all of its equipment and supplies from the property of the City, failing which the City shall have the right to remove the equipment and supplies at the expense of the Contractor.

The removed equipment and supplies may be stored by the City and, if all costs of removal and storage are not paid by the Contractor within 10 days of invoicing, the City upon 10 days written notice may sell the equipment and supplies at auction or private sale, and shall pay the Contractor the net proceeds after deducting all costs and expenses that should have been borne by the Contractor and after deducting all amounts claimed due by any lien holder of the equipment or supplies.

Section 25 - Responsibility for Work and Warranties

The Contractor assumes full responsibility for any and all materials and equipment used in the construction of the work and may not make claims against the City for damages to materials and equipment from any cause except negligence or willful act of the City. Until its final acceptance, the Contractor shall be responsible for damage to or destruction of the project (except for any part covered by Partial Completion and Acceptance - Section 26). The Contractor shall make good all work damaged or destroyed before acceptance. All risk of loss remains with the Contractor until final acceptance of the work (Section 19) or partial acceptance (Section 26). The Contractor is advised to investigate obtaining its own builders risk insurance.

The Contractor shall guarantee the quality of the work for a period of one year. The Contractor shall also unconditionally guarantee the quality of all equipment and materials that are furnished and installed under the contract for a period of one year. At the end of one year after the Contractor's receipt of final payment, the complete work, including equipment and materials furnished and installed under the contract, shall be inspected by the Contractor and the

Supervising Professional. Any defects shall be corrected by the Contractor at its expense as soon as practicable but in all cases within 60 days. Any defects that are identified prior to the end of one year shall also be inspected by the Contractor and the Supervising Professional and shall be corrected by the Contractor at its expense as soon as practicable but in all cases within 60 days.

The Contractor shall assign all manufacturer or material supplier warranties to the City prior to final payment. The assignment shall not relieve the Contractor of its obligations under this paragraph to correct defects.

Section 26 - Partial Completion and Acceptance

If at any time prior to the issuance of the final certificate referred to in Acceptance and Final Payment - Section 19, any portion of the permanent construction has been satisfactorily completed, and if the Supervising Professional determines that portion of the permanent construction is not required for the operations of the Contractor but is needed by the City, the Supervising Professional shall issue to the Contractor a certificate of partial completion, and immediately the City may take over and use the portion of the permanent construction described in the certificate, and exclude the Contractor from that portion.

The issuance of a certificate of partial completion shall not constitute an extension of the Contractor's time to complete the portion of the permanent construction to which it relates if the Contractor has failed to complete it in accordance with the terms of this Contract. The issuance of the certificate shall not release the Contractor or its sureties from any obligations under this Contract including bonds.

If prior use increases the cost of, or delays the work, the Contractor shall be entitled to extra compensation, or extension of time, or both, as the Supervising Professional may determine.

Section 27 - Payments Withheld Prior to Final Acceptance of Work

The City may withhold or, on account of subsequently discovered evidence, nullify the whole or part of any certificate to the extent reasonably appropriate to protect the City from loss on account of:

(1) Defective work not remedied;

(2) Claims filed or reasonable evidence indicating probable filing of claims by other parties against the Contractor;

(3) Failure of the Contractor to make payments properly to subcontractors or for material or labor;

(4) Damage to another Contractor.

When the above grounds are removed or the Contractor provides a Surety Bond satisfactory to the City which will protect the City in the amount withheld, payment shall be made for amounts withheld under this section.

A. The Contractor shall procure and maintain during the life of this Contract, including the guarantee period and during any warranty work, such insurance policies, including those set forth below, as will protect itself from all claims for bodily injuries, death or property damage which may arise under this Contract; whether the acts were made by the Contractor or by any subcontractor or anyone employed by them directly or indirectly. The following insurance policies are required:

1. Worker's Compensation Insurance in accordance with all applicable state and federal statutes. Further, Employers Liability Coverage shall be obtained in the following minimum amounts:

   Bodily Injury by Accident - $500,000 each accident
   Bodily Injury by Disease - $500,000 each employee
   Bodily Injury by Disease - $500,000 each policy limit

2. Commercial General Liability Insurance equivalent to, as a minimum, Insurance Services Office form CG 00 01 07 98. The City of Ann Arbor shall be named as an additional insured. There shall be no added exclusions or limiting endorsements including, but not limited to: Products and Completed Operations, Explosion, Collapse and Underground coverage or Pollution. Further, the following minimum limits of liability are required:

   $1,000,000 Each occurrence as respect Bodily Injury Liability or Property Damage Liability, or both combined.

   $2,000,000 Per Job General Aggregate

   $1,000,000 Personal and Advertising Injury

   $2,000,000 Products and Completed Operations Aggregate

3. Motor Vehicle Liability Insurance, including Michigan No-Fault Coverages, equivalent to, as a minimum, Insurance Services Office form CA 00 01 07 97. The City of Ann Arbor shall be named as an additional insured. There shall be no added exclusions or limiting endorsements. Coverage shall include all owned vehicles, all non-owned vehicles and all hired vehicles. Further, the limits of liability shall be $1,000,000 for each occurrence as respects Bodily Injury Liability or Property Damage Liability, or both combined.

4. Umbrella/Excess Liability Insurance shall be provided to apply excess of the Commercial General Liability, Employers Liability and the Motor Vehicle coverage enumerated above, for each occurrence and for aggregate in the amount of $1,000,000.

B. Insurance required under Section A.2 and A.3 of this Contract shall be considered primary as respects any other valid or collectible insurance that the City may possess, including any self-insured retentions the City may have; and any other insurance the City does possess shall be considered excess insurance only and shall not be required to contribute with this insurance. Further, the Contractor agrees to waive any right of recovery by its insurer against the City.

C. In the case of all Contracts involving on-site work, the Contractor shall provide to the City before the commencement of any work under this Contract documentation demonstrating it has obtained the above mentioned policies. Documentation must provide and demonstrate an unconditional 30 day written notice of cancellation in favor of the City of Ann Arbor. Further, the documentation must explicitly state the following: (a) the policy number; name of insurance company; name and address of the agent or authorized representative; name and address of insured; project name; policy expiration date; and specific coverage amounts; (b) any deductibles or self-insured retentions which shall be approved by the City, in its sole discretion; (c) that the policy conforms to the requirements specified. An original certificate of insurance may be provided as an initial indication of the required insurance, provided that no later than 21 calendar days after commencement of any work the Contractor supplies a copy of the endorsements required on the policies. Upon request, the Contractor shall provide within 30 days a copy of the policy(ies) to the City. If any of the above coverages expire by their terms during the term of this Contract, the Contractor shall deliver proof of renewal and/or new policies to the Administering Service Area/Unit at least ten days prior to the expiration date.

D. Any Insurance provider of Contractor shall be admitted and authorized to do business in the State of Michigan and shall carry and maintain a minimum rating assigned by A.M. Best & Company's Key Rating Guide of "A-" Overall and a minimum Financial Size Category of "V". Insurance policies and certificates issued by non-admitted insurance companies are not acceptable unless approved in writing by the City.

Section 29 - Surety Bonds

Bonds will be required from the successful bidder as follows:

(1) A Performance Bond to the City of Ann Arbor for the amount of the bid(s) accepted;
(2) A Labor and Material Bond to the City of Ann Arbor for the amount of the bid(s) accepted.

Bonds shall be executed on forms supplied by the City in a manner and by a Surety Company satisfactory to the City Attorney.

Section 30 - Damage Claims

The Contractor shall be held responsible for all damages to property of the City or others, caused by or resulting from the negligence of the Contractor, its employees, or agents during the progress of or connected with the prosecution of the work, whether within the limits of the work or elsewhere. The Contractor must restore all property injured including sidewalks, curbing, sodding, pipes, conduit, sewers or other public or private property to not less than its original condition with new work.

Section 31 - Refusal to Obey Instructions

If the Contractor refuses to obey the instructions of the Supervising Professional, the Supervising Professional shall withdraw inspection from the work, and no payments will be made for work performed thereafter nor may work be performed thereafter until the Supervising Professional shall have again authorized the work to proceed.

Section 32 - Assignment

Neither party to the Contract shall assign the Contract without the written consent of the other. The Contractor may assign any monies due to it to a third party acceptable to the City.

Section 33 - Rights of Various Interests

Whenever work being done by the City's forces or by other contractors is contiguous to work covered by this Contract, the respective rights of the various interests involved shall be established by the Supervising Professional, to secure the completion of the various portions of the work in general harmony.

The Contractor is responsible to coordinate all aspects of the work, including coordination of, and with, utility companies and other contractors whose work impacts this project.

Section 34 - Subcontracts

The Contractor shall not award any work to any subcontractor without prior written approval of the City. The approval will not be given until the Contractor submits to the City a written statement concerning the proposed award to the subcontractor. The statement shall contain all information the City may require.

The Contractor shall be as fully responsible to the City for the acts and omissions of its subcontractors, and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by it.

The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of the General Conditions and all other contract documents applicable to the work of the subcontractors and to give the Contractor the same power to terminate any subcontract that the City may exercise over the Contractor under any provision of the contract documents.

Nothing contained in the contract documents shall create any contractual relation between any subcontractor and the City.

Section 35 - Supervising Professional's Status

The Supervising Professional has the right to inspect any or all work. The Supervising Professional has authority to stop the work whenever stoppage may be appropriate to insure the proper execution of the Contract. The Supervising Professional has the authority to reject all work and materials which do not conform to the Contract and to decide questions which arise in the execution of the work.

The Supervising Professional shall make all measurements and determinations of quantities. Those measurements and determinations are final and conclusive between the parties.

Section 36 - Supervising Professional's Decisions

The Supervising Professional shall, within a reasonable time after their presentation to the Supervising Professional, make decisions in writing on all claims of the City or the Contractor and on all other matters relating to the execution and progress of the work or the interpretation of the contract documents.

Section 37 - Storing Materials and Supplies

Materials and supplies may be stored at the site of the work at locations agreeable to the City unless specific exception is listed elsewhere in these documents. Ample way for foot traffic and drainage must be provided, and gutters must, at all times, be kept free from obstruction. Traffic on streets shall be interfered with as little as possible. The Contractor may not enter or occupy with agents, employees, tools, or material any private property without first obtaining written permission from its owner. A copy of the permission shall be furnished to the Supervising Professional.

Section 38 - Lands for Work

The Contractor shall provide, at its own expense and without liability to the City, any additional land and access that may be required for temporary construction facilities or for storage of materials.

Section 39 - Cleaning Up

The Contractor shall, as directed by the Supervising Professional, remove at its own expense from the City's property and from all public and private property all temporary structures, rubbish and waste materials resulting from its operations unless otherwise specifically approved, in writing, by the Supervising Professional.

Section 40 - Salvage

The Supervising Professional may designate for salvage any materials from existing structures or underground services. Materials so designated remain City property and shall be transported or stored at a location as the Supervising Professional may direct.

Section 41 - Night, Saturday or Sunday Work

No night or Sunday work (without prior written City approval) will be permitted except in the case of an emergency and then only to the extent absolutely necessary. The City may allow night work which, in the opinion of the Supervising Professional, can be satisfactorily performed at night. Night work is any work between 8:00 p.m. and 7:00 a.m. No Saturday work will be permitted unless the Contractor gives the Supervising Professional at least 48 hours but not more than 5 days notice of the Contractor's intention to work the upcoming Saturday.

Section 42 - Sales Taxes

Under State law the City is exempt from the assessment of State Sales Tax on its direct purchases. Contractors who acquire materials, equipment, supplies, etc. for incorporation in City projects are not likewise exempt. State Law shall prevail. The Bidder shall familiarize itself with the State Law and prepare its Bid accordingly. No extra payment will be allowed under this Contract for failure of the Contractor to make proper allowance in this bid for taxes it must pay.

CONTRACTOR'S DECLARATION

I hereby declare that I have not, during the period _____, 20__, to _____, 20__, performed any work, furnished any materials, sustained any loss, damage or delay, or otherwise done anything in addition to the regular items (or executed change orders) set forth in the Contract titled _____, for which I shall ask, demand, sue for, or claim compensation or extension of time from the City, except as I hereby make claim for additional compensation or extension of time as set forth on the attached itemized statement. I further declare that I have paid all payroll obligations related to this Contract that have become due during the above period and that all invoices related to this Contract received more than 30 days prior to this declaration have been paid in full except as listed below.

There is/is not (Contractor please circle one and strike one as appropriate) an itemized statement attached regarding a request for additional compensation or extension of time.

_____

Contractor Date

By_____
(Signature)

Its_____
(Title of Office)

Past due invoices, if any, are listed below.

APPENDIX A - CONTRACT COMPLIANCE FORMS

City of Ann Arbor Procurement Office
INSTRUCTIONS FOR CONTRACTORS

For Completing CONTRACT COMPLIANCE FORM

City Policy

The "non discrimination in contracts" provision of the City Code, (Chapter 112, Section 9:161) requires contractors/vendors/grantees doing business with the City not to discriminate on the basis of actual or perceived race, color, religion, national origin, sex, age, condition of pregnancy, marital status, physical or mental limitations, source of income, family responsibilities, educational association, sexual orientation, gender identity or HIV status against any of their employees, any City employee working with them, or any applicant for employment. It also requires that the contractors/vendors/grantees include a similar provision in all subcontracts that they execute for City work or programs.

This Ordinance further requires that each prospective contractor/vendor submit employment data to the City showing current total employee breakdown by occupation, race and gender. This allows the Human Rights Office to determine whether or not the contractor/vendor has a workforce that is reflective of the availability of women and under-represented minorities within the contractor's labor recruitment area (the area where they can reasonably be expected to recruit employees). ***This data is provided to the City on the Human Rights Contract Compliance Forms (attached).***

To complete the form:

1) **If a company has more than one location, then that company must complete 2 versions of the form.**
- **Form #1** should contain the employment data for the **entire corporation**.
- **Form #2** should contain the employment data for those employees:
  - who will be working on-site;
  - in the office responsible for completing the contract; or,
  - in the case of non-profit grantees, those employees working on the project funded by the City grant(s).

2) If the company has only one location, fill out Form #1 only.

3) Complete all data in the upper section of the form including the name of the person who completes the form and the name of the company/organization's president.

4) Complete the Employment Data in the remainder of the form. Please be sure to complete all columns including the Total Columns on the far right side of the form, and the Total row and Previous Year Total row at the bottom of the form.

5) Return the completed form(s) to *your contact* in the City Department for whom you will be conducting the work.

For assistance in completing the form, contact:
Procurement Office of the City of Ann Arbor
(734) 794-6500

If a contractor is determined to be out of compliance, the Procurement Office will work with them to assist them in coming into compliance.

CITY OF ANN ARBOR HUMAN RIGHTS OFFICE
CONTRACT COMPLIANCE FORM

Form #1

Entire Organization (Totals for All Locations where applicable)

Name of Company/Organization_____ Date Form Completed_____

Name and Title of Person Completing this Form_____ Name of President _____

Address_____ County_____ Phone #_____
(Street address) (City) (State) (Zip) (Area Code)

Fax#_____ Email Address_____
(Area Code)

EMPLOYMENT DATA

Job Categories	**Number of Employees (Report employees in only one category)**												
	Male						**Female**						
	White	Black or African American	Asian	Hispanic or Latino	Native Hawaiian or Other Pacific Islander	American Indian or Alaska Native	White	Black or African American	Asian	Hispanic or Latino	Native Hawaiian or Other Pacific Islander	American Indian or Alaskan Native	**TOTAL COLUMNS A-L**
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	
Exec/Sr. Level Officials													
Supervisors													
Professionals													
Technicians													
Sales													
Admin. Support													
Craftspeople													
Operatives													
Service Workers													
Laborers/Helper													
Apprentices													
Other													
TOTAL													
PREVIOUS YEAR TOTAL													

9/03 **Questions about this form? Call (734)794-6500**

CITY OF ANN ARBOR HUMAN RIGHTS OFFICE

Form #2

CONTRACT COMPLIANCE FORM

Local Office (Only those employees that will do local or on-site work, if applicable)

Name of Company/Organization_____ Date Form Completed_____

Name and Title of Person Completing this Form_____ Name of President _____

Address_____ County_____ Phone #_____
(Street address) (City) (State) (Zip) (Area Code)

Fax#_____ Email Address_____
(Area Code)

EMPLOYMENT DATA

Job Categories	Number of Employees (Report employees in only one category)												
	Male						Female						
	White	Black or African American	Asian	Hispanic or Latino	Native Hawaiian or Other Pacific Islander	American Indian or Alaska Native	White	Black or African American	Asian	Hispanic or Latino	Native Hawaiian or Other Pacific Islander	American Indian or Alaskan Native	**TOTAL COLUMNS A-L**
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	
Exec/Sr. Level Officials													
Supervisors													
Professionals													
Technicians													
Sales													
Admin. Support													
Craftspeople													
Operatives													
Service Workers													
Laborers/Helper													
Apprentices													
Other													
TOTAL													
PREVIOUS YEAR TOTAL													

2/12

Questions about this form? Call 734-794-6500

APPENDIX B – LIVING WAGE FORMS

CITY OF ANN ARBOR
LIVING WAGE ORDINANCE
DECLARATION OF COMPLIANCE

The Ann Arbor Living Wage Ordinance (Section 1:811-1:821 of Chapter 23 of Title I of the Code) requires that employers providing services to the City or recipients of grants for financial assistance (in amounts greater than $10,000 in a twelve-month period of time) pay their employees who are working on the City project or grant, a minimum level of compensation known as the **Living Wage**. This wage must be paid to the employees for the length of the contract/project.

Companies employing fewer than 5 persons and non-profits employing fewer than 10 persons are exempt from the Ordinance. If this exemption applies to your firm, please check below:

_____ This **company** is exempt due to the fact that we employ or contract with fewer than 5 individuals.

_____ This **non-profit agency** is exempt due to the fact that we employ or contract with fewer than 10 employees.

The Ordinance requires that all contractors/vendors and/or grantees agree to the following terms:

a) To pay each of its employees performing work on any covered contract or grant with the City, no less than the living wage, which is defined as $12.70/hour when health care is provided, or no less than $14.18/hour for those employers that do *not* provide health care. It is understood that the Living Wage will be adjusted each year on April 30, and covered employers will be required to pay the adjusted amount thereafter. The rates stated above include any adjustment for 2014.

b) Please check the boxes below which apply to your workforce:

☐ Employees who are assigned to *any covered* City project or grant will be paid at or above the applicable living wage without health benefits Yes_____ No_____

OR

☐ Employees who are assigned to *any covered* City project or grant will be paid at or above the applicable living wage with health benefits Yes_____ No_____

c) To post a notice approved by the City regarding the Living Wage Ordinance in every work place or other location in which employees or other persons contracting for employment are working.

d) To provide the City payroll records or other documentation as requested; and,

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

The undersigned authorized representative hereby obligates the contractor/vendor or grantee to the above stated conditions under penalty of perjury and violation of the Ordinance.

Company Name	Address, City, State, Zip
Signature of Authorized Representative	Phone (area code)
Type or Print Name and Title	Email address
Date signed	

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

Revised 3/2014 rev.0 LW-2

CITY OF ANN ARBOR
LIVING WAGE ORDINANCE

RATE EFFECTIVE APRIL 30, 2014 - ENDING APRIL 29, 2015

$12.70 per hour

If the employer provides health care benefits*****

$14.18 per hour

If the employer does **NOT** provide health care benefits*****

Employers providing services to or for the City of Ann Arbor or recipients of grants or financial assistance from the City of Ann Arbor for a value of more than $10,000 in a twelve-month period of time must pay those employees performing work on a City of Ann Arbor contract or grant, the above living wage.

ENFORCEMENT

The City of Ann Arbor may recover back wages either administratively or through court action for the employees that have been underpaid in violation of the law. Persons denied payment of the living wage have the right to bring a civil action for damages in addition to any action taken by the City.

Violation of this Ordinance is punishable by fines of not more than $500/violation plus costs, with each day being considered a separate violation. Additionally, the City of Ann Arbor has the right to modify, terminate, cancel or suspend a contract in the event of a violation of the Ordinance.

***** Health Care benefits include those paid for by the employer or making an employer contribution toward the purchase of health care. The employee contribution must not exceed $.50 an hour for an average work week; and the employer cost or contribution must equal no less than $1/hr for the average work week.

The Law Requires Employers to Display This Poster Where Employees Can Readily See It.

For Additional Information or to File a Complaint Contact
Mark Berryman at 734/794-6500 or mberryman@a2gov.org

Revised 3/2014 Rev.0 **LW-1**

ATTACHMENT C – VENDOR CONFLICT OF INTEREST DISCLOSURE FORM

Vendor Conflict of Interest Disclosure Form

All vendors interested in conducting business with the City of Ann Arbor must complete and return the Vendor Conflict of Interest Disclosure Form in order to be eligible to be awarded a contract. Please note that all vendors are subject to comply with the City of Ann Arbor's conflict interest policies as stated within the certification section below.

If a vendor has a relationship with a City of Ann Arbor official or employee, an immediate family member of a City of Ann Arbor official or employee, the vendor shall disclose the information required below.

Certification: I hereby certify that to my knowledge, there is no conflict of interest involving the vendor named below:

1. No City official or employee or City employee's immediate family member has an ownership interest in vendor's company or is deriving personal financial gain from this contract.
2. No retired or separated City official or employee who has been retired or separated from the City for less than one (1) year has an ownership interest in vendor's Company.
3. No City employee is contemporaneously employed or prospectively to be employed with the vendor.
4. Vendor hereby declares it has not and will not provide gifts or hospitality of any dollar value or any other gratuities to any City employee or elected official to obtain or maintain a contract.
5. Please note any exceptions below:

Vendor Name	Vendor Phone Number
Conflict of Interest Disclosure *	
Name of City of Ann Arbor employees, elected officials, or immediate family members with whom there maybe a potential conflict of interest.	( ) Relationship to employee_____ ( ) Interest in vendor's company _____ ( ) Other

*Disclosing a potential conflict of interest does not disqualify vendors. In the event vendors do not disclose potential conflicts of interest and they are detected by the City, vendor will be exempt from doing business with the City.

I certify that the information provided is true and correct by my signature below:

Signature of Vendor Authorized Representative _____ Date _____ Printed Name of Vendor Authorized Representative

PROCUREMENT USE ONLY

☐ Yes, named employee was involved in Bid / Proposal process.

☐ No, named employee was not involved in procurement process or decision.

Attachment C
BIDDER'S QUALIFICATIONS QUESTIONNAIRE

All questions must be answered clearly and in a comprehensive manner. Any bidder failing to answer all questions may be rejected on these grounds. It is understood that the by submitting a signed bid, the Contractor is certifying the correctness of all statements and is hereby under oath. If necessary, the bidder may use additional sheets to answer these questions (when complete, any additional sheets that are used must have a reference to this Qualification Statement and must be attached to this Qualification Statement). The bidder may submit any additional information he/she desires.

1. Name of Bidder

2. Permanent Main Office Address

3. When (Name of Bidder) Organized?

4. If a Corporation, Where (Name of Bidder) Incorporated?

5. How many years have you been operating under the (Name of Bidder) name?

6. What other names has/are the principals of (Bidder) operated(ing) under that was/is associated with the asbestos abatement industry?

7. Have the principals of (Name of Bidder) filed for Chapter 11 or Chapter 13 for protection of (Name of Bidder) or for any other asbestos abatement related firm, company or organization, in the last five years? Describe. Use additional sheets if necessary.

8. List all contracts on hand. Show schedule (actual or anticipated commencement and

completion dates) and gross dollar amount of each contract. Use additional sheets if necessary.

9. List all specifications (Name of Bidder) currently is submitting bids for which have overlapping working dates. Show schedule (anticipated commencement and completion dates) for each bid. Use additional sheets if necessary.

10. Have you (Bidder and other entities identified in question 6 answers) ever failed to complete any work awarded to you?

If yes, where and why? Use additional sheets if necessary.

11. Have you (Name of Bidder and other entities identified in Question 6 answers) ever been disqualified from bidding in the City of Ann Arbor?

If yes, when and why? Use additional sheets if necessary.

12. Have you (Name of Bidder and other entities identified in Question 6 answers) ever not been recommended for bidded contracts when you were the low bidder in the City of Ann Arbor?

If yes, when and why? Use additional sheets if necessary.

13. List all projects (Name of Bidder) completed in the City of Ann Arbor since January 1, 2004?

14. List any and all citations with or without monetary penalty received, pending, paid or disputed by (Name of Bidder and other entities identified in Question 6 answers) during the past 3 years for failure to comply with applicable federal, state or local regulations. Describe in detail the type of citation, the reason for the citation and the ultimate disposition of same. Provide copies of all citations received since January 1, 2009, and all correspondence associated with the citations. Use additional sheets if necessary.

15. When was the last on-site inspection by the Michigan Department of Public Health and the Department of Natural Resources?

MDPH - _____ DNR- _____

What were the results of these visits? Use additional sheets if necessary.

16. List all penalties incurred through non-compliance with asbestos abatement project specifications, including liquidated damages, overruns in scheduled time limitations and any subsequent resolutions for (Name of Bidder and other entities identified in Question 6 answers). Use additional sheets if necessary.

17. List all contracts over $20,000 completed by (Name of Bidder) since January 1,

2009 (contracts with the City of Ann Arbor) do not need to be listed in response to Question 17), stating approximate gross cost for each, and the month and year completed. Use additional sheets if necessary.

18. List your major equipment (as of January 1, 2014) which will be available for this contract.

19. List the experience of (Name of Bidder) in work similar to this project. Project references must include: names, addresses, and phone numbers of Building Owner's for whom projects were performed (minimum of four). Use additional sheets if necessary.

20. List bank references.

22. Name of Bonding Company and the name and address of agent.

GENERAL SPECIFICATIONS

1. Description

1.1 This project consists of alterations to the existing City of Ann Arbor's City Hall located at 301 E. Huron Street, Ann Arbor, Michigan 48107. The project involves demolition, asbestos abatement and restoration of a portion of the 2nd floor in City Hall.

1.2 The Base Bid shall include all work described and required by the General Specifications, Scope-of-Work and Technical Specifications. This Base Bid also includes all miscellaneous and incidental items such as overhead, insurance, all building permits, dust and noise control, access maintenance during non-working hours, coordination with others, dust enclosure maintenance, all mobilizations and demobilizations, all costs incurred by the Contractor for all "minor" delays in the construction progress due to City's direct actions, and the like.

1.3 Coordination with others shall include City departments, air monitoring consultants and manufacturers.

1.4 The presence of ducts, conductors, conduits, pipes, beams, supports and any other installations which are not in conflict with the proposed work, and which do not present a hazard to the public or an extraordinary hazard to the Contractor's operations, will not be required to be moved. When such installations which are, or are not, shown on the plans must be moved to new locations to allow for reasonable installation of improvements, no additional compensation will be paid to the Contractor. The Contractor is directed to review available building blueprints for additional information regarding building features. Stoppages created solely by the relocation or repair of existing conditions as noted above which delay any portion of the project, may be considered as a basis of claim for an extension of time only, for project completion.

2. Permits

2.1 The Contractor shall be responsible for the procurement of all permits required in connection with the work, and to arrange for all necessary inspections and to pay for all fees in connection therewith.

3. Contract Limits

3.1 The Contractor shall limit activities within the areas shown on the Floor Plan. The Contractor shall make reasonable effort to disturb as little as possible existing operations and activities in the building. Dust-tight enclosures shall be maintained at all times particularly during demolition work and asbestos abatement.

3.2 The Contractor shall clearly label and separate the construction area by means of pedestrian control items such as tape, signs, and barricades.

4. Standards, Codes and Regulations

4.1 Reference to standards, codes and regulations shall mean the latest that have been approved or adopted at the date of acceptance.

5. Protection of Existing Facilities

5.1 The Contractor is responsible for protection of the City's property. Any areas damaged as a result of the Contractor's actions, operations, and equipment shall be restored and/or repaired to a condition equal to or better than the original.

6. Site Limitations

6.1 Limited parking is available on site. Parking is available at 721 N. Main Street, Ann Arbor with approval from the Representative of the City. The Contractor will be limited to an onsite dumpster and truck access for loading and unloading materials.

7. Measurement and Payment

7.1 Forty (40) percent of the cost of the General Conditions item shall be paid on the first request for payment. Thirty (30) percent of the cost of the General Conditions item shall be paid when over 50% of the value of the total project is complete. Thirty (30) percent of the cost of the General Conditions shall be paid when over 85% of the value of the total project is complete. The General Conditions shall be paid on a lump sum (LS) basis.

GENERAL SPECIFICATIONS FOR DEMOLITION

8. Description

8.1 This work consists of removal and legal disposal of all demolition materials. The Contractor shall provide all labor, materials, tools, and equipment necessary to complete all the demolition work, whether specifically indicated or not, in the Contract drawings.

8.2 The contractors are cautioned to thoroughly familiarize themselves with all portions of demolition work. The building must be protected from weather hazards at all times. Prevent the spread of dust and debris when accomplishing work by dust-tight enclosures between construction areas and areas not affected by demolition or construction. The Contractor shall promptly clean up all work areas during each day of such work.

8.3 All bracing, shoring, or similar operations, required to accomplish this work shall be included herein as the responsibility of the Contractor.

8.4 Demolition work includes, but is not necessarily limited to, the following: Removal of all ceilings, lighting, flooring products and the raised ceiling (including vertical surfaces) of the Council Chambers.

8.5 Any damage to existing construction resulting from demolition, service relocation, or related work beyond that specified herein or in the Floor Plan, shall be made good promptly by the Contractor at his own expense to the satisfaction of the Representative of the City.

GENERAL SPECIFICATIONS FOR ASBESTOS ABATEMENT

9. Description

9.1 This work consists of the removal of asbestos or asbestos fiber containing materials, in accordance with guidelines and regulations of federal, state and local agencies, EPA and MIOSHA.

9.2 The Contractor is hereby notified of the presence of asbestos fiber insulation, flooring and fireproofing in the building. Federal and state laws concerning asbestos abatement, and the handling and disposal of hazardous materials will be applicable to perform demolition and construction work in the building.

10. Work Schedule

10.1 The Contractor shall so arrange his work to conform to the completion schedule specified by the Representative of the City for the work phases as specified below:

10.1.1 All the items performed under this contract must be completed in a timely manner, according to the schedule agreed to between the Representative of the City and the Contractor.

10.1.2. Work shall not commence until the Contractor has received a Notice to Proceed from the Representative of the City. The Representative of the City shall not issue a Notice to Proceed until all required submittals from the Contractor have been submitted within the time schedule for submittal of required Contractor's documentation.

10.1.3. Work shall not commence until a fully executed contract is received by the Contractor from the Representative of the City. Work commenced prior to receipt of both a fully executed contract and a written notice to proceed shall be unauthorized and such work will progress solely at Contractor's risk.

11. Terms

11.1 The time schedule agreed to between the Representative of the City and the Contractor for completion of work is an essential part of this specification and contract. If the Contractor shall neglect, fail or refuse to complete the work within the time schedule agreed to between the Representative of the City and the Contractor, or any proper extension therefore granted by the Representative of the City, this shall be a breach of contract and the Contractor shall be in default after the day stipulated in the completion schedule agreed to between the Representative of the City

and the Contractor for completion of the work. In this event, the Contractor will be required to reimburse the City for cost of air monitoring, industrial hygiene services and administrative services for work which progresses beyond the allotted time specified in the completion schedule due to Contractor's failure to complete the work on time.

12. Submittals

12.1 General - This section specifies administrative and procedural requirements for submittals required for performance of the work, including:

-Plan of Action
-Inspection
-Contractor's construction schedule
-Submittal schedule
-Daily construction reports
-Product data
-Samples
-Miscellaneous submittals

12.2 Submittal Procedures

12.2.1 Coordination: Coordinate preparation and processing of submittals with performance of project activities. Transmit each submittal sufficiently in advance of performance of related project activities to avoid delay.

12.2.2 The Representative of the City reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

12.2.3 No extension of contract time will be authorized because of failure to transmit submittals to the Representative of the City sufficiently in advance of the work to permit processing.

12.2.4 Submit two copies of each required submittal. The Representative of the City will retain one, and will return the one marked with action taken and corrections or modifications required.

12.2.5 Unless noncompliance with contract document provisions is observed, the submittal may serve as the final submittal.

12.2.6 Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities.

12.2.7 Do not proceed with installation until an applicable copy of product data is in the installer's possession.

12.2.8 Do not permit use of unmarked copies of product data in connection with construction.

12.2.9 Except for submittals for record, information or similar purposes, where action and return is required or requested, the Representative of the City will review each submittal, mark to indicate action taken, and return promptly.

12.2.10 Compliance with specified characteristics is the Contractor's responsibility.

12.3 Plan of Action

12.3.1 The Contractor is required to submit a detailed plan of the procedures proposed for use in complying with the requirements of this specification. He shall include in the plan the location and layout of decontamination areas. The sequencing of asbestos work, work methods and engineering controls to be used to assure the safety of building occupants and visitors to the site, disposal plan including location of approved disposal site, a detailed description of the methods to be employed to perform work, and a list of all personnel state-required asbestos worker licensing, medical evaluations, respirator fit test, and certification proposed to be employed on this project.

12.3.2 The Contractor shall further explain his intent for use of portable HEPA ventilation system and exhaust, closing out and sealing of the building's HVAC system, method of removal to prohibit visible emissions in work areas, asbestos worker protection, packaging of removed asbestos debris and any other pertinent items necessary to complete an AHERA (type) project. The plan must be approved by the Representative of the City prior to commencement of work.

12.4 Inspection

12.4.1 Prior to commencement of work, the Contractor shall perform the following: inspect the area in which work will be performed; prepare a listing of damage to structure, surfaces, equipment or of surrounding properties which could be misconstrued as damage resulting from the work; photograph or videotape existing conditions as necessary to document conditions; submit to Representative of the City prior to starting work.

12.5 Contractor's Construction Schedule

12.5.1 Provide proposed detailed schedule including work dates, work shift times, number of employees, dates of start and completion, including dates of preparation work, removals and final inspection dates.

12.5.2 Indicate clearance of each work area in advance of the dates established for clearance. Allow time for testing and other procedures necessary for certification of clearance.

12.6 Submittal Schedule

12.6.1 Listing: At the end of this section is a listing of the principal submittals required for the work. this listing is not necessarily complete, nor does the listing reflect the significance of each submittal requirement or will all items listed by required. The listing is included only for the convenience of users of the contract documents.

12.7 Product Data

12.7.1 Collect product data into a single submittal. Product data includes printed information such as manufacturer's installation instructions, catalog cuts, and performance curves. Where product data must be specifically prepared because standard printed data is not suitable for use, submit as "Shop Drawings" .

12.7.2 Mark each copy to show applicable choices and options. Where printed product data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following information:
-Manufacturer's printed recommendations.
-Compliance with recognized trade association standards.
-Compliance with recognized testing agency standards.
-Application of testing agency labels and seals.
-Notation of dimensions verified by field measurement.
-Notation of coordination requirements.

12.7.3 Do not submit product data until compliance with requirements of the contract documents has been confirmed.

12.8 Samples

12.8.1 Submit full-size, fully fabricated samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials .
-Generic description of the sample.
-Sample source.
-Product name or name of manufacturer.
-Compliance with recognized standards.
-Availability and delivery time.

12.8.2 Submit samples for review of kind, and for a comparison of these characteristics between the final submittal and the actual component as delivered and installed.

12.9 Miscellaneous Submittals

12.9.1 Material Safety Data Sheets: Process material safety and data sheets as "product data".

12.9.2 Records of Actual Work: Furnish two copies of records of actual work:, one of which will be returned.

12.9.3 Standards: Where submittal of a copy of standards is indicated, and except where copies of standards are specified as an integral part of a "Product Data" submittal, submit a single copy of standards for the use of the Representative of the City. Where workmanship, whether at the project site or elsewhere, is governed by a standard, furnish additional copies of the standard to fabricators, installers and other involved in the performance of the work.

GENERAL SPECIFICATIONS FOR RESTORATION

13. Description

13.1 This work consists of the installation of the new ceilings, interior painting and the installation of flooring materials. The Contractor shall provide all labor, materials, tools, and equipment necessary to complete all the restoration work, whether specifically indicated or not, in the Contract drawings. The Owner will supply the carpet tiles being used on this floor. The Contractor will be responsible for installation of these tiles, and must supply all necessary adhesives, trim and accessories.

13.2 The products listed in the technical specifications shall be the products bid and installed. No substitutions will be allowed unless a product is no longer available.

14. Suspended Ceiling System

14.1 The contractor shall provide a ceiling plan that shall be approved by the Owner prior to the start of ceiling installation. The proposed ceiling plan should integrate the layout of the existing suspended ceiling (outside of the abatement work area) so that the entire ceiling shall match.

14.2 The ceiling plan submittal shall be returned to the Contractor by the Owner with the locations of the new 2' x 4' recessed lay-in lighting fixtures, supplied and installed by the Owner, or the Owner's representative, during the Phase 4 Work time period shown in the Sequence of Work (SW-3). The ceiling grid system shall be supported appropriately to handle the approximate 30 lb/light fixture weight.

14.3 The contractor will be required to construct the necessary soffits/wall extensions to support the suspended ceiling system. These are anticipated near the moveable wall sections and above the brick at the east end of the building. These must be finished and painted below the ceiling system. Additional areas may also be required to ensure a uniform ceiling height.

15. Floor Covering

15.1 Floor covering will consist of either carpet tiles or linoleum floor covering. The flooring plan is provided as part of the technical specifications.

15.2 The Owner has pre-purchased the carpet tiles being used for this installation. The Contractor will be responsible to measure the carpeting needs and provide the anticipated quantity needed to the Owner at the beginning of the project.

15.3 The Contractor will be responsible for all flooring and transition accessories. All flooring and transition accessories should be included with submittals.

15.4 Access covers for the in floor conduit system shall integrated with the floor coverings. The Contractor shall work with the Owner to identify covers that can be eliminated and covered over. The Contractor shall be responsible to cover these identified openings.

16. Council Chambers Raised Ceiling

16.1 The center section of Council Chambers includes a raised ceiling that displaces a section of the 3rd floor.

16.2 The vertical and horizontal surfaces of this section will be demolished for abatement purposes and must be reconstructed to ensure the required fire rating between the floors is maintained.

16.3 This will include a high ceiling for fire rating purposes and a lower suspended ceiling for aesthetic purposes and support of light fixtures.

16.4 All surfaces below the suspended ceiling level must be finished and painted.

16.5 Wood trim to match existing shall be installed where the raised ceiling area meets the regular ceiling in Council Chambers.

SCOPE OF WORK

1. Demolition Activities

This section identifies requirements, in addition to the Technical Specification, that the awarded Contractor must follow during the course of the demolition activities.

1.1 The entire work area shall be appropriately sealed and protected to ensure a safe and contained environment for demolition activities. It is the intent of the Owner to maintain City operations on the 2nd floor of the building outside of the work area which has already been abated. Appropriate barriers to seal and protect these areas must be installed.

1.2 Contractor shall modify HVAC systems and seal supply and return ducts in the work area. This work must be done on a weekend or after normal business hours so the HVAC system can be shut down by Facilities staff.

1.3 All light fixtures shall be disconnected from their electrical supply at the light fixture and the electrical wires shall be safely terminated (capped) for future re-use. Existing light fixtures shall be included in demolition. All other ceiling mounted fixtures shall be cleaned of residual asbestos, protected and secured as needed.

1.4 Smoke and fire alarms should be properly bagged and secured to avoid false alarms from the fire alarm system.

1.5 All ceiling materials, including light fixtures, should be demolished and treated as hazardous materials due to their long-term exposure to friable ACM above the ceiling. All chemical mastic removers utilized should consist of “no-odor” or “low-odor” type removers. All floors where chemical mastic removers are to be utilized shall be evaluated prior to the use of chemical mastic removers to ensure the integrity of the floors and to ensure leakage of mastic remover and asbestos will not occur.

1.6 All flooring materials, including tile mastics, should be removed and treated as hazardous materials since many of these products contain asbestos.

1.7 All floors should be cleaned of all mastic and prepared for new flooring.

1.8 East Elevator Area: Prior to demolition activities, the Contractor shall construct plywood/polyethylene barriers on the face of the elevator. Three (3) holes shall be cut out of the barrier and "slinky" duct placed flush into the wood and fire rated polyethylene barriers and connect to a wood barrier placed in a window/breech. These ducts shall remain in place for the duration of the project and are used to control the piston effects of the elevators. The contractor shall ensure that the elevator is "locked out" to the floor under renovation. Warning signs shall be placed on the elevator sides of the barriers. Barrier shall remain until abatement activities all completed.

1.9 Warning signs and barrier tape shall be installed at each stairway and exterior entrance to the work area undergoing abatement activities.

2. Abatement, Re-insulation and Restoration Activities

This section identifies requirements, in addition to the Technical Specification, that the awarded Contractor must follow during the course of the abatement, re-insulation and restoration activities.

2.1 Contractor shall re-insulate all abated Thermal System Insulation (TSI) to satisfaction of Owner. See Technical Specifications for Mechanical Insulation.

2.2 Contractor shall reapply all abated Spray-on Fireproofing to satisfaction of Owner. See Cementitious Fireproofing.

2.3 The restrooms on all floors have been abated previously and are not included in this scope of work. The lobby area for elevators #7 and #8, west hallway, Clerk's office and conference room do not contain ACM and must be properly protected. See Floor Plan drawing for areas to be abated.

2.4 Restoration work includes new ceilings and flooring installations to satisfaction of the Owner.

2.5 All ACM and non-ACM designated dumpsters shall be rigid on all six (6) sides. The access door shall be locked when not in view of a worker. Dumpsters must be removed from the premises within two (2) days of project completion.

2.6 All spray-on and associated over spray and hardware shall be removed and disposed of as ACM. The Contractor is responsible for removing all spray-on and removing pipe and duct insulation containing ACM or impacted by over-spray, whether identified on the maps or not, and whether measurements are identified or not. All cavities exposed when the spray-on is removed shall be decontaminated. Any and all locations where decontamination is not possible shall be sealed with an U/L approved fire rated foam.

2.7 The Contractor shall remove and dispose of all duct insulation, tank insulation, pipe insulation and pipe fitting insulation as ACM. The Contractor shall "VIAC" any ACM TSI in walls, floors, chases or ceilings not accessible without damage to areas not identified for removal or demolition.

2.8 If a Vac Loader is used, the personnel operating the Vac Loader, it's placement and standard operating procedures must be approved by the Owner and Owner's Representative. Sound suppression shall be constructed to the satisfaction of the Owner. The Owner reserves the right to prohibit Vac Loader use at any time, for any reason.

2.9 The Contractor is responsible for all measurements. Measurements for bidding purposes as well as material procurement are the sole responsibility of the Contractor. Any maps or drawings included within this specification may not identify all materials listed in the Scope-of-Work. The Scope-of-Work may not identify all materials. The Contractor is responsible for abatement of all materials whether identified in the Scope-of-Work or not.

2.10 The Contractor shall be responsible for the security and safety of the building. Wood with cut outs for exhaust duct shall be placed in doors and windows and shall be vented to the immediate outdoor environment unless otherwise approved in writing by the Owner. The Contractor shall secure the wood in the doors and windows to ensure a secure work area.

2.11 The Contractor is responsible for any damage to surfaces, electrical and mechanical equipment. The Contractor shall be responsible for repairing (painting) surfaces: walls, ceilings, floors, windows, doors etc. The Contractor is responsible for all damage resulting from removal operations. All wires shall be properly adhered with cable ties to appropriate hangers.

2.12 The Workers shall wear PAPR's, at a minimum.

2.13 No bladder bags may be used.

2.14 The Contractor shall provide utility lighting for all work areas.

2.15 No salvaging, by the Contractor or their employees, of any item.

2.16 The Contractor shall spray-back with clean encapsulant upon acceptable visual clearance.

3. Sequence of Work

3.1 PHASE 1

3.1.1 Remove all spray-on insulation (deck, wall, I-beam) and overspray from the 2nd floor work area of City Hall.
3.1.2 Remove all ACM duct insulation, pipe insulation and pipe fitting insulation (including that covered by over-spray) from the work area.
3.1.3 Remove all ACM floor tiling and mastic from the work area.

3.2 PHASE 2

3.2.1 Re-insulate all abated spray-on fireproofing to satisfaction of the Owner.
3.2.2 Re-insulate all abated ducts, pipes and fittings to satisfaction of the Owner.

3.3 PHASE 3 **(OWNER WORK)**

3.3.1 The Owner will require a seven (7) calendar day period, immediately after completion of the Phase 2 work, to allow for the installation of new cabling and electrical infrastructure by the Owner.

3.4 PHASE 4

3.4.1 Contractor shall install new soffits as needed to accommodate the new ceilings. The Contractor shall also install new drywall on the vertical surfaces of the vaulted ceiling above the City Council meeting space.

3.4.2 Contractor shall install a new 2' x 2' lay-in grid ceiling, utilizing the specified ceiling products. The new ceiling should be at the same height as the removed ceiling and be able to support the new light fixtures (approx. 30 lb/light fixture) being supplied and installed by the Owner during Phase 4 of the work.

3.4.3 Contractor shall install new flooring which will consist of carpet tiles (Owner supplied) and resilient flooring per the flooring schedule provided with these specifications.

3.4.4 In areas where the in-floor conduit system access is located, the Contractor shall work with the Owner to verify which access points can be covered and which ones shall remain.

3.4.5 Contractor shall provide a final cleaning of all surfaces to the satisfaction of the Owner.

4. Meeting Requirements

4.1 All Contractors submitting bids will be required to attend the following meetings if requested by the Owner:

4.1.1 Pre-Start Scheduling Meeting: The awarded Contractor will be required to attend a pre-start meeting on-site with the Owner to schedule the logistics of the project in accordance with Section 2 of the Technical Specifications for Asbestos Abatement.

4.1.2 Progress Meetings: The awarded Contractor will be required to attend regular progress meeting every other week to discuss the project progress and any related issues.

5. Notification

5.1 All regulatory agencies including, but not limited to, the Environmental Protection Agency, the Michigan Department of Licensing and Regulatory Affairs, the Michigan Department of Public Health, and all other applicable Federal, State, County or City municipalities should be notified within 7 days of the signed contract and at least in a period allowable for the project to begin on the start date given below. The Contractor shall also be solely responsible for payment of all applicable fees and charges. Failure to notify in a timely manner will not excuse the awarded Contractor(s) from liquidated damages.

6. Project Time Schedule

6.1 The following time schedule must be adhered to by the awarded Contractor(s). This schedule will be made part of the contract documents and will be strictly enforced by the Owner. Any and all variances to this schedule must be cleared by the Owner prior to the commencement of the project(s). If the project(s) is/are not completed within the time period outlined below, the Owner may impose liquidated damages as described below.

6.2 The Contractor will commence and complete all projects according to the following calendar:

Project Start Date:	November 17, 2014
Project Completion:	January 2, 2015

6.3 Phase 3 work, which includes seven (7) calendar days of work by the Owner, is included in the schedule above.

6.4 Liquidated damages, as described below, shall be assessed after the Completion Dates.

6.5 All projects will be considered complete for schedule purposes when the project site has passed required clearance testing, the Contractor has completed removal of all supplies and equipment and the Contractor has returned the building to the Owner in a condition that satisfies the Owner and Owner's Representative.

7. Post Abatement PCM (Phase Contrast Microscopy) Clearance Testing

7.1 Post Abatement PCM Clearance Samples will be collected, analyzed and results verbally expressed to the Owner and to the Contractor within twenty-four (24) hours, with the time period beginning at the completion of the lock down activities. Delays in clearance testing, after the accepted final visual inspection and lock down, will be cause for a proportional extension of the project completion date.

7.2 It will be in the judgment of the Owner's Representative as to when Post Abatement PCM Clearance Samples will be collected. All Post Abatement PCM Clearance Samples will be collected on-site.

8. Post Abatement TEM (Transmission Electron Microscopy) Clearance Testing

8.1 Post Abatement TEM Clearance Samples will be collected, analyzed and results verbally expressed to the Owner and to the Contractor within forty-eight (48) hours, with the time period beginning at the completion of the lock down activities. Delays in clearance testing, after the accepted final visual inspection and lock down, will be cause for a proportional extension of the project completion date.

8.2 It will be in the judgment of the Owner's Representative as to when Post Abatement TEM Clearance Samples will be collected. The Owner will not authorize any turn-around time of less than twenty-four (24) hours. The Contractor may request turn-around times of less than twenty-four hours and incur any additional costs.

9. Site Availability

9.1 The Contractor shall be allowed to work evening and weekend hours with the approval of the City.

9.2 The Contractor shall only remove waste containers from the floor under abatement between the hours of 5:30 PM and 7:00 AM on normal business days.

TECHNICAL SPECIFICATIONS FOR ASBESTOS ABATEMENT

The following are technical specifications which shall be strictly enforced by the City of Ann Arbor, hereafter referred to as the "Owner" or "Building Owner". The Asbestos Abatement Contractor will hereinafter be referred to as the "Contractor" for the asbestos abatement project and the Air Monitors will hereinafter be referred to as the "Owner's Consultant" or "Owners Representative".

I. INITIAL REQUIREMENTS

1. General Terms

1.1 By submitting a bid, the Contractor acknowledges that he has investigated and satisfied himself as to:

1.1.1 The conditions affecting the work, including but not limited to the physical conditions of the site which may bear upon site access, handling and storage of tools and materials, access to water, electricity or other utilities that otherwise may affect performance of required activities.

1.1.2 The character and quantity of all surface and sub-surface material or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, including exploratory work done by the Building Owner or a designated Consultant, as well as information presented in drawings and specifications included with this specification. Any failure by the Contractor to acquaint himself with available information will not relieve him of the responsibility of determining properly the difficulty, safety concerns or cost of successfully performing the work. The Building Owner and/or the Owner's Consultant is not responsible for any conclusions or interpretations made by the Contractor on the basis of the information made available by the Building Owner and/or the Owner's Consultant.

1.1.3 The methods and procedures detailed within the technical specifications of this bid package are merely illustrative of the procedures to be utilized on the asbestos abatement projects for the Owner. Other procedures, which are the equivalent of those described, are encouraged at the option of the Contractor but are always subject to the Owner and/or the Owner's Consultant approval.

1.2 The Contractor shall furnish all labor, materials, services, insurance, and equipment necessary to perform the asbestos abatement activities contemplated by this specification.

1.3 Additional work in the form of change orders, written or verbal agreements must also be completed in accordance with these Technical Specifications for Asbestos Abatement as well as all other sections of this specification document.

2. Pre-Start Meeting

2.1 Prior to commencement of work, the Contractor shall meet with the Owner and Owner's Consultant to present and review the items listed below. At that time, the Contractor shall designate at least one "competent" (as described by OSHA 1926.1101 {o}) individual who shall be on-site throughout the project with full authority to act on the Contractor's behalf and this person shall attend the pre-start job meeting. This meeting is arranged to discuss and set procedures to be followed throughout the performance of the contract. At this meeting and to be included in the logbook, the Contractor shall provide:

- 2.1.1 Proof of Contractor licensing to conduct asbestos abatement activities in the State of Michigan in accordance with Act 135 P.A. 1986, as amended, (Asbestos Abatement Licensing Act) and any subsequent State of Michigan Acts.
- 2.1.2 A list of all employees who will participate in the project, including delineation of experience and assigned responsibilities (including subcontractors' employees who may enter the work area).
- 2.1.3 Proof that the "competent person" to be responsible for the execution of this project has had training in accordance with 29 CFR, 1926.1101 and the Michigan Department of Consumer & Industry Services. THIS PERSON SHALL BE ON SITE AT ALL TIMES.
- 2.1.4 Proof that employees who will work on this project have had a minimum of twenty-four (24) hours of training in accordance with 40 CFR, Part 763, Subpart E.
- 2.1.5 Proof that employees who work on this project have had proper medical screening as required by OSHA 29 CFR, Part 1926.1101 (M) (1) (2) (3) (4) and (N) (3) and 29 CFR 1910.20.
- 2.1.6 Proof that employees who work on this project have had proper respirator fit testing for all personnel who wear negative pressure respirators (when allowed).
- 2.1.7 Copies of all worker's Michigan State Accreditation "Cards" must be provided to the Owner's Consultant prior to being allowed within the project area. For any employee(s) who have approval but do not yet have cards in their possession; the Contractor must provide a signed statement (on company letterhead) stating that state approval has been given to that/those employee(s). This statement must include the name of the state employee who granted verbal approval. In addition to this letter, the Contractor must provide a copy of the employee's training certificate, appropriate fit test(s) and doctor's written opinion.
- 2.1.8 A detailed written explanation of the following items:
  - 2.1.8.1 Preparation of the work area, including all engineering controls to be utilized.
  - 2.1.8.2 Decontamination procedure for personnel, work area and equipment.
  - 2.1.8.3 Abatement methods and procedures to be utilized.
  - 2.1.8.4 Procedures for handling and disposing of waste materials including the name and address of the landfill

to be used.

2.1.8.5 Emergency Planning Procedures (see Section 8.0 of these specifications).

2.1.8.6 A sequence of work and a performance schedule. The items discussed in this section must be presented at the Pre-Start Meeting and a copy must also be kept in a log book which will be in view at the job site at all times. The items listed in the "Regulations" section of this specification must also be included in this log book. Proof of Contractor Licensing and Emergency Procedures as outlined above must also be posted in view near the decontamination chamber entrance as well as the notification addressed in Item 5 and the sign-in sheet addressed in Item 10 of these specifications.

2.2 At this meeting the Contractor and Owner shall agree on the existing conditions of the work area and the areas immediately surrounding this area.

3. Log Book/Regulations

3.1 The Contractor shall have the following items in view at the job site at all times. These items must be kept in a log book (three (3) ring binder) as described in the "Pre-Start Meeting" section and include all items stated in 2.1.

3.1.1 OSHA Regulation 29 CFR, Part 1926.1101.

3.1.2 Environmental Protection Agency 40 CFR, Part 61 Subpart M: (National Emission Standard for Hazardous Air Pollutants).

3.1.3 Environmental Protection Agency 40 CFR, Part 763.

3.1.4 A complete set of these specifications.

3.1.5 Appropriate MSDS's.

3.2 Whenever during the course of this contract the Contractor, his subcontractor or his employees encounter asbestos, the Contractor shall handle, remove, and dispose of the asbestos strictly in accordance with the rules, guidelines, and regulations specified by EP A, OSHA, the Michigan Department of Licensing and Regulatory Affairs, the Department of Environmental Health, and all other applicable regulatory agencies. The most recent edition or revision of any relevant regulation, standard, document or code shall be controlling. Where conflict among the requirements or with these specifications exists, the most stringent requirements shall be utilized.

4. Submittals to Owner's Representative/Consultant

4.1 The following shall be submitted for all employees who will participate in the project, to the Owner's Representative before project begins.

4.1.1 Copy of Employee Training Certificates.

4.1.2 Copy of MDLEG accreditation cards or letter by Contractor with verbal acceptance from MDPH (see 2.1.7).
4.1.3 Copy of dated fit test.
4.1.4 Copy of doctors written opinion.

5. Notification Procedures

5.1 The Contractor will make all necessary notifications to the appropriate federal, state and local agencies.

5.2 The National Emission Standards for Hazardous Air Pollutants (NESHAP), Asbestos regulation 40 CFR 61, Subpart M, requires that in a facility being renovated, if the combined amount of regulated asbestos containing materials being removed is at least 80 linear meters (260 linear feet) on pipes or at least 15 square meters (160 square feet) on other facility components, or is at least I cubic meter (35 cubic feet) off of facility components where the length or area could not be measured previously, a ten (10) working day notification must be submitted to the EP A and the Michigan Department of Environmental Quality. All the requirements of 40 CFR 61.145 apply, including but not limited to the following:

5.2.1 An indication of whether the notice is an original or a revised notification.
5.2.2 Name, address, and telephone number of the facility Owner and operator and the Owner or operator of the asbestos removal firm.
5.2.3 Type of operation: demolition or renovation.
5.2.4 Facility description including at least the following:
5.2.4.1 Size (square meters (or square feet) and number of floors).
5.2.4.2 Age.
5.2.4.3 Present and prior uses.
5.2.5 Procedure, including analytical methods, employed to detect the presence of asbestos-containing material.
5.2.6 Estimate of the approximate amount of regulated asbestos-containing material to strip using the appropriate units, either linear meters (linear feet) for pipes, square meters (square feet) for other facility components, or cubic meters (cubic feet), if the asbestos-containing material will be stripped from the facility components without being measured.
5.2.7 Estimate of the amount of Category I and Category II non-friable asbestos-containing materials in the affected part of the facility that will not be removed before demolition.
5.2.8 Location and address, including building number or name and floor or room number, if appropriate, street address, city , county, and state of the facility being demolished or renovated.
5.2.9 Scheduled starting and completion dates of asbestos removal work (or any other activity, such as site preparation that would break up, dislodge, or similarly disturb asbestos material) in a demolition (with the exception of government ordered demolitions) or renovation, and scheduled starting and completion dates of the demolition or renovation.

5.2.10 The beginning and ending dates of the report period for planned renovation operations involving individual non-scheduled operations.

5.2.11 Description of planned demolition or renovation work including the demolition and renovation techniques to be used and description of the affected facility components.

5.2.12 Description of work practices and engineering controls to be used to comply with the requirements of this standard.

5.2.13 Name and location of the waste disposal site where the asbestos-containing waste material will be deposited.

5.2.14 Certification that only persons trained as required in paragraph (C) (8) will supervise the stripping and removal of asbestos-containing material (effective one (1) year after promulgation).

5.2.15 Description of procedures for handling the finding of unexpected regulated asbestos containing material or Category II non-friable asbestos-containing material that has been crumbled, pulverized, or reduced to powder.

5.2.16 For government ordered demolitions, include the name, title, and authority of the government representative ordering the demolition, the date the order was issued, and the date the demolition was ordered to begin by the State or local government representative. Attach a copy of the order to the notification.

5.2.17 For emergency renovations, include the date and hour the emergency occurred, a description of the event and an explanation of how the event has caused unsafe conditions or would cause equipment damage or unreasonable financial burden.

5.2.18 Name, address, and telephone number of the waste transporter.

5.3 Section 220(1)(c) of Act 135 of the Public Acts of1986, as amended, requires an asbestos abatement Contractor provide the Michigan Department of Licensing and Regulatory Affairs a minimum ten (10) day prior notification which includes items under 5.2 (above), in accordance with their requirements for any project that exceeds ten (10) linear feet or 15 square feet or both of friable asbestos-containing material.

5.4 All other agency notifications must be made on a timely basis as deemed necessary by those agencies.

5.5 Payments of all applicable regulatory required fees and/or charges are the sole responsibility of the Contractor.

II. ABATEMENT REQUIREMENTS

6. Worker's Dress and Safety Equipment

6.1 Worker's clothing shall be provided by the Contractor as required by current OSHA regulation. Rips and tears in the coveralls shall be repaired, or else the coveralls shall be replaced.

6.2 The Contractor shall provide protective clothing for the Owner's Consultant, and inspection personnel.

6.3 Worker's clothing shall consist of disposable full body coveralls (coveralls should be of Tyvek material - disposable paper), underwear, head covers, gloves, and boots. The Contractor shall supply whatever safety gear is necessary to protect those people authorized to enter the work site, including if necessary, hard hats and eye protection. OSHA approved footwear is mandatory while at the project site (inside and outside of the enclosure). No street clothing shall be worn under coveralls.

6.4 The Contractor shall have an appropriately rated fire extinguisher in the dirty room and clean room of each enclosure.

6.5 The Contractor shall adhere to all OSHA and other regulatory agency requirements regarding the safety of the employees, including but not limited to:

6.5.1 Fire Safety
6.5.2 Ladders
6.5.3 Scaffolding
6.5.4 Confined Spaces

7. Respiratory Protection

7. I Respirator protection for workers shall be provided by the Contractor as required by current OSHA regulation.

7.2 Respiratory protection consisting of powered air purifying respirators (P.A.P.R.) with full-face piece and HEPA filters will be provided and used by all asbestos abatement workers. Half-face cartridge respirators may be used for setting up, tearing down, Pre-cleaning and post cleaning work area(s) with the approval and/or at the discretion of the Owner's representative. Workers will always wear a respirator when in the work area. While wearing the respirator, workers will not pull the respirator away from his/her face to talk, smoke, eat, or drink. No workers will be permitted to wear a half-face respirator unless clean shaven. If half-face cartridge respirators are used as described above, then a qualitative fit test for each employee engaged in this work must be completed. These fit tests must be completed in accordance with OSHA regulations.

7.3 Combination cartridges (Asbestos and Organic vapor) are required during the removal of mastic materials using chemical mastic removers.

7.4 An adequate supply of cartridges and respirators must be on-site and available for workers (regardless of respirator type).

8. Emergency Planning

8.1 Emergency planning shall be developed prior to abatement initiation and agreed to by the Contractor and the Owner or Owner's Representative. All plans must be detailed in writing and posted at the job site (in view near the decontamination chamber entrance).

8.2 Emergency planning shall include written procedures for the following emergencies:

8.2.1 The Contractor must explain his contingency plan for the possibility of the negative air filtration devices blowing a fuse, tripping a circuit breaker, or losing power.
8.2.2 The Contractor must explain his contingency plan for the possibility that a disposal bag may break or leak.
8.2.3 The Contractor must explain his contingency plan for the possibility of an injury.
8.2.4 For non-life-threatening situations - employees injured or otherwise incapacitated shall decontaminate following normal procedures with assistance from fellow workers if necessary, before exiting the work place to obtain proper medical treatment
8.2.5 For life-threatening injury or illness, worker decontamination shall take least priority after measures to stabilize the injured worker, remove him/her from the work place and secure proper medical treatment.
8.2.6 The Contractor must detail emergency evacuation routes in case of fire, explosion, or toxic atmosphere, etc.

8.3 The Contractor shall take all necessary precautions and actions to protect his employees, subcontractors, Owner's Representatives, Owner's Consultants, government inspectors, general public, and the building and structure from exposure to asbestos.

9. Preparation of Work Area for Asbestos Abatement

9.1 The Owner shall attempt to furnish utility services for the Contractor's use, including electrical outlets (25 ampere) and water taps in or adjacent to the work area in sufficient quantities and located such that the Contractor can use them for equipment and abatement/decontamination practices. However, should such utility access not be available, the Contractor is solely responsible for the provision of the same. In the event of power failure (regardless of fault), the Contractor is responsible for continuing work using adequate generator power.

9.2 Danger signs will be posted at a distance sufficiently far enough from the asbestos abatement work area to permit an employee to read the sign and take necessary protective measures to avoid exposure. Signs shall be in accordance with EP A and OSHA regulations. All possible entrances to the work area shall be posted. Additional signs will be placed at areas designated by the Owner's Consultant.

9.3 The building personnel shall attempt to shut down and lock out all heating, cooling, and air conditioning system components that are in, supply, or pass through the work areas. Should building personnel be unavailable or unable to so do, it is the sole responsibility of the Contractor to do so. The Contractor will seal all intake and exhaust vents in the work area with tape and 6-mil polyethylene, as well as any seams in system components that pass through the work area. All affected heating, ventilation and air

conditioning system filters will be removed and placed in 6-mil polyethylene bags for disposal as asbestos waste.

9.4 The Contractor may be required to Pre-clean all movable objects within the work area using a HEPA filtered vacuum and/or wet cleaning methods.· Pre-cleaning will be conducted by the Contractor as deemed necessary by the Owner or the Owner's Consultant. After cleaning, these objects shall be removed from the work area by the Contractor and carefully stored in an uncontaminated location as designated by the Owner's Consultant. (Carpeting, drapes, clothing, furniture, and other fabric items contaminated with asbestos may be required to be disposed of as asbestos contaminated waste.)

9.5 The Contractor may be required to Pre-clean all fixed objects in the work area using HEPA filtered vacuums and/or wet-cleaning methods. Pre-cleaning will be conducted by the Contractor as deemed necessary by the Owner or the Owner's Consultant. The extent of the Pre-cleaning will be determined by, but not limited to the following factors: the particular application of the asbestos-containing material, its present condition, friability, asbestos content, visible debris and the type of surface to which the material is applied.

9.6 Where doors or other such building fixtures are removed by the Contractor prior to abatement activities, the Contractor is responsible for replacing doors and/or fixtures upon completion of abatement. Each door and/or fixture shall be sufficiently marked or otherwise identified by the Contractor to insure replacement in the proper location.

9.7 The Contractor shall seal all windows, doorways, elevator openings, corridor entrances, drains, ducts, grills, grates, diffusers, skylights and all other openings between the work area and the areas outside the work area with, at a minimum, 6-mil polyethylene sheeting.

9.8 Walls will be covered with at least one layer of 6-mil polyethylene sheeting. Walls that are non-porous and will not be damaged by water, surfactant, or encapsulation do not necessarily need protection. They can be decontaminated using HEPA vacuums and wet cleaning techniques. The Owner or the Owner's Consultant will advise the method deemed most appropriate and the Contractor shall comply with the method chosen.

9.9 Floors shall be covered with at least three layers of 6-mil polyethylene sheeting.

9.10 Non-waterproof tape may not be used for attaching polyethylene sheeting or for sealing polyethylene leaks. High quality duct tape or its equivalent shall be used for this purpose.

9.11 The Owner or the Owner's Consultant must approve the decontamination chamber location, Contractor parking, dumpster location and entrances that the Contractor will use for the movement of supplies and personnel.

9.12 Equipment storage, bathroom usage designation, foreman's office and designated break areas (if available) will be determined by the Owner or the Owner's Consultant. Only project areas and designated areas are to be used.

9.13 No asbestos abatement shall begin until the Owner's Consultant has inspected and approved the enclosure built around the work area.

10. Decontamination

10.1 The Contractor will construct decontamination facilities in a pre-designated area which will house the clean room, shower room, dirty room, and, when feasible, an equipment room. This facility will be, at minimum, a three-chambered with an entrance airlock with shower facilities in its central chamber. The dimensions of these chambers will be adequate for the number of men needed for the project. At least two layers of 6-mil polyethylene will be placed on the floor of the entire decontamination chamber, to prevent leakage of water from the showers. The walls, floor, and ceiling covering of the airlock construction will be seamed to each other in a fashion making them air and water tight. One end of this construction will exit to the clean area outside the containment barrier walls. The other end of this construction will exit inside or at the containment barrier walls. Except for these doors, all three chambers will be partitioned from each other with air and water tight flaps made of 6-mil polyethylene. Four (4) flapped doors will be constructed with two (2) layers of 6-mil polyethylene. One door will be at the entrance of the clean room, one door at the entrance to the shower, one door at the entrance to the dirty room, and the last door at the entrance to the work area. Both layers will be attached to the side of the door which faces toward the work area. The first layer of polyethylene will be attached at the top, bottom, and sides of the door opening. It will be slit down the middle. The second layer of polyethylene will be attached only at the top of the door on the dirty side of the door opening. It will be wider than the slit made in the first layer and will hang like a flap. When air is drawn from the clean side of the airlock into the work area it will cause the door flaps to lift. It air attempts to move from the work area end of the airlock toward the clean end or outside of the enclosure, it will force the flaps shut, closing the slit in the first polyethylene layer and thus stopping the air flow. All four (4) door openings or flaps will be constructed to allow clean air into the enclosure, but stopping air from exiting the enclosure. The central chamber will contain shower(s). Each shower stall will sit in a pan with at least six-inch sides. Suitable hoses will be used to supply hot and cold water to the showers. A sump pump or other suitable and safe device will be used to filter and dispose of the shower waste water through a special HEPA filter. No water may leave the work area without undergoing HEPA filtration or being treated as asbestos waste. Black polyethylene sheeting may be used for privacy on the decontamination facility.

10.2 The Contractor may construct a two-chambered decontamination airlock to serve as a debris port. All asbestos waste will be moved out through this port or through the decontamination unit. The chamber will be

constructed in the same manner as the main decontamination airlock, but excluding the shower facility. As each bag is filled, it will be set into the first room for temporary storage. Three workers will be needed to complete the waste decontamination process. A worker in the first room will wash and hand the bag to a worker in the second room where he/she will then double-bag the material. The second worker will then hand the double-bagged material to a third worker who loads the material on the transport vehicle (airlocks must exist between each room, as in the main decontamination facility). If a debris port is not possible, all precautions should be taken when hauling waste through the main decontamination facility, where all bags will go through the decontamination process. If a separate decontamination facility is constructed it shall be sealed while not in use.

10.3 All workers, without exception, will change street clothes in designated areas (clean room) prior to the start of each day's work. Lockers or acceptable substitutes will be provided by the Contractor for street and work clothes. After workers are properly dressed in protective gear, they will walk through the shower and dirty room into the work area.

10.4 At the end of the work shift, and anytime the worker leaves the work area, he/she will decontaminate by removing all contaminated work clothes in the dirty room, but leaving his/her respirator on. He/she will then proceed to the showers and properly wash. Respirators will be worn while showering and remain on until the respirator is clean of asbestos. The cartridges will then be removed and disposed of as asbestos waste and the respirator stored in the clean room. Workers will shower before breaks, lunch and at the end of each day's work. Hot water, towels, soap and hygienic conditions shall be provided by the Contractor.

10.5 Adequate toilet facilities may be located outside of the work area and decontamination for this purpose will be employed. Where such facilities do not exist, the Contractor will provide portable service.

10.6 No smoking, eating or drinking is to take place in the work area. Prior to smoking, eating, drinking or using toilet facilities, workers will fully decontaminate by showering. A new coverall will then be used to re-enter the work area.

10.7 Procedures developed for evacuation of injured workers (see 6.3, Emergency Planning) will be used. Aid for a seriously injured worker will not be delayed for reasons of decontamination.

10.8 Worker's footwear will remain inside the work area until the completion of the job.

10.9 All waste water must be passed through a HEPA filter or collected in an air tight container and disposed of as asbestos waste.

10.10 All Contractor's tools and supplies, including large items such as ladders and scaffolding must be properly decontaminated when removing them from the project area.

11. Methods of Asbestos Abatement

NOTE: The use of supplies, equipment, tools, etc., owned, rented or otherwise in the possession of the Building Owner is strictly prohibited.

11.1 The asbestos material will be sprayed with either removal encapsulant or "amended water" (which contains an additive to enhance penetration). A fine spray of either solution will be applied to prevent fiber disturbance preceding the removal of the asbestos material. The asbestos will be sufficiently saturated to prevent emission of airborne fibers in excess of the exposure limits prescribed in the OSHA standards referenced in these specifications. The Contractor shall not, however, allow excessive water to accumulate in the work area. If removal encapsulant water is not used, surrounding areas will be periodically sprayed and kept wet to facilitate removal with minimum fiber release. A high humidity will be maintained in the work area to assist in fiber settling. If at any time the Owner's Consultant determines the material is not kept adequately wet, misters and/or sprinklers will be mandatory.

11.2 Removal of asbestos material will be done in manageable sections with two-person teams (if needed). Material will be removed as intact sections or components whenever possible and carefully lowered to the floor.

11.3 The waste material will be packed in labeled 6-mil polyethylene bags (held within 55 gallon drums with the required EPA & OSHA labels where appropriate) prior to starting the next section to prevent the material from drying. Double bagging will always be used. All waste bags shall have a sufficient amount of amended water added to each bag. Bags shall not be over-filled and will be securely taped or sealed at the top to prevent accidental opening or leakage during removal, storage and transport. All bags and/or drums shall have all appropriate warnings and labels attached to them.

11.4 Large components removed intact will be wrapped in two layers of 6-mil polyethylene sheeting secured with tape properly labeled for transport to the landfill. Such packaging shall have all appropriate warnings and labels attached to them.

11.5 When removal of building materials (electrical, light, duct work, etc.) is necessary, the Contractor shall develop drawings indicating existing materials and their exact locations.

11.6 Personnel knowledgeable and experienced in electrical work must be used when installing or making connections to any electrical components within the facility, as well as when removing and/or replacing lights.

11.7 All ceiling demolition, including but not limited to wires, hangers, steel bands, nails, screws, metal lath, tin sheeting, and other objects may be required to be treated as asbestos waste. These materials have sharp edged components that will tear the polyethylene bags and sheeting, thus, this waste must be placed into fiberglass or fiberboard drums for disposal and labeled appropriately.

11.8 No bags shall be thrown or dropped at any time.

11.9 All containerized asbestos waste that is stored on-site (if allowed) shall be properly labeled and placed in a locked or secured location until ready for final disposal. Labels shall be of sufficient size and contrast to be readily visible and legible. The sign shall read:

"Danger Contains Asbestos Fibers Avoid Creating Dust Cancer and Lung Disease Hazard"

11.10 All asbestos abatement projects will be completed with the use of HEPA air filtration devices. Each unit must have three filters, including a HEPA filter capable of removing minute asbestos fibers. Each unit has ducts that must be exhausted to the outside air. Inlet and outlet ports of the air filtration devices must be covered with tape and 4-inil polyethylene sheeting when not in use. HEPA air filtration devices will be set up so that the air in the enclosure is drawn away from the abatement worker. Removal and cleaning operations will always move towards the air filtration devices. HEPA air filtration devices will be run until the completion of the project. A sufficient number of “backup” HEPA air filtration devices shall remain on the project site until the completion of the project.

11.10.1 The Contractor will provide and maintain a pressure differential strip gauge. It will be activated prior to removal of any building material and continue operating until the final clearance results have been determined. Placement of the differential strip gauge is subject to the approval of the Owner's Consultant. The Owner's Consultant may, at their discretion, utilize additional pressure differential strip gauges or other devices to measure the pressure differential.

11.10.2 A minimum reading of 0.020 inches of water on a differential pressure gauge shall be maintained at all parts of the enclosure.

11.10.3 Sufficient negative pressure will be used in the enclosure to evacuate the air once every 15 minutes (minimum).

11.10.4 Smoke tubes shall be used daily by the Contractor to test for leaks and breeches in the containment.

11.11 All air filtration devices must be ducted to the outside of the building from a position that is securable. Flexible duct will be used and placed at a location approved by the Owner's Representative.

11.12 All gross amounts of asbestos debris shall be cleaned up, bagged, and sealed at the end of each working day.

11.13 The Contractor shall transport materials to the ground via leak-tight chutes or such other containers if the material is being removed or stripped more than 50 feet above ground level and not removed as units or in sections.

11.14 A thick encapsulant such as "VIAC" shall be applied to any exposed pipe insulation ends leading away from the enclosure area, regardless of material make-up.

11.15 Only vacuums and air filtration devices with "HEPA" filters will be allowed. No "shop-vacs", homemade hybrid vacuums or air filtration devices will be allowed on site.

12. Non-Friable Material

12.1 Under certain circumstances, asbestos-containing materials may be removed in a non-friable state. The circumstances which will allow such removal will be determined by and at the sole discretion of the Owner and/or the Owner's Representative.

12.2 Non-friable asbestos-containing floor tile may be removed utilizing infra-red heat machines. The following procedures shall be strictly adhered to.

12.2.1 Critical barriers will be established over all vents, doors or other openings between the work area and other areas of the facility. These barriers shall be constructed so as to prevent any objectionable smoke or odor from penetrating outside the work area.

12.2.2 The removal of the asbestos-containing floor tile will be conducted with the use of HEPA air filtration devices. Each unit must have three filters including a HEPA filter. Each unit shall be exhausted to the outside air. Inlet and outlet ducts of the air filtration devices must be covered with tape and at least 4-mil polyethylene when not in use. The HEPA air filtration devices will be activated prior to any removal operations being commenced and will remain running 24 hours per day until the completion of the project.

12.2.3 All air filtration devices must be ducted to the outside of the building. The area where the duct leaves the building must be made so as to be secure and protected from vandalism and the elements. Flexible ductwork will be used and shall be placed at locations approved by the Owner and/or the Owner's Representative.

12.2.4 The Contractor has sole responsibility to arrange for the arrival and placement of the infrared heat machine(s) within the facility. Additionally, the Contractor shall have at least one individual experienced in electrical work who can make whatever electrical connections to power the machines. It is <u>not</u> the Owner's responsibility to make any electrical connections. Any involvement by the Owner's personnel will result in back charges to the Contractor.

12.2.5 The Contractor is responsible for the provision of charged and suitably rated fire extinguishers within the work area(s). The number necessary shall be determined in part by the size of the work area and the number of infra-red heat machines in use. The Owner and/or the Owner's Representative may require additional extinguishers at their sole discretion.

12.2.6 The Contractor shall take special care to ensure that the infra-red heat machine(s) are not left on one area of floor tile so as to bum the floor tile and cause excessive odor and smoke.

12.2.7 The floor tile will be carefully scraped up off the underlying flooring utilizing such methods as necessary. Special care should be taken so as to be sure that the floor tile is removed in whole pieces. Chipping the floor tile is strictly forbidden. The floor tile must remain in a non-friable state at all times.

12.2.8 As the floor tile is removed, the Contractor's personnel shall carefully place the tile into fiberboard barrels. Other types of materials for the barrels will be considered at the discretion of the Owner's Representative. However, barrels shall be required to hold the tile being removed. Exceptions to this policy will not be considered or allowed

12.2.9 Each barrel shall be labeled and disposed of in strict compliance with all applicable requirements as set forth in Section 16 et. seq. of these Technical Specifications. The Owner and/or the Owner's Representative shall make the decision in its/their sole discretion whether a requirement is applicable.

12.3 Non-friable asbestos-containing transite material may be removed at times utilizing, at a minimum, the following procedures. The circumstances under which such removal will be allowed and exactly which procedures shall be utilized shall be determined by and at the sole discretion of the Owner and/or the Owner's Representative.

12.3.1 The transite must remain in a non-friable state throughout the removal process. special care must be utilized when removing the material from either the underlying substrate or from whatever type of frame is holding the material.

12.3.2 The material should be wetted thoroughly. Special care should be taken with the edges and/or other protrusions through the material (i.e. screw holes, nail holes, etc.) as soon as they are exposed. The wetting process needs to be repeated as necessary to maintain the wetted condition and to prevent fibers from being released.

12.3.3 Polyethylene drop cloths should be utilized whenever possible to enable material to be more easily cleaned.

12.3.4 Any items removed from the transite material shall be disposed of as asbestos waste. Such items would include but not be limited to screws, nails and other such fasteners

12.3.5 The material shall be wrapped in 6-mil plastic and securely sealed with waterproofed duct tape. This wrapped "package" shall then be wrapped again and securely sealed.

12.3.6 Certain transite materials may be more economically wrapped by utilizing 6-mil polyethylene asbestos disposal bags. In such instances, the material shall be double-bagged with each bag being sealed individually with high quality duct tape.

12.3.7 Any polyethylene drop cloths or other plastic shall be wrapped and sealed as indicated in Section 12.3.6 of these Technical Specifications.

12.3.8 Should the removal or the transite material be conducted within the confines of a facility, critical barriers may have to be established over all vents, doors or other openings between the work area and other areas of the facility.

12.3.9 The Contractor shall ensure that its employees strictly comply with Sections 6, 7, and 8 of these Technical Specifications regarding worker protection, respiratory protection, and emergency planning. Should additional steps need to be taken so as to prevent the exposure to asbestos fibers for the facility, facility occupants or other workers at the site, the Contractor shall promptly comply with the requests of the Owner and/or the Owner's Representative. The decision to require any additional measures to be taken will be at the sole discretion of the Owner and/or the Owner's Representative.

12.3.10 Each "package", bag or other container with transite material within shall be labeled and disposed of in strict compliance with all applicable requirements as set forth in Section 16 et. seq. of these Technical Specifications. The Owner and/or the Owner's Representative shall make the decision in its/theirs sole discretion whether a particular requirement is applicable.

12.3.11 Any areas that may be exposed between the outside and inside of the facility or any areas within the facility shall be sealed by plywood or such other material so as to secure the building both from the elements and vandalism. The Contractor shall be responsible for the security of the area where the work was performed or is being performed.

13. Glove Bag Technique

13.1 A solution of amended water shall be prepared (according to manufacturer's instructions) for the air-less sprayer.

13.2 The glove bag should be fitted to the size of the pipe by cutting the top and the top sides of the glove bag. A polyethylene drop cloth shall be placed under the glove bag work area.

13.3 The following tools and supplies at a minimum shall be placed inside the glove bag in the tool pouch: utility knife, wire brush, rags, container with thick encapsulate (such as Childer's VIAC). Additional items or tools shall be placed inside dependent on the particular job.

13.4 The glove bag is then attached to the pipe by folding the open edges together (making a top seam above the pipe) and securely sealing them with duct tape, as well as sealing both cut sides around the pipe.

13.5 The bottom seam of the glove bag may be sealed with duct tape to prevent any leakage from a defective bag.

13.6 Insert the wand of the airless sprayer through the glove bag by making a small hole in a location that allows the wand to move freely in the bag, and tape the polyethylene tightly. (There may be a prefabricated hole, especially for the sprayer.)

13.7 Insert the nozzle of the HEPA vacuum through the appropriate opening (prefabricated hole) and tape the polyethylene tightly around the nozzle. The vacuum (turned on), in association with a flap, will be used throughout the duration of the glove bag removal project in order to establish proper negative pressure within the glove bag.

13.8 Place your arms into the glove bag appendages and thoroughly wet the pipe insulation.

13.9 Using the knife, cut through the asbestos at each end of the section to be removed. The section to be removed is then slit from end to end (keeping material wet while cutting).

13.1 0 The insulation is then lifted off the pipe and lowered carefully to the bottom of the glove bag.

13.11 Using the wire brush, towels and water, the pipe shall be thoroughly cleaned.

13.12 Wet the entire inside of the bag with specific attention to the polyethylene around the pipe and the arms and sockets.

13.13 Following a visual by the Owner's Consultant, the exposed end of the insulation remaining on the pipe shall be encapsulated, as well as the bare pipe.

13.14 Put all tools and supplies into wet cleaned arm socket by pulling socket inside out.

13.15 Tape the flap and collapse the bag by sucking all of the air out of the bag using the HEPA vacuum.

13 .16 Tape the arm close to the tools (tape it in two locations with a one-inch space between the taped spots). Cut between the taped spots and put the enclosed tools into a bucket of water.

13.17 Remove the sprayer wand and seal the opening.

13.18 Remove the vacuum nozzle and seal the opening.

13.19 The glove bag should be squeezed tightly (as close to the top as possible) twisted, and sealed with duct tape.

13.20 Cut the bag off the pipe above the taped area and put the glove bag and drop cloth into an asbestos disposal bag, as well as the remaining portion of the bag on the pipe.

13.21 Clean the tools in the bucket of water and dispose of the water and glove bag remains in the asbestos disposal bag. The clean tools should be placed inside a polyethylene bag for future use.

UNACCEPTABLE PRACTICE USING THE GLOVE BAG TECHNIQUE

13.22 Glove bags shall not be slid down the length of the pipe. Only insulation within the dimensions of the glove bag may be removed.

13.23 The Owner's Consultant shall determine when the glove bag technique to be used is acceptable.

13.24 Glove bag removal shall be a two-person removal process. Single-person glove bag removal is prohibited.

14. Post Abatement Clean-Up

14.1 After completion of all removal and stripping, all surfaces within the work area will be wire-brushed and/or wet-wiped to remove all visible residue.

14.2 All visible accumulations of asbestos-containing materials and asbestos-contaminated debris will be removed and containerized. Durable plastic shovels must be used in place of metal shovels in order to minimize damage to floor sheeting.

14.3 Tools will be decontaminated by removing any gross amounts of asbestos from them in the work area. Following this, they will be wiped off in the dirty room and then sprayed down with water in the shower area. All hand tools will then be sealed in plastic bags. Workers will wear protective equipment throughout this process. (Where space allows, a separate equipment room will be built inside the enclosure. This will eliminate the accumulation of gross asbestos on tools and equipment and will facilitate decontamination of these items.) No tools or equipment will be allowed to leave the work area without being decontaminated.

14.4 Following the cleanup of visible accumulations, the polyethylene sheeting will be removed from the walls and ceiling, and the interior layer will be removed from floors. At this point any asbestos that has fallen behind the polyethylene will be cleaned up. However, all barriers to doors, windows, and other critical barriers to clean areas will be left in place until clearance testing and analytical results are completed and communicated to the contractor.

14.5 Following clean up of visible accumulations of asbestos waste, the entire area will be wet-wiped. During setting/drying periods no entry, activity, or ventilation into the work area will be allowed. However, the HEPA air

filtration devices will continue to operate.

14.6 All removed polyethylene, tape, cleaning material, and contaminated clothing will be placed in 6-mil polyethylene bags or polyethylene lined drums, sealed and labeled as described above for disposal as asbestos waste material.

14.7 Only clear drying encapsulants and amended solutions may be used.

14.8 Prior to final clearance sampling, all items will be removed from the dirty room.

15. Acceptance Criteria for Area Re-Occupancy

15.1 The Contractor will clean all work site surfaces in a proper manner with appropriate equipment in accordance with Item 13 of these specifications.

15.2 After completion of the cleaning operations, the following activities shall be performed:

15.2.1 A complete visual inspection to insure dust free conditions. The Contractor shall tour and inspect the entire work area, including but not limited to: ventilation openings, doorways, windows, and other openings; he/she shall look for debris from any sources, residue on surfaces, or any other matter. If any debris or residue is found, repeat the final cleaning until visual inspection is passed. It shall be the right of the Owner's Consultant(s) to accompany the Contractor during the inspection and determine if additional cleaning is necessary.

15.2.2 A clear drying encapsulant will be used to seal all surfaces of the work area. Non-clear drying encapsulants can only be used upon approval by the Owner and/or Owner's Consultant.

15.3 Air samples will be collected following completion of all cleaning operations as specified in 14.1 - 14.7, following encapsulation as specified in 15.2.2, and after the work area is completely dry.

15.4 Post-abatement air samples collected from an area in which less than or equal to 160 square feet, or 260 linear feet of ACBM have been removed, enclosed or encapsulated, may be analyzed using Phase Contrast Microscopy (PCM). If more than 160 square feet, or 260 linear feet of ACBM are removed, or encapsulated the post-abatement air samples collected must be analyzed by Transmission Electron Microscopy (TEM).

15.4.1 Transmission Electron Microscopy (TEM) Clearance
When the work site has become completely dry, the Owner's Consultant shall collect at least ten post-abatement air samples according to 40 CFR, Part 763 (AHERA Regulations). At least five samples shall be taken in the abatement site; and five samples shall be taken at locations representative of air entering the abatement site. A minimum of 1,200 liters per air

sample and a maximum of 1,800 liters per air sample shall be collected using aggressive sampling techniques. If the post-abatement test reveals fiber levels in excess of 0.01 fibers/cc, and/or if the Z-Test analysis in accordance with AHERA does not pass, the cleaning and measurement operations specified in Sections 13 and 14 of these specifications will be repeated until the area is in compliance. Performing the Z-Test analysis is solely at the discretion of the Owner's Consultant.

15.4.2 Phase Contrast Microscopy (PCM) Clearance
When the work site has become completely dry, the Owner's Consultant shall collect at least five post-abatement air samples according to 40 CPR, Part 763 (AHERA Regulations). Five samples shall be taken in the abatement site. A minimum of 2,000 liters per air sample shall be collected using aggressive sampling techniques. If the post-abatement test reveals fiber levels in excess of 0.01 fibers/cc, the cleaning and measurement operations specified in Sections 13 and 14 of these specifications will be repeated until the area is in compliance.

15.5 After the work area is found to be in compliance, all entrances and exits are unsealed, and the polyethylene sheeting, tape and any other trash and debris shall be placed in double sealed polyethylene bags (6-mil minimum) or barrels lined with one polyethylene bag (6-mil minimum), and properly labeled and disposed of.

16. Disposal of Asbestos Material and Related Debris

16.1 All asbestos materials and miscellaneous debris in properly labeled polyethylene bags (double bagged) or other containers will be transported to the predesignated disposal site in accordance with the guidelines of the U.S. Environmental Protection Agency and the Department of Environmental Quality. Asbestos disposal forms will be completed to document proper disposal of asbestos waste. (These must be submitted before final payment will be made.)

16.2 All containers bagged or wrapped materials with asbestos-containing materials shall be labeled with the name and address at which the waste was generated, prior to materials being transported off the facility site.

16.3 Workers unloading the polyethylene bags and machinery operators will wear respirators when handling material at the disposal site.

16.4 All pertinent DOT rules and regulations will be followed when transporting asbestos.

16.5 All containers or wrapped materials shall be posted with Class 9 hazardous waste signs.

16.6 All asbestos-containing materials shall be transported in covered vehicles.

16.7 All dumpsters, trucks or other containers used to transport asbestos contained materials shall be properly labeled during the loading and unloading of waste.

17. Submittals Prior To Contractor Release & Final Payment

17.1 Damages: The Contractor shall promptly repair any and all damages caused to facilities at no cost to the Owner.

17.2 The following must be submitted prior to final payment:

17.2.1 Copies of Disposal receipts of all asbestos contaminated material, plus copies of all transport manifests, trip tickets, or other disposal documentation.
17.2.2 All documentation requested in Submittals to Owner's Representative, Section 4.1.

III. WORK/CONDUCT REQUIREMENTS

18. Supervision, Personnel and Misconduct

18.1 A "competent person" as defined in 29 CFR 1926.1101 must be on-site at all times throughout the duration of the project(s). This competent person, as designated prior to the start of said project(s) must remain the same throughout the duration of the project(s).

18.2 The Owner's Consultant IS NOT THE CONTRACTOR'S OUT -MAN. The Contractor must provide one out-man for each enclosure (unless the decontamination chambers are within "talking" distance of each other). The out-man must always remain within talking distance of the enclosure they are assigned to.

18.3 A Foreman with competent-person training must remain within the enclosure at all times during the project.

18.4 Contractors employees are subject to immediate dismissal if any of the following, but not limited to the following, occurs:

18.4.1 Failure to follow proper abatement procedures, including but not limited to respiratory protection and the throwing of asbestos disposal bags outside of the enclosure.
18.4.2 Physical threats and violence to the Owner's Consultant or any other person.
18.4.3 Property damage or theft.
18.4.4 Reckless driving on Owner's property.
18.4.5 Discourteous and ill-mannered statements made to the Owner, Owner's employees or Owner's Consultant.
18.4.6 Consumption of alcohol on Owner's premises.

19. Site Security/Site Cleanliness

19.1 The work area is restricted to only authorized, trained and protected personnel. These personnel may include the Contractor's employees, employees of subcontractors, Owner's employees and Representatives, state and local inspectors, and any other designated individuals. The list of employees who will participate in the project as defined in 2.1.2 of these specifications will be the only employees allowed to enter the work area. Additional employees assigned to this project **must** be cleared through the Owner or the Owner's Consultant. Documentation of all training, medical, and other pertinent requirements are needed before the employees participation.

19.1.1 An employee shall not remain on the Owner's premises if he/she is prohibited from participating in the project as a result of insufficient paperwork or if the Owner's Consultant determines the employee, in any manner, is detrimental to the safe completion of the project.

19.1.2 The Contractor shall record the names and social security numbers of all people on a sign-in sheet who enter the work site, and maintain this record for thirty years.

19.2 Entry into the work area by unauthorized individuals shall be strictly prohibited.

19.3 Access to the work area shall be through a single worker decontamination system. All other means of access (doors, windows, hallways, etc.) shall be blocked or locked so as to prevent entry to or exit from the work area. The only exceptions for this rule are the waste pass-out airlock which shall be sealed except during the removal of containerized asbestos waste from the work area, and emergency exits in case of fire or accident. Emergency exits shall not be locked from the inside; instead, they shall be sealed with polyethylene sheeting and tape until needed.

19.4 The Contractor shall designate one worker to remain outside each enclosure throughout the duration of the project in order to regulate ingress and egress to the work areas as well as to provide needed supplies and equipment. The worker outside the enclosure will be within hearing range at all times. At least one person, at all times, inside the enclosure must have had "competent person" training.

19.5 All areas occupied or used in any way by the Contractor (all employees), outside the enclosure(s) but within the building shall be kept in an acceptable condition and thoroughly cleaned at the end of each day, to the satisfaction of the Owner's Consultant. If at any time, food containers or debris is found not properly disposed of, eating on premises shall be terminated.

19.6 The Contractor is responsible for maintaining areas outside the building in a condition acceptable to the Owner or the Owner's Consultant. This includes but is not limited to: sanitation, supplies and equipment, and

employee driving and substance abuse.

20. Stop Work Orders

20.1 If at any time, the Owner or the Owner's Consultant decide that work practices are in violation of the contract specifications or endangering workers, he/she or they will immediately notify the Contractor's on-site Representative of such and operations are to cease until corrective action is taken.

20.2 The Contractor shall cooperate fully with the Owner and Owner's Consultant.

IV. AIR MONITORING

21. Sampling Requirements

21.1 The Owner's Consultant shall conduct all air sampling for the Owner throughout all phases of the contract.

21.2 All non-post-abatement air samples shall be analyzed using the NIOSH 7400 Method. All post-abatement air samples collected in situations involving removal, repair, enclosure, or encapsulation of more than 160 square feet or 260 linear feet of ACBM shall be analyzed under the "Mandatory Transmission Electron Microscopy Method" defined in 40 CFR, Part 763 (AHERA rules). Post abatement air samples collected in situations involving removal, repair, enclosure, or encapsulation of less than 160 square feet or 260 linear feet of ACBM shall be analyzed using the NIOSH 7400 Method, at the discretion of the Owner and/or the Owner's Consultant.

22. Sampling Types

22.1 Throughout the abatement and cleaning operations, air sampling will be conducted to ensure that the Contractor is complying with all codes, regulations, and ordinances. The following are representative sampling which may take place at the discretion of the Owner and the Owner's Consultant.

22.1.1 Baseline - Collected in various/numerous locations prior to abatement to determine ambient interior fiber levels.

22.1.2 Contiguous - Collected in various/numerous locations outside of the work area in order to detect elevated fiber levels during abatement.

22.1.3 Work Area - Collected in various locations inside the work area to ensure compliance with proper procedures and specifications.

22.1.4 Personal - Collected in the breathing zone of the asbestos abatement personnel according to 1926.11 01, Appendix A, as amended, of the OSHA regulations. These samples will be placed on employees who are exposed to representative

concentrations of airborne asbestos fibers. Personal sampling will ensure that the workmen performing the asbestos abatement projects are not exposed to asbestos contamination exceeding STEL (short term excursion limit) requirements and levels which exceed their respirator protection or otherwise endanger their health. Personal air samples will be collected on individuals as designated by the Owner's Consultant.

22.1.5 Post Abatement - Collected inside and/or outside the work area after the project is completed and .the area has been cleaned and dried. This will determine if the job has been done correctly and whether the cleanup process must be repeated. Quantities are determined by all applicable regulations.

22.1.6 Field Blanks - Field blanks are collected to ensure that contamination of cassettes has not occurred. Each set of samples collected will include ten percent (10%) blanks or a minimum of two blanks.

END OF SECTION

TECHNICAL SPECIFICATIONS FOR MECHANICAL INSULATION

PART 1- GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes pipe and fitting insulation.

B. Related Sections: The following sections contain requirements that related to this section: NA

1.3 DEFINITIONS

A. Hot Surfaces: Normal operating temperatures of 100 deg F (38 deg C) or higher.

B. Dual-Temperature Surfaces: Normal operating temperatures that vary from hot to cold.

C. Cold Surfaces: Normal operating temperatures less than 75 deg F (24 deg C).

D. Thermal sensitivity is designated by an r-value that represents the reciprocal of thermal conductivity (k-value). Thermal conductivity is the rate of heat flow through a homogeneous material exactly 1 inch (25.4 mm) thick. Thermal resistivity (r-value) is expressed by the temperature difference in degrees Fahrenheit (Kelvin) between the two exposed faces required to cause 1 BTU (1 Watt) to flow through 1 square foot (1 square meter) at mean temperatures indicated.

E. Thermal Conductivity (k-value): Measure of heat flow through a material at a given temperature difference; conductivity is expressed in units of BTU x inch/h x sq. ft. x deg F (W x m/sq. m x K).

F. Density is expressed in pcf (kg/cu. m).

1.4 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product data for each type of mechanical insulation identifying k-value, thickness and accessories.

C. Shop drawings illustrating details of the insulation system on the roofing ducts and the details of the flashing at the penetration of the supply and return ducts as they enter the root.

1.5 QUALITY ASSURANCE

A. Fire Performance Characteristics: Conform to the following characteristics for insulation including facings, cements and adhesives, when tested according to ASTM E 84, by UL or other testing or inspecting organization acceptable to the authority having jurisdiction.

B. Label insulation with appropriate markings of testing laboratory.

1. Interior Insulation: Flame spread rating of 25 or less and a smoke developed rating of 50 or less.
2. Exterior Insulation: Flame spread rating of 75 or less and a smoke developed rating of 150 or less.

1.6 SEQUENCING AND SCHEDULING

A. Schedule insulation application after testing of piping and duct systems.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:

1. Glass Fiber:
   a. CertainTeed Corporation
   b. Knauf Fiberglass GmbH
   c. Owens-Corning Fiberglass Corporation
   d. Schuller
2. Flexible Elastomeric Cellular:
   a. Armstrong World Industries, Inc.
   b. Halstead Industrial Products
   c. Rubatex Corporation
3. Expanded Perlite:
   a. Calcilite Sproule
   b. Knauf "Temperlite 1200"

2.2 GLASS FIBER

A. Material: Inorganic glass fibers, bonded with a thermosetting resin.

B. Jacket: All-purpose, factory-applied, laminating glass-fiber-reinforced, flame-retardant kraft paper and aluminum foil having self-sealing lap (ASJ-SSL).

C. Board: ASTM C 612, Class 2, semi-rigid jacketed board.

1. Thermal Conductivity: 0.26 Btu x inch/h x sq. ft. x deg F (0.037 W x m/sq. m x K) average maximum, at 75 deg F (24 deg C) mean temperature.
2. Density: 3 pct average maximum.

D. Blanket: ASTM C553, Type II, Class F-1, jacketed flexible blankets.

1. Thermal Conductivity: 0.32 Btu x inch/h x sq. ft. x deg F (0.046 W x m/sq. m x K) average maximum., at 75 deg F (24 deg C) mean temperature.

E. Preformed Pipe Insulation: ASTM C 547, Class 1, rigid pipe insulation, jacketed.

1. Thermal Conductivity: 0.26 Btu x inch/h x sq. ft. x deg F (0.037 W x m/sq. m x K) average maximum, at 75 deg F (24 deg C) mean temperature.

F. Adhesive: Produced under the UL Classification and Follow-Up service.

1. Type: Non-flammable, solvent-based.
2. Service Temperature Range: Minus 20 to 180 deg F (minus 29 to 82 deg C).

G. Vapor Barrier Coating: Waterproof coating recommended by insulation manufacturer for outside service.

2.3 FLEXIBLE ELASTOMERIC CELLULAR

A. Material: Flexible expanded closed-cell structure with smooth skin on both sides.

1. Tubular Materials: ASTMC 534, Type I
2. Sheet Materials: ASTM C 534, Type II

B. Thermal Conductivity: 0.30 Btu x inch/h x sq. ft. x deg F (0.043 W x m/sq. m x K) average maximum, at 75 deg F (24 deg C).

C. Coating: Water-based latex enamel coating recommended by insulation manufacturer.

2.4 EXPANDED PERLITE

A. Material: ASTM C 610, Type II; expanded perlite, sodium silicate binder, non-asbestos fibrous reinforcement; incombustible.

B. Form: Molded flat block, curved block, grooved block and preformed pip sections as appropriate for surface.

C. Thermal Conductivity: 0.74 at 500 deg F.

D. Dry Density: 14.0 pcf maximum.

E. Compressive Strength: 60 psi minimum at 5 percent deformation.

F. Water Absorption: 0.04%

G. Fire Performance Characteristics: Provide materials identical to those whose fire performance characteristics have been determined, per test method indicated below, by UL or other testing and inspecting organization acceptable to authorities having jurisdiction.

1. Test Method: ASTM E 84
2. Flame Spread: 0
3. Smoke Developed: 0

2.5 INSULATING CEMENTS

A. Mineral Fiber: ASTM C 195.

1. Thermal Conductivity: 1.0 Btu x inch/h x sq. ft. x deg F (0.14 W x m/sq. m x K)average maximum at 500 deg F (260 deg C) mean temperature.
2. Compressive Strength: 10 psi (70 kPa) at 5 percent deformation.

B. Expanded or Exfoliated Vermiculite: ASTM C 196.

1. Thermal Conductivity: 1.10 Btu x inch/h x sq. ft. x deg F (0.159 W x m/sq. m x K) average maximum at 500 deg F (260 deg C) mean temperature.
2. Compressive Strength: .5 psi (35 kPa) at 5 percent deformation.

C. Mineral Fiber, Hydraulic-Setting Insulating and Finishing Cement: ASTM C 449.

1. Thermal Conductivity: 1.2 Btu x inch/h x sq. ft. x deg F (0.173 W x m/sq. m x K) average maximum at 400 deg F (204 deg C) mean temperature.
2. Compressive Strength: 100 psi (690 kPa) at 5 percent deformation.

2.6 ADHESIVES

A. Flexible Elastomeric Cellular Insulation Adhesive: Solvent-based, contact adhesive recommended by insulation manufacturer.

B. Lagging Adhesive: MIL-A-3316C, non-flammable adhesive in the following Classes and Grades:

1. Class 1, Grade A for bonding glass cloth and tape to unfaced glass fiber insulation, sealing edges of glass fiber insulation and bonding lagging cloth to unfaced glass fiber insulation.
2. Class 2, Grade A for bonding glass fiber insulation to metal surfaces.

2.7 JACKETS

A. General: ASTM C 921, Type 1, except as otherwise indicated.

B. Foil and Paper Jacket: Laminated glass-fiber-reinforced, flame-retardant kraft paper and aluminum foil.

1. Water Vapor Permeance: 0.02 perm (1.2 ng/Pa/s/sq/m) maximum when tested according to ASTM E 96.
2. Puncture Resistance: 50 beach units minimum when testing according to ASTM D 781.

C. PVC Jacketing: High-impact, ultra-violet-resistant PVC, 20 mils (0.50 mm) thick, roll stock ready for shop or field cutting and forming to indicated sizes.

1. Adhesive: As recommended l:lyinsulation manufacturer.

D. PVC Fitting Covers: Factory-fabricated fitting covers manufactured from 20 mil (0.50 mm) thick, high-impact, ultra-violet-resistant PVC.

1. Adhesive: As recommended by insulation manufacturer.

E. Aluminum Jacket: ASTM B 209, 3003Alloy, H-14 temper, roll stock ready for shop or field cutting and forming to indicated sizes.

1. Finish and Thickness: Stucco embossed finish, 0.016 inch (0.40 mm) thick.
2. Moisture Barrier: 1 mil (0.025 mm), heat-bonded polyethylene and kraft paper.
3. Moisture Barrier: 3 mil (0.075 mil) Dupont Surlyn.
4. Elbows: Preformed 45-degree and 90-degree short- and long-radius elbows, same material, finish and thickness as jacket, 0.024" minimum thickness.

2.8 ACCESSORIES AND ATTACHMENTS

A. Glass Cloth and Tape: Woven glass fiber fabrics, plain weave, presized a minimum of 8 ounces per sq. yd. (272 gm per sq. m).

1. Tape Width: 4 inches (102 mm).
2. Cloth Standard: MIL-C-20079H, Type I.
3. Tape Standard: MIL-C-20079H, Type II.

B. Bands: % inch (19 mm) wide, in one of the following material compatible with jacket:

1. Stainless Steel: Type 304, 0.020 inch (0.5 mm) thick.
2. Galvanized Steel: 0.005 inch (0.13 mm) thick.
3. Aluminum: 0.007 inch (0.18 mm) thick.
4. Brass: 0.01 inch (0.25 mm) thick.

5. Nickel-Copper Alloy: 0.005 inch (0.13 mm) thick.

C. Wire: 14 gage (1.6 mm) nickel copper alloy, 16 gage (1.6 mm) soft-annealed stainless steel or 16 gage (1.6 mm) soft-annealed galvanized steel.

D. Corner Angles: 28 gage (0.3 mm), 1 inch by 1 inch (25 mm by 25 mm) aluminum, adhered to 2 inches by 2 inches (50 mm by 50 mm) kraft paper.

E. Anchor Pins: Capable of supporting 20 pounds (9 kg) each. Provide anchor pins and speed washers of sizes and diameters as recommended by the manufacturer for insulation type and thickness.

2.9 SEALING COMPOUNDS

A. Vapor Barrier Compound: Water-based, fire-resistive composition.

1. Water Vapor Permeance: 0.08 perm (4.6 ng/Pa/s/sq. m) maximum.
2. Temperature Range: Minus 20 to 180 deg F (minus 20 to 82 deg C).

B. Weatherproof Sealant: Flexible-elastomer-based, vapor-barrier sealant designed to seal metal joints.

1. Water Vapor Permeance: 0.02 perm (1.2 ng/Pa/s/sq. m) maximum.
2. Temperature Range: Minus 50 to 250 deg F (minus 46 to 121 deg C).
3. Color: Aluminum.

PART 3 - EXECUTION

3.1 PREPARATION

A. Surface Preparation: Clean, dry, and remove foreign materials such as rust, scale and dirt.

3.2 INSTALLATION, GENERAL

A. Refer to schedules' at the end of this Section for materials, forms, jackets and thicknesses required for each mechanical system.

B. Select accessories compatible with materials suitable for the service. Select accessories that do not corrode, soften or otherwise attack the insulation or jacket in either the wet or dry state.

C. Install vapor barriers on insulated pipes, ducts and equipment having surface operating temperatures below 60 deg F (16 deg C).

D. Apply insulation material, accessories and finishes according to the manufacturer's printed instructions.

E. Install insulation with smooth, straight and even surfaces.

F. Seal joints and seams to maintain vapor barrier on insulation requiring a vapor barrier.

G. Seal penetrations for hangers, supports, anchors and other projections in insulation requiring a vapor barrier.

H. Seal Ends: Except for flexible elastomeric insulation, taper ends at 45 degree angle and seal with lagging adhesive. Cut ends of flexible elastomeric cellular insulation square and seal with adhesive.

I. Apply adhesives and coatings at manufacturer's recommended coverage-per-gallon rate.

J. Keep insulation materials dry during application and finishing.

K. Items Not Insulated: Unless otherwise indicated, do not apply insulation to the following systems, material and equipment:

1. Factory-insulated flexible ducts.
2. Factory-insulated plenums, terminal boxes and filter boxes and sections.
3. Flexible connectors for ducts and pipes.
4. Vibration control devices.
5. Testing laboratory labels and stamps.
6. Nameplates and data plates.
7. Access panels and doors in air distribution systems.
8. Fire protection piping systems.
9. Sanitary drainage and vent piping.
10. Drainage piping located in crawl spaces, unless indicated otherwise.
11. Below grade piping .
12. Chrome-plated pipes and fittings, except for plumbing fixtures for the disabled.
13. Piping specialties including air chambers, unions, strainers, check valves, plug valves and flow regulators.

3.3 PIPE INSULATION INSTALLATION, GENERAL

A. Tightly butt longitudinal seams and end joints.

B. Stagger joints on double layers of insulation.

C. Apply insulation continuously over fittings, valves and specialties, except as otherwise indicated.

D. Apply insulation with a minimum number of joints.

E. Apply insulation with integral jackets as follows:

1. Pull jacket tight and smooth.
2. Cover circumferential joints with butt strips at least 3 inches (76 mm) wide and of same material as insulation jacket.
3. Longitudinal Seams: Overlap seams at least 1-1/2 inches (40 mm). Apply insulation with longitudinal seams at bottom of pipe. Clean and dry surface to receive self-sealing lap.
4. Vapor Barrier Coatings: Where vapor barriers are indicated, apply on seams and joints, over staples and at ends butt to flanges, union, valves and fittings.
5. At penetrations in jackets for thermometers and pressure gauges, fill and seal voids with vapor barrier coatings.
6. Repair damaged insulation jackets, except metal jackets, by applying jacket material around damaged jacket. Adhere and seal. Extend patch at least 2 inches (50 mm) in both directions beyond damaged insulation jacket and around the entire circumference of the pipe.

F. Roof Penetrations: Apply insulation for interior applications to a point even with the top of the roof flashing. Seal with vapor barrier coating. Apply insulation for exterior applications butted tightly to interior ends. Extend metal jacket for exterior insulation outside roof flashing at least 2 inches (50 mm) below top of roof flashing. Seal metal jacket to roof flashing with vapor barrier coating.

G. Interior Walls and Partitions Penetrations: Apply insulation continuously through walls and partitions, except fire-rated walls and partitions. Apply an aluminum jacket with factory-applied moisture barrier over insulation. Extend 2 inches (50 mm) from both surfaces of wall or partition. Secure aluminum jacket with metals bands at both ends. Seal ends of jacket with vapor barrier coating. Seal around penetration with joint sealer. Refer to Division 7 Section "Joint Sealants".

H. Fire-Rated Walls and Partitions Penetrations: Terminate insulation at penetrations through fire-rated walls and partitions. Seal insulation ends with vapor barrier coating. Seal around penetration with fire-stopping or fire-resistant joint sealer. Refer to Division 7 for fire-stopping and fire-resistant joint sealers.

I. Floor Penetrations: Terminate insulation underside of floor assembly and at floor support at top of floor.

J. Flanges, Fittings and Valves - Interior Exposed and Concealed: Coat pipe insulation ends with vapor barrier coating. Apply premolded, precut or field-fabricated segments of insulation around flanges, unions, valves and fittings. Make joints tight. Bond with adhesive.

1. Use same material and thickness as adjacent pipe insulation.
2. Overlap nesting insulation by 2 inches (50 rom) or I-pipe diameter, whichever is greater.

3. Apply materials with adhesive, fill voids with mineral fiber insulating cement. Secure with wire or tape.
4. Insulated elbows and tees smaller than 3 inches (DN 75) pipe size with premolded insulation.
5. Insulate elbows and tees 3 inches (DN 75) and larger with premolded insulation or insulation material segments. Use at least 3 segments for each elbow.
6. Cover insulation, except for metal jacketed insulation, with PVC fitting covers and seal circumferential joints with butt strips. Overlap PVC and metal jackets 2 inches at all joints.

K. Hangers and Anchors: Apply insulation continuously through hangers and around anchor attachments. Install saddles, shields and inserts as specified in Division 15 Section "Supports and Anchors". For cold surface piping, extend insulation on anchor legs a minimum of 12 inches (300 mm) and taper and seal insulation ends.

1. Inserts and Shields: Cover hanger inserts and shields with jacket material matching adjacent pipe insulation.

3.4 GLASS FIBER PIPE INSULATION INSTALLATION

A. Seal exposed ends with vapor retarding mastic or end caps.

3.5 FLEXIBLE ELASTOMERIC CELLULAR PIPE INSULATION INSTALLATION

A. Slip insulation on the pipe before making connections wherever possible. Seal joints with adhesive. Where the slip-on technique is not possible, cut one side longitudinally and apply to the pipe. Seal seams and joints with adhesive.

B. Valves, Fittings and Flanges: Cut insulation segments from pipe or sheet insulation. Bond to valve, fitting and flange and seal joints with adhesive.

1. Miter cut materials to cover soldered elbows and tees.
2. Fabricate sleeve fitting covers from flexible elastomeric cellular insulation for screwed valves, fittings and specialties. Miter cut materials. Overlap adjoining pipe insulation.

3.6 DUCT INSULATION

A. Install block and board insulation as follows:

1. Adhesive and Band Attachment: Secure block and board insulation tight and smooth with at least 50 percent coverage of adhesive. Install bands spaced 12 inches (300 mm) apart. Protect insulation under bands and at exterior comers with metal comer angles. Butt ends tightly together.
2. Speed Washers Attachment: Secure insulation tight and smooth with paper-backed speed washers and welded pins. Space anchor pins 18 inches (450 mm) apart each way and 3 inches (75 mm)

from insulation joints. Apply vapor barrier coating compound to insulation in contact, open joints, breaks, punctures and voids in insulation.

B. Blanket Insulation: Install tight and smooth with maximum 25% compression. Secure to ducts having long sides or diameters as follows:

1. Smaller than 18 inches (460 mm): Bonding adhesive applied in 6 inches (150 mm) wide transverse strips on 12 inches (300mm) centers.
2. 19 inches (480 mm) and Larger: Anchor pins spaces 12 inches (300 mm) apart each way. Apply bonding adhesive to prevent sagging of the insulation.
3. Seal joints, breaks and punctures with vapor barrier compound or pressure sensitive tape.
4. Butt ends firmly together.

3.7 JACKETS

A. Foil and Paper Jackets (FP): Install jackets drawn tight. Install lap or butt strips at joints with material same as jacket. Install jackets with 1-1/2 inches (40 mm) laps at longitudinal joints and 3 inch (75 mm) wide butt strips at end joints.

1. Seal openings, punctures and breaks in vapor barrier jackets and exposed insulation with vapor barrier compound or pressure sensitive tape.

B. Interior Exposed Insulation: Install continuous PVC jackets.

C. Exterior Exposed Insulation: Install continuous aluminum jackets and seal all joints and seams with waterproof sealant.

D. Install metal jacket with 2 inches (50 mm) overlap at longitudinal and butt joints. Overlap longitudinal joints to shed water. Seal butt joints with weatherproof sealant recommended by insulation manufacturer. Secure jacket with stainless steel draw bands 12 inches (300mm) on center and at butt joints.

E. Install the PVC jacket with 2 inch (50 mm) overlap at longitudinal and butt joints and seal with adhesive.

3.8 FINISHES

A. Flexible elastomeric Cellular Insulation: After adhesive has fully cured, apply 2 coats of protective coating to exposed insulation.

3.9 APPLICATIONS

A. General: Materials and thicknesses are specified in schedules at the end of this Section.

B. Interior - Exposed Piping Systems: Unless otherwise indicated, insulated the following piping systems:

1. Domestic cold water.
2. Storm water. Insulate only roof drain bodies and horizontal rainwater leaders of storm water piping.
3. Domestic hot water.
4. Recirculated hot water.
5. Hydronic piping {35 to 55 deg F (1.7 to 12.8 deg C)}
6. Hydronic piping {lOO to 250 deg F (38 to 121 deg C)}

C. Interior - Concealed Piping Systems: Unless otherwise indicated, insulate the following piping systems:

1. Domestic cold water.
2. Storm water. Insulate only roof drain bodies and horizontal rainwater leaders of storm water piping.
3. Domestic hot water.
4. Recirculated hot water.
5. Hydronic piping {lOO to 250 deg F (38 to 121 deg C)}
6. Hydronic piping {35 to 55 deg F (1.7 to 12.8 deg C)}

D. Exterior - Exposed Piping Systems: Unless otherwise indicated, insulate the following piping systems:

1. Domestic cold water
2. Storm water

E. Duct Systems: Unless otherwise indicated, insulate the following duct systems:

1. Interior supply air ductwork
2. Supply and outside air ductwork in mechanical rooms.

3.10 PIPE INSULATION SCHEDULES

A. General: Abbreviations used in the following schedules include:

1. Field-Applied Jackets: P - PVC; K - Foil & Paper; A - Aluminum; SS - Stainless Steel
2. Pipe Sizes: NPS - Nominal Pipe Size (DN - Nominal Dimension)

B. Domestic Cold Water and Storm Water All Sizes (Interior): 1/2 inch (13 mm) thick glass fiber, cellular glass or flexible elastomeric insulation. Field-applied jacket is not required.

INTERIOR DOMESTIC HOT WATER AND RECIRCULATED HOT WATER				
PIPE SIZES (NPS)	MATERIALS	THICKNESS IN INCHES	VAPOR BARRIER REQ'D	FIELD APPLIED JACKET
½ TO 1 ¼	GLASS FIBER	½	NO	NONE
1 ½ TO 4	GLASS FIBER	½	NO	NONE

INTERIOR DOMESTIC COLD WATER				
PIPE SIZES (NPS)	MATERIALS	THICKNESS IN INCHES	VAPOR BARRIER REQ'D	FIELD APPLIED JACKET
½ TO 1 ¼	GLASS FIBER	½	YES	NONE
1 ½ TO 4	GLASS FIBER	½	YES	NONE

INTERIOR HYDRONIC (35 TO 65 DEG F) EXPOSED AND CONCEALED				
PIPE SIZES (NPS)	MATERIALS	THICKNESS IN INCHES	VAPOR BARRIER REQ'D	FIELD APPLIED JACKET
½ TO 4	GLASS FIBER	1	YES	NONE
5 TO 6	GLASS FIBER	1 ½	YES	NONE
½ TO 1 ¼ ONLY	FLEXIBLE ELASTOMERIC	¾	YES	NONE

INTERIOR HYDRONIC (150 TO 250 DEG F) EXPOSED AND CONCEALED				
PIPE SIZES (NPS)	MATERIALS	THICKNESS IN INCHES	VAPOR BARRIER REQ'D	FIELD APPLIED JACKET
½ TO 1 ¼	GLASS FIBER	1 ½	NO	NONE
1 ½ TO 4	GLASS FIBER	2	NO	NONE

3.11 DUCT INSTALLATION SCHEDULES

INTERIOR HVAC SUPPLY DUCTS				
MATERIAL	FORM	THICKNESS IN INCHES	VAPOR BARRIER REQ'D	FIELD APPLIED JACKET
GLASS FIBER	BLANKET	1 ½	YES	NONE

INTERIOR MECHANICAL ROOM SUPPLY AND OUTSIDE AIR DUCTS				
MATERIAL	FORM	THICKNESS IN INCHES	VAPOR BARRIER REQ'D	FIELD APPLIED JACKET
GLASS FIBER	BOARD	1 1/2	YES	NONE

SECTION 07810

TECHNICAL SPECIFICATIONS FOR CEMENTITIOUS FIREPROOFING

PART 1 GENERAL

1.01 SUMMARY

A. Work under this section consists of the furnishing of all labor, materials, equipment, and services necessary for, and incidental to, the complete and proper installation of all cementitious direct spray-applied fireproofing and related work as shown on the drawings or specified herein, and in accordance with all applicable requirements of the contract documents.

B. Conform to all applicable building code requirements of all authorities having jurisdiction.

1.02 REFERENCES

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

1. ASTM E84 Surface Burning Characteristics
2. ASTM E119 Standard Methods of Fire Tests of Building Construction and Materials
3. ASTM E605 Standard Test Methods for Thickness and Density of Sprayed Fire-Resistive Material Applied to Structural Members
4. ASTM E736 Cohesion/Adhesion of Sprayed Fire-Resistive Material Applied to Structural Members
5. ASTM E759 Effect of Deflection on Sprayed Fire-Resistive Material Applied to Structural Members
6. ASTM E760 Effect of Impact on Bonding of Sprayed Fire-Resistive Material Applied to Structural Members
7. ASTM E761 Compressive Strength of Sprayed Fire-Resistive Material Applied to Structural Members
8. ASTM E859 Air Erosion of Sprayed Fire-Resistive Material Applied to Structural Members
9. ASTM E937 Corrosion of Steel by Sprayed Fire-Resistive Material Applied to Structural Members
10. ASTM E1354 Cone Calorimeter
11. ASTM G21 Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi

B. Underwriters Laboratories Inc. (UL) Fire Resistance Directory (Latest Edition)

1. UL/ANSI 263 Fire Tests of Building Construction Materials

C. Uniform Building Code (UBC)

1. UBC Standard No. 7-6 – Thickness and Density Determination for Spray Applied Fireproofing
2. UBC Standard No. 7-7 – Methods for Calculating Fire Resistance of Steel, Concrete and Wood Construction

1.03 SUBMITTALS

A. Manufacturer's Data: Submit manufacturer's instructions for proper application of cementitious fireproofing.

B. Fire Testing:

1. Submit evidence that the cementitious fireproofing has been subjected to full-scale UL 263/ASTM E119 fire testing at Underwriters Laboratories Inc. by the manufacturer.

C. Thickness Schedule: Provide schedule indicating material to be used, structural elements to be protected with spray applied fireproofing, hourly rating and material thickness provided and appropriate references.

D. Test Data: Independent laboratory test results for fireproofing shall be submitted for the following performance criteria:

1. Bond Strength per ASTM E736
2. Compressive Strength per ASTM E761
3. Deflection per ASTM E759
4. Bond Impact per ASTM E760
5. Air Erosion per ASTM E859
6. Corrosion Resistance per ASTM E937
7. High Speed Air Erosion per ASTM E859
8. Surface Burning Characteristics per ASTM E84
9. Combustibility per ASTM E1354 Cone Calorimeter
10. Mold Resistance per ASTM G21

1.04 QUALITY ASSURANCE

A. Fireproofing work shall be performed by a skilled and experienced applicator specializing in the application of spray-applied fireproofing. Fireproofing applicator shall be approved by the manufacturer who furnished the materials. Submit proof of this in writing to the Owner before starting the fireproofing application.

B. Products, execution, and fireproofing thicknesses shall conform to the applicable code requirements for the required fire-resistance ratings.

C. At completion of the work, the manufacturer shall submit written certification that fireproofing material was applied over the appropriate steel components and roof decking and was applied correctly in accordance with these specifications and the manufacturer's specification and recommendations.

1.05 DELIVERY, STORAGE AND HANDLING

A. Material shall be delivered in original unopened packages, fully identified as to manufacturer, brand or other identifying data and bearing the proper independent testing laboratory labels for Surface Burning Characteristic and Fire Resistance Classification.

B. Material shall be stored off the ground, under cover, and in a dry location until ready for use. All bags that have been exposed to water before use shall be found unsuitable and discarded. Stock of material is to be rotated and used prior to its expiration date.

1.06 PROJECT/SITE CONDITIONS

A. A minimum air and substrate temperature of 4.4°C (40°F) shall be present before application of spray applied fireproofing. A minimum air and substrate temperature of 4.4°C (40°F) must be maintained during and for 24 hours after application of the spray applied fireproofing. Provide enclosures with heat to maintain temperature.

B. Provide ventilation in poorly ventilated areas to achieve a minimum total fresh air exchange rate of 4 times per hour until the material is substantially dry.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Fireproofing Materials – Factory-blended, cementitious direct spray-applied, non-flaking and non-dusting, type fireproofing material, with mold and fungi inhibitor added by the manufacturer. Material containing asbestos will not be acceptable. Material shall contain the following properties and characteristics:

1. Dry Density: Provide for minimum dry density in place, with tested in accordance with ASTM E605, as required by applicable UL Design Number and UBC Standard 7-6 for the indicated application.
2. Deflection: Material shall not crack or delaminate from the surface to which it is applied when tested in accordance with ASTM E759.
3. Bond Impact: Material subject to impact tests in accordance with ASTM E760 shall not crack or delaminate from the surface to which it is applied.
4. Bond Strength: Minimum bond strength between fireproofing material and steel members shall be 200 pounds per square foot when tested in accordance with ASTM E736.
5. Air Erosion: Maximum allowable total weight loss of the fireproofing material shall be 0.005 g/ft^2 when tested in accordance with ASTM E859.

6. Compressive Strength: The fireproofing shall not deform more than 10% when subjected to compressive forces of 1,200 pounds per square foot when tested in accordance with ASTM E761.
7. Corrosion Resistance: Fireproofing applied to steel shall be tested in accordance with ASTM E937 and shall not promote corrosion of steel.
8. Surface Burning Characteristics: Material shall have a flame-spread rating of 10 or less and a smoke-developed contribution of 0 when tested in accordance with ASTM E84.
9. Resistance to Mold: The fireproofing material shall be formulated at the time of manufacturing with a mold inhibitor. Fireproofing material shall be tested in accordance with ASTM G21 and shall show resistance to mold growth for a period of 28 days for general use.

B. Fire Resistance Classification - The spray applied fireproofing material shall have been tested and reported by Underwriters Laboratories Inc., or other accredited laboratory, in accordance with the procedures of ANSI/ASTM E119 and shall be listed in the Underwriters Laboratories Fire Resistance.

C. Water - Mixing water shall be clean, fresh, and suitable for domestic consumption and free from such amounts of mineral or organic substances as would affect the set of the fireproofing material. Provide water with sufficient pressure and volume to meet the fireproofing application schedule.

2.02 ACCESSORIES

A. Provide accessories to comply with manufacturer’s recommendations and to meet fire resistance design and code requirements. Such accessories include, but are not limited to, any required or optional items such as lock down agents, bonding agents, mechanical attachments; application aids such as metal lath, scrim, or netting.

PART 3 - EXECUTION

3.01 EXAMINATION

A. All surfaces to receive spray-applied fireproofing shall be provided free of oil, grease, loose mill scale, dirt or other foreign substances which may impair proper adhesion of the fireproofing to the substrate. Where necessary, cleaning or other corrections of surfaces to receive fireproofing shall be the responsibility of the Contractor.

B. Fireproofing shall be applied to painted surfaces and surfaces coated with lock down agents in accordance with ambient bond and mechanical attachment requirements set forth n the Underwriters Laboratories, Inc. Fire Resistance Directory, current edition.

C. Application of the fireproofing shall not begin until the contractor and applicator have examined surfaces to receive fireproofing and determined that the surfaces are acceptable to receive the fireproofing material.

3.02 PREPARATION

A. All surfaces to receive spray-applied fireproofing shall be cleaned of oil, grease, dirt, loose paint, mill scale, or other foreign substances which may impair the bond of fireproofing material to steel.

B. Provide suitable templates, masking, or coverings to stop fireproofing material and overspray at exposed finishes in sharp and neat straight lines. Provide protection of floors and equipment from spillage, overspray, and rebound.

3.03 APPLICATION

A. Application of fireproofing materials shall be in accordance with the material manufacturer's application instructions.

B. Fireproofing material shall be applied in minimum thickness as required to meet UL Design requirements and code approvals for the fire protections as indicated.

3.04 FIELD QUALITY CONTROL

A. Corrective measures, when necessary, shall be performed as required. The contractor shall require that the manufacturer of the fireproofing material submit recommendations for corrective measures for approval.

B. The contractor shall take frequent, random probe measurements of applied materials to verify compliance with thickness requirements.

3.05 PATCHING

A. All patching and repairing of spray-applied fireproofing shall be performed with the same materials under this section.

3.06 FIRE RATING SCHEDULE

A. Elements - Fire-Resistance rating (time in hours) schedule shall be as follows:

Structural Component	**Hourly Rating Requirement**
Columns	1 hr.
Floor Assemblies (Decks)	1 hr.
Floor Beams/Joists	1 hr.
Roof Assemblies (Decks)	1 hr.
Roof Beams/Joists	1 hr.

SECTION 092900

GYPSUM BOARD SYSTEMS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. This Section includes interior non-load bearing gypsum board systems on steel framing members for the following applications:

1. Partition walls, framed soffits, furred masonry walls, etc.
2. Ceilings, suspended soffits, etc.

B. Related Sections include the following:

1. Division 05 Section "Cold-Formed Metal Framing" for exterior and interior load bearing and exterior non-load-bearing wall studs; floor joists; and ceiling joists.
2. Division 09 Section "Tiling" for cementitious backer units installed as substrates for ceramic tile.
3. Division 09 painting Sections for primers applied to gypsum board surfaces.

1.2 SUBMITTALS

A. Product Data: Submit copies of manufacturer's product specifications and installation instructions for each gypsum drywall product required, including other data as may be required to show compliance with these Specifications. Include data for fire-rated assemblies.

B. Samples: For the following products:
1. Trim Accessories: Full-size Sample in 12-inch-long length for each trim accessory indicated.

C. LEED Submittals LEED-NC version 2.2:

1. Submit all LEED submittal information on the LEED Material Credits Documentation Worksheet referenced in Submittal Procedures section 01 3300.
2. Credit MR4.1 and MR4.2: Submit product data stating the percentage of postconsumer and pre-consumer (post-industrial) recycled content of each product and material by weight. Submit material cost for same.
3. Credit MR5.1 and MR5.2: Submit a statement from the manufacturer stating the distance between the project location and final manufacturing locations; stating the distance between the project location and extraction/harvest/recovery site; and the percentage of product, by weight, that is within 500 miles for both the extraction and manufacture.
4. Credit EQ 4.1 (low VOC adhesives and sealants): Submit product data for installation adhesives stating the VOC content of adhesives used on the project.

1.3 QUALITY ASSURANCE

A. Fire-Resistive Rating: Where indicated for fire-resistance ratings, provide materials and installations identical with applicable assemblies, which have been tested per ASTM E 119 and listed by a testing laboratory recognized by authorities having jurisdiction.

B. References:

1. Steel Framing Standard: Comply with applicable requirements of ASTM C 754 for installation of steel framing for gypsum board and as specified.
2. Gypsum Board Standard: Comply with applicable requirements of ANSI/ASTM C 840 for application and finishing of gypsum board and as specified.

C. Allowable Tolerances: 1/16" offsets between planes of board faces, and 1/8" in 8'-0" for plumb, level, warp and bow.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in manufacturer's unopened containers, packages or bundles identified with manufacturer's name, brand, type and grade. Store inside in a dry area and protect from dampness and deterioration. Protect ready-mixed compounds (if any) from freezing.

1.5 PROJECT CONDITIONS

A. Environmental Requirements: Maintain interior ambient temperatures at not less than 55 degrees F. for a period of at least 48 hours prior to application of gypsum board and joint treatment application, during application, and subsequently until joint treatment materials are dry. Ventilate as required.

B. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent for all panel products.

C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 NON-LOAD-BEARING STEEL FRAMING COMPONENTS

A. General Material/Product Requirements:

1. Recycled Content: Provide products produced from recycled materials to the greatest extent possible.
2. Material and Product Sources: Provide materials and products harvested, extracted, or reclaimed and manufactured, within 500 miles of the Project site to the greatest extent possible.

B. Framing Members, General: Comply with ASTM C 754 for conditions indicated.

1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal, unless otherwise indicated.
2. Protective Coating: ASTM A *653/A* 653M, G40 ASTM A *653/A* 653M, or hot-dip galvanized, unless otherwise indicated.

C. Cast-in-Place and Postinstalled Anchors in Concrete: Anchors of type indicated below, fabricated from corrosion-resistant materials, with holes or loops for attaching hanger wires, and with capability to sustain, without failure, a load equal to 5 times that imposed by ceiling construction, as determined by testing according to ASTM E 488 conducted by a 'qualified independent testing agency.

1. Cast-in-place type designed for attachment to concrete forms.
2. Chemical anchor.
3. Expansion anchor.

D. Powder-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated, and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing according to ASTM E 1190 conducted by a qualified independent testing agency.

E. Wire Ties: ASTM A 641 (ASTM A 641 M), Class 1 zinc coating, soft temper, 0.162-inch (4.1-mm) diameter.

F. Wire Hangers: ASTM A 641 (ASTM A 641M), Class 1 zinc coating, soft temper, 0.162inch (4.1-mm) diameter.

G. Hanger Rods: Mild steel and zinc coated or protected with rust-inhibitive paint.

H. Flat Hangers: Mild steel and zinc coated or protected with rust-inhibitive paint.

I. Angle-Type Hangers: Angles with legs lot less than *7/8* inch (22.2 mm) wide, formed from 0.0635-inch-(1.6-mm) thick galvanized steel sheet complying with ASTM A 653, G 90 (ASTM A 653M, Z 180) coating designation, with bolted connections and 5/16-inch (8mm) diameter bolts.

J. Fasteners for Metal Framing: Provide fasteners of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel framing and furring members securely to substrates involved; complying with the recommendations of gypsum board manufacturers for applications indicated.

2.2 STEEL FRAMING FOR FRAMED ASSEMBLIES

A. Steel Studs and Runners: ASTM C 645.

1. Minimum Base-Metal Thickness: 0.0312 inch.
2. Depth: As indicated on Drawings.

B. Slip-Type Head Joints: Where indicated, provide one of the following:

1. Single Long-Leg Runner System: ASTM C 645 top runner with 2-inch-deep flanges in thickness not less than indicated for studs, installed with studs friction fit into top runner and with continuous bridging located within 12 inches of the top of studs to provide lateral bracing.
2. Double-Runner System: ASTM C 645 top runners, inside runner with 2-inchdeep flanges in thickness not less than indicated for studs and fastened to studs, and outer runner sized to friction fit inside runner.
3. Deflection Track: Steel sheet top runner manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.
    a. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
        1) Steel Network Inc. (The); VertiClip SLD or VertiTrack VTD Series.
        2) Superior Metal Trim; Superior Flex Track System (SFT).

C. Firestop Tracks: Top runner manufactured to allow partition heads to expand and contract with movement of the structure while maintaining continuity of fire-resistance rated assembly indicated; in thickness not less than indicated for studs and in width to accommodate depth of studs.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
    a. Fire Trak Corp.; Fire Trak.
    b. Metal-Lite, Inc.; The System.

D. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.

1. Minimum Base-Metal Thickness: 0.0312 inch.

E. Cold-Rolled Channel Bridging: 0.0538-inch bare-steel thickness, with minimum 1/2-inchwide flanges.

1. Depth: 1-1/2 inches.
2. Clip Angle: Not less than 1-1/2 by 1-1/2 inches, 0.068-inch- thick, galvanized steel.

F. Hat-Shaped, Rigid Furring Channels: ASTM C 645.

1. Minimum Base Metal Thickness: 0.0312 inch.
2. Depth: As indicated on Drawings.

G. Resilient Furring Channels: 1/2-inch- deep, steel sheet members designed to reduce sound transmission.

1. Configuration: Asymmetrical or hat shaped.

H. Cold-Rolled Furring Channels: 0.0538-inch bare-steel thickness, with minimum 1/2-inchwide flanges.

1. Depth: *3/4* inch.
2. Furring Brackets: Adjustable, corrugated-edge type of steel sheet with minimum bare-steel thickness of 0.0312 inch.
3. Tie Wire: ASTM A *641/A* 641M, Class 1 zinc coating, soft temper, 0.0625-inchdiameter wire, or double strand of 0.0475-inch- diameter wire.

I. Z-Shaped Furring: With slotted or nonslotted web, face flange of 1-1/4 inches, wall attachment flange of *7/8* inch, minimum bare-metal thickness of 0.0179 inch, and depth required to fit insulation thickness indicated.

2.3 INTERIOR GYPSUM BOARD

A. General Requirements

1. General Material Product Requirements: Provide the maximum amount of recycled material possible and produced within 500 miles of the site.
2. Paper facers are 100% recycled paper.
3. Provide 100% synthetic gypsum

B. General: Complying with ASTM C *36/C* 36M or ASTM C *1396/C* 1396M, as applicable to type of gypsum board indicated and whichever is more stringent.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   a. American Gypsum Co.
   b. BPB America Inc.
   c. G-P Gypsum.
   d. Lafarge North America Inc.
   e. National Gypsum Company.

f. PABCO Gypsum.
g. Temple.
h. USG Corporation.

C. Regular Type:

1. Thickness: *5/8* inch.
2. Long Edges: Tapered.

D. Type X:

1. Thickness: *5/8* inch.
2. Long Edges: Tapered.

E. Ceiling Type: Manufactured to have more sag resistance than regular-type gypsum board.

1. Thickness: *5/8* inch.
2. Long Edges: Tapered.

F. Moisture and Mold Resistant Gypsum Board: comply with ASTM D3273. Having paper or glass mat face. Provide Type X where required to achieve indicated fire-resistance ratings and where shown.

1. Core: 5/8 inch, Type X.
2. Long Edges: Tapered.
3. Accessory Materials: Provide tape and tape bedding materials recommended by board manufacturer.

2.4 TILE BACKING PANELS

A. Water-Resistant Gypsum Backing Board: ASTM C 630/C 630M or ASTM C 1396/C 1396M.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   a. American Gypsum Co.
   b. BPB America Inc.
   c. G-P Gypsum.
   d. Lafarge North America Inc.
   e. National Gypsum Company.
   f. PABCO Gypsum.
   g. Temple.
   h. USG Corporation.
2. Core: 5/8 inch, Type X or Type C as required by fire-resistance-rated assembly indicated on Drawings.
3. Tapered-Edge Profile: Where water-resistant type is indicated to extend beyond the application of wall tile and receive a painted finish, provides standard taper long-edge profile.

B. Cementitious Backer Units: ANSI A118.9.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
   a. Custom Building Products; Wonderboard.
   b. FinPan, Inc.; Util-A-Crete Concrete Backer Board.
   c. USG Corporation; DUROCK Cement Board.
2. Thickness: 1/2 inch.

2.5 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.

1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc.
2. Shapes:
   a. Cornerbead.
   b. Bullnose bead.
   c. LC-Bead: J-shaped; exposed long flange receives joint compound.
   d. L-Bead: L-shaped; exposed long flange receives joint compound.
   e. U-Bead: J-shaped; exposed short flange does not receive joint compound.
   f. Expansion (control) joint.

B. Reveal Picture Hanger: Reveal channel with exposed long flanges to receive joint compound including picture hanger inserts similar to Fry Reglet DHMR Reveal Picture Hanger.

C. Interior Trim: Paper-faced metal for taping on except where specifically identified otherwise on drawings.

D. Exterior Trim: Provide zinc-alloy units, except as otherwise indicated.

E. Provide special accessories as indicated on the drawings.

2.6 JOINT TREATMENT MATERIALS

A. General: Provide joint treatment materials and systems complying with ASTM C 475/C 475M and the recommendations of both the manufacturer of the board and joint treatment materials for reach application.

1. Provide exterior chemical-hardening type, which is moisture-resistant and recommended by the manufacturer for use on exterior gypsum boards.
2. Provide setting type compound on abuse resistant board or impact board.

B. Joint Tape:

1. Interior Gypsum Wallboard: Paper.
2. Exterior Gypsum Soffit Board: Paper.
3. Glass-Mat Gypsum Sheathing Board: 1 0-by-1 0 glass mesh.
4. Tile Backing Panels: As recommended by panel manufacturer.

C. Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.

1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping or drying-type, all-purpose compound.
   a. Use setting-type compound for installing paper-faced metal trim accessories.
3. Fill Coat: For second coat, use setting-type sandable or drying type topping compound.
4. Finish Coat: For third coat, use setting-type sandable or drying type topping compound.

D. Joint Compound for Exterior Applications:

1. Exterior Gypsum Soffit Board: Use setting-type taping compound and setting type, sandable topping compound.'
2. Glass-Mat Gypsum Sheathing Board: As recommended by sheathing board manufacturer.

E. Joint Compound for Tile Backing Panels:

1. Water-Resistant Gypsum Backing Board: Use setting-type taping compound and setting-type, sandable topping compound.
2. Glass-Mat, Water-Resistant Backing Panel: As recommended by backing panel manufacturer.
3. Cementitious Backer Units: As recommended by backer unit manufacturer.

2.7 MISCELLANEOUS MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

B. Laminating Compound: Special joint compound recommended for laminating gypsum boards for use on double layer walls.

C. Spot Grout: ASTM C 475, setting-type joint compound of type recommended for spot grouting hollow metal doorframes.

D. Firestopping Box Pad: Fire Rated Putty Pads by 3M.

E. Outlet Box Pads: Polybutene -Butyl tape:

1. Elixir by Creative Resources Services
2. Lowry's Outlet Box Pad by Harry Lowry and Associates, Inc.

F. Screws: ASTM C 1002, unless otherwise indicated.

1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch thick.
2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.

G. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.

1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.

H. Isolation Strip at Exterior Walls: Provide one of the following:

1. Asphalt-Saturated Organic Felt: ASTM D 226, Type I (No. 15 asphalt felt), nonperforated.
2. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch thick, in width to suit steel stud size.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Suspended Assemblies: Coordinate installation of suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hangers at spacing required to support the Work and that hangers will develop their full strength.

1. Furnish concrete inserts and other devices indicated to other trades for installation in advance of time needed for coordination and construction.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

D. Coordination with Sprayed Fire-Resistive Materials:

1. Before sprayed fire-resistive materials are applied, attach offset anchor plates or ceiling runners (tracks) to surfaces indicated to receive sprayed fire-resistive materials. Where offset anchor plates are required, provide continuous plates fastened to building structure not more than 24 inches o.c.
2. After sprayed fire-resistive materials are applied, remove them only to extent necessary for installation of non-load-bearing steel framing. Do not reduce thickness of fire-resistive materials below that required for fire-resistance ratings indicated. Protect adjacent fire-resistive materials from damage.

3.3 INSTALLATION, GENERAL

A. Installation Standard: ASTM C 754, except comply with framing sizes and spacing indicated.

1. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.

B. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.

C. Install bracing at terminations in assemblies.

D. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.4 INSTALLING SUSPENSION SYSTEMS

A. Install suspension system components in sizes and spacing indicated on Drawings, but not less than those required by referenced installation standards for assembly types and other assembly components indicated.

B. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.

C. Suspend hangers from building structure as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.

a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.

2. Where width of ducts and other construction within ceiling plenum produces hanger spacing that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.
   a. Size supplemental suspension members and hangers to support ceiling loads within [performance limits established by referenced installation standards].
3. Wire Hangers: Secure by looping and wire tying, either directly to structures or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.
4. Flat Hangers: Secure to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices and fasteners that are secure and appropriate for structure and hanger, and in a manner that will not cause hangers to deteriorate or otherwise fail.
5. Do not attach hangers to steel roof deck.
6. Do not attach hangers to permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.
7. Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.
8. Do not connect or suspend steel framing from ducts, pipes, or conduit.

D. Fire-Resistance-Rated Assemblies: Wire tie furring channels to supports.

E. Seismic Bracing: Sway-brace suspension systems with hangers used for support.

F. Grid Suspension Systems: Attach perimeter wall track or angle where grid suspension systems meet vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.

G. Installation Tolerances: Install suspension systems that are *level* to within 1/8 inch in 12 feet measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

3.5 INSTALLING SUSPENSION SYSTEMS GENERAL

A. General: Comply with ASTM C 754 and C840 and as further specified.

B. Install suspension system components in sizes and spacing indicated on Drawings, but not less than those required by referenced installation standards for assembly types and other assembly components indicated.

C. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.

3.6 INSTALLATION OF METAL SUPPORT SYSTEMS

A. Support Suspension Systems: Suspend hangers from building structure as follows:

1. Furnish and install hanger devices in coordination with other work.
2. Secure hanger wires to structural support by wire-tying directly to structure where possible; otherwise, tie to inserts, clips or other anchorage devices or fasteners. Wire-tie hanger wires to main runners.
3. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or ceiling suspension system.
    a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
4. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with the"location of hangers required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
    a. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.
5. Space carrying channels 4'-0" o.c. and space hangers 4'-0" along runners, except as otherwise shown.
6. Level carrying channels to a tolerance of 1/4" in 12'-0", measured both lengthwise on each runner and transversely between parallel runners.
7. Wire-tie or clip furring channels to carrying channels runners and to other structural supports.
8. Space furring channels 16" o.c., unless otherwise indicated on the partition schedule.
9. Install auxiliary framing at termination of drywall work, and at openings for light fixtures and similar work, as required for support of both the drywall construction and other work indicated for support thereon.
10. For exterior soffits ceiling, provide cross bracing and additional framing required to resist wind uplift as indicated on the drawings.
11. Do not attach hangers to permanent metal forms. Furnish cast-in-place hanger
inserts that extend through forms.
12. Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.
13. Do not connect or suspend steel framing from ducts, pipes, or conduit.
14. Fire-Resistance-Rated Assemblies: Wire tie furring channels to supports.
15. Seismic Bracing: Sway-brace suspension systems with hangers used for support.
16. Grid suspension systems are suitable for use with gypsum board. They might not be acceptable for gypsum veneer plaster; consult gypsum veneer plaster and grid suspension system manufacturers before specifying them.

17. Grid Suspension Systems: Attach perimeter wall track or angle where grid suspension systems meet vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.
18. Example tolerance below is based on ASTM C 636 for acoustical ceilings.
19. Installation Tolerances: Install suspension systems that are level to within 1/8 inch in 12 feet measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

3.7 INSTALLING FRAMED ASSEMBLIES

A. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.

B. Install studs so flanges within framing system point in same direction.

1. Space studs as follows:
   a. Single-Layer Application: 16 inches o.c., unless otherwise indicated.
   b. Multilayer Application: 16 inches o.c., unless otherwise indicated.
   c. Tile backing panels: 16 inches o.c., unless otherwise indicated.

C. Install tracks (runners) at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts penetrating partitions above ceiling.

1. Slip-Type Head Joints: When using USG Gypsum board, isolate stud system from transfer of structural loading to system, both horizontally and vertically. Provide slip or cushioned type joints to attain lateral support and avoid axial loading. Cut studs 3/4" short of full height. Do not secure studs to top of runner. Do not secure gypsum board to top runner. Reference **UL** U 465 4A or 4B. For use on fire rated partition.
2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
   a. Install two studs at each jamb, unless otherwise indicated.
   b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch clearance from jamb stud to allow for installation of control joint in finished assembly.
   c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.
3. Other Framed Openings: Frame openings other than door openings the same as required for door openings, unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
4. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.

a. Firestop Track: Where indicated, install to maintain continuity of fire resistance-rated assembly indicated.

5. Install supplementary framing, solid blocking and bracing to support fixtures, equipment, services, heavy trim, furnishings, woodwork, accessories and similar work.
6. Install runner tracks where gypsum board stud system abuts other work.
7. Terminate partition stud system at underside of construction above, except where indicated. Provide bracing to structure above in long runs and elsewhere where required but not less than 16 foot centers.
8. Fasten studs only at ends of floor and ceiling runner tracks by installing a screw into both flanges at each end.
9. Install horizontal stiffeners in stud system faced on one side only; space 4'-0" o.c. vertically; wire-tie at each intersection.

D. Metal Furring:

1. Space furring members 16" o.c. vertically, except as indicated closer.
2. Install extra furring members and angle runners at terminations of drywall work, and at openings and where required for support of other work occurring in the drywall work.
3. Attachment:
   a. Screw to metal framing.
   b. Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.

E. Z-Furring Members:

1. Erect insulation (specified in Division 07 Section "Thermal Insulation") vertically and hold in place with Z-furring members spaced 24 inches o.c.
2. Except at exterior corners, securely attach narrow flanges of furring members to wall with concrete stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.
3. At exterior corners, attach wide flange of furring members to wall with short flange extending beyond corner; on adjacent wall surface, screw-attach short flange of furring channel to web of attached channel. At interior corners, space second member no more than 12 inches from corner and cut insulation to fit.

F. Paragraph below is based on recommendation in GA-216 for wood framing and ASTM C 840 for metal framing.

G. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

3.8 INSTALLATION OF GYPSUM BOARD

A. Preparations and Coordination:

1. Prior to the start of installation of gypsum board, meet at the Project Site with the installers of related work including work requiring openings, chases, frames, access panels, support and similar integrated requirements (including mechanical and electrical work). Review areas of potential interference and conflicts, and coordinate layout and sequencing requirements for proper integration of the work.

2. Do not proceed with gypsum board installation until blocking, framing, bracing and other supports for subsequently applied work have been installed.
3. Install sound attenuation blankets where indicated and where required to achieve fire-resistance ratings, before installation of gypsum board unless blankets can be readily installed after board has been installed.

B. Basic Installation Requirements:

1. Comply with ASTM C 840.
2. Comply with requirements for fire-resistance ratings.
3. Locate exposed end-butt joints as far from center of walls and ceilings as possible, and stagger not less than 1 '-0" in alternate courses of board.
4. Install exposed gypsum board with face side out. Do not install imperfect, damaged or damp boards. Butt boards together for a light contact at edges and ends with not more than 1/16" open space between boards. Do not force into place.
5. Apply board vertically, one-piece full height. Locate edge end joints over supports. Position boards so that both tapered edge joints abut, and mill-cut or field-cut end joints abut. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs On opposite sides of partitions.
6. Attach gypsum board to framing and blocking as required for additional support at openings and cutouts.
7. After scoring face paper and breaking core, cut back paper; do not tear or snap. Bevel panel ends 1/8" at 45° angle with sharp knife.
8. Do not locate joints within 8" of corners or openings. Where necessary, place a single vertical joint over the center of wide openings.
9. Install gypsum board on both faces of steel stud partition framing above ceilings to underside of deck unless noted otherwise.
10. Provide perimeter isolation where partitions abut structural elements. Allow not less than 1/4", not more than 3/8" gap between gypsum and structure. Finish edges of face layer with Hype (semi-finishing) casing bead. Seal space between casing bead and structure with continuous acoustical sealant bead. Attach gypsum board to studs not less than 1/2" below bottom edge of ceiling track flanges and to first stud adjacent to vertical tracks. Do not attach board directly to tracks.
11. At partitions, provide continuous beads of acoustical sealant at juncture or both faces of runners of plates with floor and ceiling construction, and wherever work abuts dissimilar materials. Seal prior to installation of gypsum boards.
12. At ceilings, provide continuous beads of acoustical sealants wherever work abuts dissimilar materials.

13. Wrap all electrical and communication boxes and all other back-boxes to completely close up all openings and joints with firestopping pads in rated construction and with outlet box pads tape in non-rated construction.
14. At openings and cutouts, fill open spaces between edges of gypsum board and fixtures, cabinets, ducts and other flush or penetrating items, with continuous bead of acoustical sealant.
15. Install sound attenuation blankets, in partitions where indicated. Completely blanket space between studs to full height of partitions. Fit carefully behind electrical outlets and other work, which penetrates partitions. Attach to back face of gypsum board in accordance with manufacturer's instructions.
16. Unless otherwise specifically shown, continue all sound attenuation blankets and gypsum board above ceiling to provide complete closure. Fit tight to abutting and penetrating construction and seal.
17. Fill joint between tracks and abutting construction with safing insulation.
18. Space fasteners in gypsum boards in accordance with referenced gypsum board application and finishing standard and manufacturer's recommendations and requirements of fire rating design (if any), but not less than 12" o.c. except 8" o.c. for abuse resistant board (if any) and the backer board.

C. Control Joints: Provide control joints in accordance with ASTM C840, if not indicated place joints at maximum 30 foot spacing located at door jamb or window jamb studs where practical. Provide on both sides of partitions. Install in accordance with ASTM C840 and manufacturer's recommendations.

D. Grouting Frames:

1. Where grouting is indicated, fully grout frames with stiff gypsum grout to depth of clip before installing jamb stud.
2. Where grouting is not indicated, spot grout by applying gypsum grout or joint compound just before inserting gypsum board sheet.

E. Ceilings:

1. Apply exposed gypsum board on ceilings, before applications on walls and partitions, to the greatest extent possible.
2. Apply indirection, which will minimize end joints.
3. Fasten with screws.
4. Where gypsum board ceiling is shown as base for adhesively-applied acoustical ceiling tile, install gypsum backing board, with end joints staggered over supports.

F. Install interior gypsum board in the following locations:

1. Regular Type: Vertical surfaces, unless otherwise indicated.
2. Type X: Where required for fire-resistance-rated assembly.
3. Type C: Where required for specific fire-resistance-rated assembly indicated.
4. Ceiling Type: Ceiling surfaces.
5. Abuse Resistant Type: On all exposed surfaces in the public spaces.

6. Moisture and Mold-Resistant Type: On walls of the in wet areas not receiving a tile finish and in following areas: including locker rooms, toilet rooms, wet wall of Break Rooms, Vestibules, Recycling Collection Spaces.

G. Single-Layer Walls and Partitions:

1. Apply sheets vertically and provide full height sheet lengths.
2. Locate edge joints over supports; stagger joints over supports on opposite sides of partitions.
3. Fasten with screws.
4. Except where otherwise specified or indicated, where drywall is base for thin-set ceramic tile and similar rigid applied wall finishes, install water-resistant gypsum backing board to comply with ASTM C 840 and recommendations of gypsum board manufacturer.

H. Double-Layer Walls and Partitions:

1. Install base layer of gypsum backing board (or exposed gypsum board, at Installer's option), and face layer of exposed gypsum board. Apply both layers vertically, with joints of base layer over supports and joints of face layer offset at least 10" with base layer joints. Provide full height sheet lengths.
2. Fasten base layer with screws.
3. Fasten face layer with screws through base layer and into supports or laminating adhesive. Brace to temporarily fasten face layer until adhesive has dried.
4. Supplement adhesive with permanent screw fastening of face layer through base layer and into supports.

I. Cementitious Backer Partitions: Install and treat joint to comply with manufactures recommendations.

3.9 INSTALLATION OF TRIM ACCESSORIES

A. Coordinate the installation of trim accessories with the installation of gypsum board. Use the same fasteners to anchor trim accessory flanges as required to fasten gypsum board to the supports.

B. Install paper tape-in type metal corner beads at external corners of drywall work.

C. Install paper tape-in type metal edge trim wherever edge of gypsum board would otherwise be exposed or semi-exposed.

1. Install L-type trim-beads for joint compound where edge is shown to be tightly fitted to abutting work without reveal or sealant pocket.
2. Install U-type trim-beads for joint compound where edge is not tightly fitted to abutting work exposed, revealed, sealant pocket, gasketed, or other separation, except as otherwise indicated.

D. Install H-Molding in exterior gypsum drywall work where control joints are indicated, except do not exceed spacing recommended by gypsum board manufacturer.

3.10 FINISHING

A. Comply with manufacturer's instructions for the mixing, handling and application of materials. Machine or hand application is Installer's option. Apply treatment at joints both directions, flanges of trim accessories, penetrations of the gypsum board (electrical boxes, piping and similar work), fastener heads, surface defects and elsewhere as indicated; and apply in the manner which will result in each of these being concealed when applied decoration has been completed.

B. Where open joints of more than 1/16" occur, including edges of boards with rounded or beveled corners, prefill joint with special chemical-hardening-type bedding compound, prior to bedding of joint tape.

C. Comply with the requirements for a level 4 finish except where otherwise specified. Embed tape in joint compound in all joints and interior angles and apply two (2) additional separate coats of joint compound over all flat joints and one separate coat of joint compound overall interior angles. Cover fastener heads and accessories with three separate coats of joint compound. Provide compound free of tool marks and ridges and the Gypsum board surface free of joint compound. Smooth compound by wiping with a damp sponge.

D. Where level 5 finishes where indicated on drawings, after completing level 4 finishing, trowel-apply a thin, skim coat of joint compound to the entire surface filling in perfections in the joint finishing, smoothing the paper texture providing a uniform surface. Immediately shear off excess compound leaving a very thin generally translucent skim coating of compound completely covering the paper, smooth and free of tool marks and ridges.

E. Where water resistant gypsum board is indicated as a base for ceramic tile and similar rigid applied finishes, finish joints with tape and setting. Tape joint compound to comply with gypsum board manufacturer's recommendations.

F. Where gypsum board is indicated as a base for the adhesive-application of wall coverings, comply with manufacturer's instructions for applying joint compound and joint tape in minimum thicknesses over end-joints and cut-joints, so as to avoid a build-up of tape and compound which would telegraph through. Select topping coat for maximum strength and bond with gypsum board.

G. Partial Finishing: Omit third coat and finishing on concealed drywall construction that is indicated for drywall finishing or which requires finishing to achieve fire-resistance rating, sound rating or to act as air or smoke barrier.

H. Exterior Finishing: Install drywall finishing with exterior chemical-hardening type compound for all three coats, and for prefill if required. Use type of joint tape recommended by manufacturer.

3.11 WASTE MANAGEMENT

A. Refer to Construction Waste Management and Disposal section 01 74 19.

B. Separate and recycle off cuts and waste materials in accordance to Section 01 74 19 and to the maximum extent economically feasible.

C. Separate clean waste gypsum products from contaminants for recycling. Do not include wood, plastic, metal, asphalt impregnated gypsum board, or any gypsum board coated with glass fiber, vinyl, decorative paper, or other finish. Place in designated area and protect from moisture and contamination.

D. Separate metal waste in accordance to Section 01 74 19 and place in designated areas for recycling or reuse.

E. Place materials defined as hazardous or toxic waste in designated containers.

F. Return solvent and oil soaked rags for contaminant recovery and laundering or for proper disposal.

G. Use trigger operated spray nozzles for water hoses.

H. Use the least toxic sealants, adhesives, sealers, and finishes necessary to comply with the requirements of this section.

I. Set aside and protect the surplus and uncontaminated waste finish materials. Deliver to or arrange collection by employees, individuals, or organizations for verifiable re-use or re-manufacturing.

J. Close and seal tightly all partly used sealant and adhesive containers and store protected in well ventilated fire-safe area at moderate temperature.

K. Place used sealant and adhesive tubes and containers in areas designated for hazardous waste.

L. Dispose of scraps less than 2 sq. ft. in area, or less than 8" in width according to Section 01 7419.

END OF SECTION

SECTION 09510

ACOUSTICAL CEILINGS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

Drawings and general conditions of Contract, including General and Supplementary Conditions and Divisions-1 Specification sections apply to work of this section.

1.2 SUMMARY

A. Section Includes:

1. Acoustical ceiling panels.
2. Exposed grid suspension system.
3. Wire hangers, fasteners, main runners, cross tees, and wall angle moldings.

B. Related Sections:

1. Section 09250 - Gypsum Board
2. Section 09120 - Suspension System Framing and Furring for Plaster and Gypsum Board Assemblies
3. Division 15 Sections - Mechanical Work
4. Division 16 Sections - Electrical Work

C. Alternates

1. Prior Approval: Unless otherwise provided for in the Contract documents, proposed product substitutions may be submitted no later than TEN (10) working days prior to the date established for receipt of bids. Acceptability of a proposed substitution is contingent upon the Architect's review of the proposal for acceptability and approved products will be set forth by the Addenda. If included in a Bid are substitute products which have not been approved by Addenda, the specified products shall be provided without additional compensation.
2. Submittals which do not provide adequate data for the product evaluation will not be considered. The proposed substitution must meet all requirements of this section, including but not necessarily limited to, the following: Single source materials suppliers (if specified in Section 1.5); Underwriters' Laboratories Classified Acoustical performance; Panel design, size, composition, color, and finish; Suspension system component profiles and sizes; Compliance with the referenced standards.

1.3 REFERENCES

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

1. ASTM A 1008 Standard Specification for Steel, Sheet, Cold Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
2. ASTM A 641 Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
3. ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.
4. ASTM C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
5. ASTM C 635 Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
6. ASTM C 636 Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.
7. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials.
8. ASTM E 1414 Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum.
9. ASTM E 1111 Standard Test Method for Measuring the Interzone Attenuation of Ceilings Systems.
10. ASTM E 1264 Classification for Acoustical Ceiling Products.
11. ASTM E 1477 Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers.
12. ASTM D 3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
13. ASTM E 119 Standard Test Methods for Fire Tests of Building Construction and Material.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's technical data for each type of acoustical ceiling unit and suspension system required.

B. Samples: Minimum 6 inch x 6 inch samples of specified acoustical panel; 8 inch long samples of exposed wall molding and suspension system, including main runner and 4 foot cross tees.

C. Shop Drawings: Layout and details of acoustical ceilings. Show locations of items which are to be coordinated with, or supported by the ceilings.

D. Certifications: Manufacturer's certifications that products comply with specified requirements, including laboratory reports showing compliance with specified tests and standards. For acoustical performance, each carton of material must carry an approved independent laboratory classification of NRC, CAC, and AC.

E. If the material supplied by the acoustical subcontractor does not have an Underwriter's Laboratory classification of acoustical performance on every carton, subcontractor shall be required to send material from every production run appearing on the job to an independent or NVLAP approved laboratory for testing, at the architect's or owner's discretion. All products not conforming to manufacturer's current published values must be removed, disposed of and replaced with complying product at the expense of the Contractor performing the work.

1.5 QUALITY ASSURANCE

A. Single-Source Responsibility: Provide acoustical panel units and grid components by a single manufacturer.

B. Fire Performance Characteristics: Identify acoustical ceiling components with appropriate markings of applicable testing and inspecting organization.

1. Surface Burning Characteristics: As follows, tested per ASTM E 84 and complying with ASTM E 1264 for Class A products.
   a. Flame Spread: 25 or less
   b. Smoke Developed: 50 or less

C. Coordination of Work: Coordinate acoustical ceiling work with installers of related work including, but not limited to building insulation, gypsum board, light fixtures, mechanical systems, electrical systems, and sprinklers.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical ceiling units to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content.

C. Handle acoustical ceiling units carefully to avoid chipping edges or damaged units in any way.

1.7 PROJECT CONDITIONS

A. Space Enclosure:

All ceiling products and suspension systems must be installed and maintained in accordance with Armstrong written installation instructions for that product in effect at the time of installation and best industry practice. Prior to installation, the ceiling product must be kept clean and dry, in an environment that is between 32°F (0°C) and 120°F (49°C) and not subject to Abnormal Conditions. Abnormal conditions include exposure to chemical fumes, vibrations, moisture from conditions such as building

leaks or condensation, excessive humidity, or excessive dirt or dust buildup.

HumiGuard Plus Ceilings: Installation of the products shall be carried out where the temperature is between 32°F (0° C) and 120°F (49° C). It is not necessary for the area to be enclosed or for HVAC systems to be functioning. All wet work (plastering, concrete, etc) must be complete and dry. The ceilings must be maintained to avoid excessive dirt or dust buildup that would provide a medium for microbial growth on ceiling panels. Microbial protection does not extend beyond the treated surface as received from the factory, and does not protect other materials that contact the treated surface such as supported insulation materials.

1.8 WARRANTY

A. Acoustical Panel: Submit a written warranty executed by the manufacturer, agreeing to repair or replace acoustical panels that fail within the warranty period. Failures include, but are not limited to:

1. Acoustical Panels: Sagging and warping as a result of defects in materials or factory workmanship.
2. Grid System: Rusting and manufacturer's defects
3. Acoustical Panels with BioBlock Plus or designated as inherently resistive to the growth of micro-organisms installed with Armstrong suspension systems: Visible sag and will resist the growth of mold/mildew and gram positive and gram negative odor and stain causing bacteria.

B. Warranty Period Humiguard:

1. Acoustical panels: Ten (10) years from date of substantial completion.
2. Grid: Ten (10) years from date of substantial completion.
3. Acoustical panels and grid systems with HumiGuard Plus or HumiGuard Max performance supplied by one source manufacturer is thirty (30) years from date of substantial completion.

C. The Warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.

1.9 MAINTENANCE

A. Extra Materials: Deliver extra materials to Owner. Furnish extra materials described below that match products installed. Packaged with protective covering for storage and identified with appropriate labels.

1. Acoustical Ceiling Units: Furnish quantity of full-size units equal to 1.0 percent of amount installed.

2. Exposed Suspension System Components: Furnish quantity of each exposed suspension component equal to 2.0 percent of amount installed.

PART 2- PRODUCTS

2.1 MANUFACTURERS

A. Ceiling Panels:
Armstrong World Industries, Inc.

2.2 ACOUSTICAL CEILING UNITS

A. Acoustical Panels Type ACT-1:

1. Surface Texture: Fine
2. Composition: Mineral Fiber
3. Color: White
4. Size: 24in X 24in X 3/4in
5. Edge Profile: Ultima 9/16” Beveled Tegular for interface with Silhouette XL 9/16" Bolt Slot - 1/4" Reveal.
6. Noise Reduction Coefficient (NRC): ASTM C 423; Classified with UL label on product carton, 0.70.
7. Ceiling Attenuation Class (CAC): ASTM C 1414; Classified with UL label on product carton, 35
8. Emissions Testing: Section 01350 Protocol, < 13.5 ppb of formaldehyde when used under typical conditions required by ASHRAE Standard 62.1-2004, "Ventilation for Acceptable Indoor Air Quality"
9. Flame Spread: ASTM E 1264; Class A (UL)
10. Light Reflectance (LR): ASTM E 1477; White Panel: Light Reflectance: 0.90.
11. Dimensional Stability: HumiGuard Plus - Temperature is between 32°F (0° C) and 120°F (49° C). It is not necessary for the area to be enclosed or for HVAC systems to be functioning. All wet work (plastering, concrete, etc) must be complete and dry.
12. Antimicrobial Protection: BioBlock Plus - Resistance against the growth of mold/mildew and gram positive and gram negative odor and stain causing bacteria.
13. Acceptable Product: Ultima 9/16” Beveled Tegular (item no. 1912), as manufactured by Armstrong World Industries.

2.3 SUSPENSION SYSTEMS

A. Components: All main beams and cross tees shall be commercial quality hot-dipped galvanized (galvanized steel, aluminum, or stainless steel) as per ASTM A 653. Main beams and cross tees are double-web steel construction with 9/16 IN type exposed flange design. Exposed surfaces chemically cleansed, capping pre-finished galvanized steel (aluminum or stainless steel) in baked polyester paint. Main beams and cross tees shall have rotary stitching (exception: extruded aluminum or stainless steel).

1. Structural Classification: ASTM C 635 HD.
2. Color: White and match the actual color of the selected ceiling tile, unless noted otherwise.
3. Acceptable Product: Silhouette XL 9/16" Bolt Slot - 1/8" Reveal as manufactured by Armstrong World Industries, Inc.

B. Attachment Devices: Size for five times design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.

C. Wire for Hangers and Ties: ASTM A 641, Class 1 zinc coating, soft temper, pre-stretched, with a yield stress load of at least time three design load, but not less than 12 gauge.

D. Edge Moldings and Trim: Metal or extruded aluminum of types and profiles indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations, including light fixtures, that fit type of edge detail and suspension system indicated. Provide moldings with exposed flange of the same width as exposed runner.

E. Accessories

PART 3 – EXECUTION

3.1 EXAMINATION

A. Do not proceed with installation until all wet work such as concrete, terrazzo, plastering and painting has been completed and thoroughly dried out, unless expressly permitted by manufacturer's printed recommendations. (Exception: HumiGuard Max Ceilings)

3.2 PREPARATION

A. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less than half width units at borders, and comply with reflected ceiling plans. Coordinate panel layout with mechanical and electrical fixtures.

B. Coordination: Furnish layouts for preset inserts, clips, and other ceiling anchors whose installation is specified in other sections.

1. Furnish concrete inserts and similar devices to other trades for installation well in advance of time needed for coordination of other work.

3.3 INSTALLATION

A. Install suspension system and panels in accordance with the manufacturer's instructions, and in compliance with ASTM C 636 and with the authorities having jurisdiction.

B. Suspend main beam from overhead construction with hanger wires spaced 4-0 on center along the length of the main runner. Install hanger wires plumb and straight.

C. Install wall moldings at intersection of suspended ceiling and vertical surfaces. Miter corners where wall moldings intersect or install corner caps.

D. For reveal edge panels: Cut and reveal or rabbet edges of ceiling panels at border areas and vertical surfaces.

E. Install acoustical panels in coordination with suspended system, with edges resting on flanges of main runner and cross tees. Cut and fit panels neatly against abutting surfaces. Support edges by wall moldings.

3.4 ADJUSTING AND CLEANING

A. Replace damaged and broken panels.

B. Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members. Comply with manufacturer's instructions for cleaning and touch up of minor finish damage.

1. Ceiling Touch-Up Paint, (Item #5760, 8oz. bottles) (Item #5761, quart size cans), "global white" latex paint should be used to hide minor scratches and nicks in the surface and to cover field tegularized edges that are exposed to view.

C. Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION

SECTION 099123

INTERIOR PAINTING

PART 1 – GENERAL

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes surface preparation and the application of paint systems on the following interior substrates:

1. Gypsum board.
2. Plywood.
3. Concrete Masonry Units

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Verification: For each type of paint system and in each color and gloss of topcoat indicated.

1. Submit Samples on rigid backing, 8 inches square.
2. Step coats on Samples to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

C. Product List: For each product indicated, include the following:

1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
2. Printout of current "MPI Approved Products List" for each product category specified in Part 2, with the proposed product highlighted.

1.4 QUALITY ASSURANCE

A. MPI Standards:

1. Products: Complying with MPI standards indicated and listed in "MPI Approved Products List."
2. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and paint systems indicated.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.6 PROJECT CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

1.7 EXTRA MATERIALS

A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.

1. Quantity: Furnish an additional 5 percent, but not less than 1 gal. of each material and color applied.

PART 2 - PRODUCTS

2.1 PAINT, GENERAL

A. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

B. VOC Content of Field-Applied Interior Paints and Coatings: Provide products that comply with the limits for VOC content as referenced in Sustainable Design Requirements section018113.

C. Chemical Components of Field-Applied Interior Paints and Coatings: Provide topcoat paints and anti-corrosive and anti-rust paints applied to ferrous metals that comply with the chemical restrictions as referenced in Sustainable Design Requirements section 01 81 13.

D. Colors: As indicated in a finish schedule.

2.2 GYPSUM WALL BOARD PRIMER

A. Interior Latex-Based Low Odor Primer: MPI#149.

1. VOC Content: Refer to Sustainable Design Requirements section 01 81 13.
2. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    a. Benjamin Moore: Eco Spec Interior Latex Primer Sealer W231
    b. Cloverdale Paint: Horizon Interior Low VOC Drywall Sealer 90700
    c. Columbia Paint: Purecoat Low Odor Interior Primer 05-574-PP
    d. Rodda Paint: Horizon Interior Latex Sealer 503501X

2.3 LATEX PAINTS

A. Institutional Low-Odor /VOC Latex (Flat): MPI #143 (Gloss Level 1).

1. VOC Content: Refer to Sustainable Design Requirements section 01 81 13.
2. Environmental Performance Rating: EPR 4 or EPR 5.5.
3. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    a. Benjamin Moore: Eco Spec Int. Latex Flat W219
    b. ICI Paints: Dulux, Lifemaster Flat Interior Latex Enamel 9100-0100
    c. PPG: Pure Performance Interior Latex Flat 9-100
    d. Sherwin-Williams: Harmony Interior Latex Flat B5W951

B. Institutional Low-Odor /VOC Latex (Low Sheen): MPI #144 (Gloss Level 2).

1. VOC Content: Refer to Sustainable Design Requirements section 01 81 13.
2. Environmental Performance Rating: EPR 4.5.
3. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    a. Benjamin Moore: Eco Spec Int. Latex Eggshell Enamel W223
    b. ICI Paints: Devoe Paint, Wonder-Pure No-VOC/Odor Int. Eggshell Wall &Trim Paint DR3201
    c. ICI Paints: Devoe Paint Wonder Pure Eggshell Interior Latex Enamel DRN32XX
    d. ICI Paints: Dulux, Lifemaster Eggshell Interior Latex Enamel 9300-0100
    e. PPG: Interior Eggshell White Pastel Base CP-5184
    f. PPG: PPG, Interior Eggshell White/Pastel Base CP-5184
    g. Sherwin-Williams: Harmony Interior Latex Eggshell B09W00951

C. Institutional Low-Odor/VOC Latex (Semigloss): MPI #147 (Gloss Level 5).

1. VOC Content: Refer to Sustainable Design Requirements section 01 81 13.
2. Environmental Performance Rating: EPR 3 or EPR 5.5.
3. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    a. Benjamin Moore: Eco Spec Int. Latex Semi-Gloss Enamel W224
    b. ICI Paints: Devoe Paint, Wonder Pure Semi-Gloss Interior Latex Enamel DRN33XX
    c. ICI Paints: Dulux Lifemaster Semi-Gloss Interior Latex Enamel 92000100
    d. PPG: Pure Performance Interior Semi-Gloss Latex 9-500
    e. Sherwin-Williams: Harmony Interior Latex Semi-Gloss B1 OW00951

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Concrete: 12 percent.
2. Masonry (Clay and CMU): 12 percent.
3. Wood: 15 percent.
4. Gypsum Board: 12 percent.
5. Plaster: 12 percent.

C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

D. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.

1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.

B. Remove plates, machined surfaces, and similar items already in place that are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

C. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.

D. Concrete Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

E. Gypsum Board Substrates: Do not begin paint application until finishing compound is dry and sanded smooth.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions.

1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.4 FIELD QUALITY CONTROL

A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure at any time and as often as Owner deems necessary during the period when paints are being applied:

1. Owner will engage the services of a qualified testing agency to sample paint materials being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
2. Testing agency will perform tests for compliance with product requirements.
3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove non-complying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 INTERIOR PAINTING SCHEDULE

A. CMU Substrates - General (Conditioned spaces excluding holding areas. Interior unconditioned spaces with CMU to receive exterior CMU paint system: MPI EXT 4.2AG5. Refer to Exterior Painting Schedule.)

1. Institutional Low-Odor/VOC Latex System: MPIINT 4.2E-G2.
   a. Prime Coat: Interior/exterior latex block filler; MPI #4.
   b. Intermediate Coat: Institutional low-odor/VOC interior latex matching topcoat; MPI #144.
   c. Topcoat: Institutional low-odor/VOC interior latex (low sheen); MPI #144.

B. Gypsum Board Substrates - Including underside of soffits, and finished ceilings:

1. Institutional Low-Odor/VOC Latex System: MPIINT 9.2M-G1.
    a. Prime Coat: Interior latex primer/sealer; MPI #149.
    b. Intermediate Coat: Institutional low-odor/VOC interior latex matching. topcoat; MPI #143.
    c. Topcoat: Institutional low-odor/VOC interior latex (flat); MPI #143.

C. Gypsum Board/Plywood Substrates - Including walls up to the underside of soffits including soffit faces, up to the underside of finished ceilings, and/or up to the underside of structural decks:

1. Institutional Low-Odor/VOC Latex System: MPIINT 9.2M-G2.
    a. Prime Coat: Interior latex primer/sealer; MPI #149.
    b. Intermediate Coat: Institutional low-odor/VOC interior latex matching topcoat; MPI #144.
    c. Topcoat: Institutional low-odor/VOC interior latex (low sheen); MPI #144.

3.1 WASTE MANAGEMENT

A. Refer to Construction Waste Management and Disposal section 01 7419.

B. Properly reseal and repackage in original manufacture's containers and return to owner.

1. Coordinate with owner's representative prior to completion of application.

C. Use trigger operated spray nozzles for water hoses.

D. Where choices exist, preference is to be given to coatings which have the following characteristics:

1. Water based.
2. Require water cleanup.
3. Low in Volatile Organic Compounds (VOG).
4. Do not contain toxic metal pigments.

E. Do not use kerosene or any such organic solvents to thin or clean up water based paints.

F. Do not dispose of paints or solvents by pouring on the ground. Place in designated containers for proper disposal.

G. Where paint recycling is available, collect all waste paint by type and provide for delivery to recycling or collection facility.

END OF SECTION

SECTION 09654

LINOLEUM FLOOR COVERINGS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes linoleum sheet floor coverings.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings:

1. Show locations of seams, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
2. Show details of special patterns.

C. Samples for Initial Selection: For each type of linoleum floor covering indicated.

1. Include similar Samples of installation accessories involving color selection.

D. Samples for Verification: In manufacturer's standard size, but not less than 6-by-9-inch sections of each color and pattern of linoleum floor covering required.

1. Heat-Welding Bead: Include manufacturer's standard-size Samples, but not less than 9 inches long, of each color required.
2. Heat-Welded Seam Samples: For each flooring product and welding bead color and pattern combination required; with seam running lengthwise and in center of 6-by-9-inch sections Sample applied to rigid backing and prepared by Installer for this Project.

E. Qualification Data: For Installer.

F. Maintenance Data: For linoleum floor coverings to include in maintenance manuals.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs workers for this Project that are competent in techniques required by manufacturer for floor covering installation indicated.

1. Engage an installer who employs workers for this Project that are trained or certified by floor covering manufacturer for installation techniques required.

B. Fire-Test-Response Characteristics: Provide products identical to those tested for fire-exposure behavior per test method indicated by a testing and inspecting agency acceptable to authorities having jurisdiction.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store floor coverings and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F.

1. Floor Tile: Store on flat surfaces.
2. Sheet Floor Covering: Store rolls upright.

1.6 PROJECT CONDITIONS

A. Maintain temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive floor tile during the following time periods:

1. 72 hours before installation.
2. During installation.
3. 72 hours after installation.

B. After post installation period, maintain temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.

C. Close spaces to traffic during floor covering installation.

D. Close spaces to traffic for 72 hours after floor covering installation.

E. Install floor coverings after other finishing operations, including painting, have been completed.

1.7 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Floor Tile: Furnish one box for every 50 boxes or fraction thereof of each type, color, and pattern of floor tile installed.
2. Sheet Floor Covering: Furnish not less than 10 linear feet in full roll width for every 500 linear feet or fraction thereof, in roll form and in full roll width, of each different type, color, and pattern of sheet floor covering installed.

PART 2 – PRODUCTS

2.1 LINOLEUM FLOOR COVERING/COVE BASE

A. Linoleum Floor Covering

1. Acceptable Product: Forbo Industries, Inc.; Marmoleum Real.
2. Color and Pattern: Slate Grey #3137.

B. Wall Base

1. Acceptable Product: Roppe 700 Series; 1/8” Type TP Wall Base; 4” with toe.
2. Color and Pattern: Charcoal #123

2.2 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic cement based formulation provided or approved by floor covering manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by floor covering manufacturer for products and substrate conditions indicated.

C. Heat-Welding Bead: Solid-strand product of floor covering manufacturer.

1. Color: To be selected by Owner from manufacturer's full range.

D. Metal Edge Strips: Extruded aluminum with mill finish, of width shown, of height required to protect exposed edge of floor covering, and in maximum available lengths to minimize running joints.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances, moisture content, and other conditions affecting performance.

1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of floor coverings.

2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare substrates according to manufacturer's written recommendations to ensure adhesion of floor coverings.

B. Concrete Substrates: Prepare according to ASTM F 710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
3. Moisture Testing:
   a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
   b. Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.

C. Remove substrate coatings and other substances that are incompatible with floor covering adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.

D. Use trowelable leveling and patching compound to fill cracks, holes, and depressions in substrates.

E. Move floor coverings and installation materials into spaces where they will be installed at least 72 hours in advance of installation.

1. Do not install floor coverings until they are same temperature as space where they are to be installed.

F. Sweep and vacuum clean substrates to be covered by floor coverings immediately before installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, and dust. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 INSTALLATION, GENERAL

A. Scribe and cut floor coverings to butt neatly and tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings.

B. Extend floor coverings into toe spaces, door reveals, closets, and similar openings.

C. Maintain reference markers, holes, or openings that are in place or marked for future cutting by repeating on floor coverings as marked on subfloor. Use chalk or other nonpermanent marking device.

D. Install floor coverings on covers for telephone and electrical ducts and similar items in finished floor areas. Maintain overall continuity of color and pattern with pieces of floor coverings installed on covers. Tightly adhere floor covering edges to substrates that abut covers and to cover perimeters.

E. Adhere floor coverings to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

F. Heat-Welded Seams: Comply with ASTM F 1516. Rout joints and use welding bead to permanently fuse sections into a seamless floor covering. Prepare, weld, and finish seams to produce surfaces flush with adjoining floor covering surfaces.

3.4 SHEET FLOOR COVERING INSTALLATION

A. Unroll sheet floor coverings and allow them to stabilize before cutting and fitting.

B. Lay out sheet floor coverings as follows:

1. Maintain uniformity of floor covering direction.
2. Minimize number of seams; place seams in inconspicuous and low-traffic areas, at least 6 inches away from parallel joints in floor covering substrates.
3. Match edges of floor coverings for color shading at seams.
4. Avoid cross seams.
5. Eliminate deformations that result from hanging method used during drying process (stove bar marks).

C. Wall Base: Wall floor coverings 4 inches up vertical surfaces.

3.5 CLEANING AND PROTECTION

A. Perform the following operations immediately after installing floor coverings:

1. Remove adhesive and other surface blemishes from floor covering surfaces.
2. Sweep and vacuum floor coverings thoroughly.
3. Damp-mop floor coverings to remove marks and soil.
    a. Do not wash floor coverings until after time period recommended by manufacturer.

B. Protect floor coverings against mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods indicated or recommended in writing by manufacturer.

1. Apply protective floor polish to surfaces that are free of soil, visible adhesive, and surface blemishes.
   a. Seal linoleum as recommended by manufacturer but with not less than two coats of floor polish.
   b. Use commercially available product acceptable to manufacturer.
   c. Coordinate selection of floor polish with Owner's maintenance service.
2. Cover linoleum floor coverings with undyed, untreated building paper until inspection for Substantial Completion.
   a. Allow drying room film (yellow film caused by linseed oil oxidation) to disappear before Substantial Completion.
3. Do not move heavy and sharp objects directly over floor covering surfaces. Place plywood or hardboard panels over floor coverings and under objects while they are being moved. Slide or roll objects over panels without moving panels.

END OF SECTION

SECTION 09680

CARPET TILES

PART 1 - GENERAL

1.01 SUMMARY

A. Install Owner supplied carpet tile, furnish and install wall base, and all accessories as shown on Construction Drawings or as otherwise requested.

1.02 REFERENCES

A. American Association of Textile Chemists and Colorists® (AA Tee)

AA TCC 16	Test Method 16, Test Option 16E: Water cooled Xenon Arc Lamp, Continuous Light
AA TCC 20	Fiber Analysis: Qualitative
AA TCC 134	Electrostatic Propensity of Carpets
AA TCC 165	Colorfastness to Crocking: Textile Floor Coverings - Crockmeter Method

B. American National Standards Institute (ANSI)

ISO 2551	Machine-made Textile Floor Coverings - Determination of Dimensional Changes Due to the Effects of Varied Water and Heat Conditions ISO 2551 (Aachen Test). (Previously DIN 54318, Aachen Dimensional Stability Test)

C. American Society of Testing and Materials (ASTM)

ASTM D1335	Standard Test Method for Tuft Bind of Pile Yam Floor Coverings ASTM D2859 Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials
ASTM D3676	Standard Specification for Rubber Cellular Cushion Used for Carpet or Rug Underlay
ASTM D3936	Standard Test Method for Resistance to Delamination of the Secondary Backing of Pile Yam Floor Covering
ASTM D5116	Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials/Products
ASTM D5252	Standard Practice for the Operation of the Hexapod Tumble Drum Tester
ASTM D5417	Standard Practice for the Operation of the Vettermann Drum Tester
ASTM E648	Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source
ASTM E662	Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials

D. California Department of Public Health (CDPH)

Section 01350 Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers

E. Carpet and Rug Institute (CRI)

CRI	Indoor Air Quality (IAQ) Testing Program
CRI TMIOI	Assessment of Carpet Surface Appearance Change
CRI TMI 02	Fluorochemical Finishes
CRI 104	Standard for Installation of Commercial Carpet

F. Consumer Product Safety Commission (CPSC)

CPSC FF 1-70 Methenamine Pill Test

G. GREENGUARD Environmental Institute

GREENGUARD Children & Schools Certification Program

H. National Fire Protection Association (NFPA) NFPA 101 Life Safety Code

NFPA 253 Standard Method of Test for Critical Radiant Flux of Floor Covering Systems using a Radiant Heat Energy Source

I. Resilient Floor Covering Institute (RFCI)

FloorScore® IAQ Testing/Certification Program

1.03 SUBMITTALS

A. The following shall be submitted in accordance with Section 01330, "Submittal Procedures. "

B. Product Data: Submit manufacturer's product literature and installation instructions for each type of carpeting material and installation accessory required.

C. Samples

1. Submit samples of each type exposed edge stripping, vinyl base, and accessory item.

D. Certification

1. Submit certificate stating that the manufacturer and installer comply with Quality Assurance requirements. Include a minimum of five (5) references, complete with addresses, telephone numbers, and contact persons for installations within the time period indicated.

2. Submit manufacturer's certificate stating that materials furnished comply with specified requirements. Include supporting independent certified laboratory testing data indicating that material meets specified test requirements.
3. Submit Material Safety Data Sheet (MSDS) for adhesives, leveling compounds, and primers required.
4. Submit written warranty information stating compliance with requirements.

E. Sustainability Data

1. Submit product data or manufacturer's certification letter indicating percentages by weight of pre-consumer and post-consumer recycled content for each carpet product.
2. Submit product data, MSDS, or manufacturer's certification letter indicating volatile organic compound (VOC) content for each adhesive used for installation of carpet, cove base, and carpet edge guard products.
3. Submit manufacturer's documentation that cove base and carpet edge guard products are compliant with one. of the following:
   a. FloorScore IAQ Certification Program
   b. GREEN GUARD Children & Schools Certification Program
   c. Emission Criteria of California Section 01350 Program
4. Submit manufacturer's documentation that carpet systems meet the following CRI IAQ program requirements:
   a. Carpet: Green Label Plus Program
   b. Carpet Cushion: Green Label Program

F. Maintenance Instructions: Submit manufacturer's printed instructions for maintenance of installed work, including methods and frequency recommended for maintaining optimum condition under anticipated traffic and use conditions. Include precautions against materials and methods that may be detrimental to finishes and performance.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Firm (material producer) with not less than 5 years of production experience, whose published literature clearly indicates general compliance of products with requirements of this Section.

B. Installer Qualifications: Firm with not less than 5 years of experience in· installation of commercial carpet tile of type, quantity, and installation methods similar to work of this Section.

C. Labeling: A label· meeting the Federal Labeling Requirements, as stated in the Textile Products Identification Act under the Federal Trade Commission, shall be attached to the certification samples and the products delivered.

1.05 DELIVERY, STORAGE, AND HANDLING

A. N/A

1.06 SEQUENCING AND SCHEDULING

A. Coordinate work of this Section with other work to ensure that installed carpeting materials are not damaged or soiled.

1.07 PROJECT CONDITIONS

A. General: Comply with CRI 104, Section 6.1, "Site Conditions; Temperature and Humidity."

B. Environmental Limitations: Do not install carpet tile until wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at the levels indicated for project when occupied for its intended use.

C. Do not install carpet tile over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet tile manufacturer and in compliance with the values outlined in 3.01A of this document.

D. When demountable partitions or other items are indicated for installation on top of carpet tile, install carpet tile before the installation of these items.

1.08 WARRANTY

A. Warranties shall cover all labor and materials, including labor and installation costs involved to replace defective product and workmanship. All warranty items are full term, not prorated.

B. General Warranty: Special warranties specified in the Article shall not deprive SNL of other rights SNL may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

C. Special Carpet Tile Warranty: N/A

D. Special Installation Warranty: Written warranty, signed by carpet tile installer and general contractor agreeing to correct faulty workmanship.

1. Installation Warranty Period: 2 years from date of construction complete.

1.09 EXTRA MATERIALS

A. N/A

PART 2 - PRODUCTS

2.1 CARPET TILES

A. Acceptable Product: Lees Commercial Carpet; Ground Strata Modular; Sequences Collection. OWNER SUPPLIED.

B. Color and Pattern: Pear Cactus

2.02 MATERIALS

A. Compatibility: Provide carpet, adhesives, and other related materials that are compatible with one another and with substrates under conditions of service and application.

B. Sustainability Requirements

1. Carpet Systems and Accessories Indoor Air Quality (IAQ):
   a. All installed carpet shall meet the testing and product requirements of the CRI Green Label Plus Program.
   b. All installed carpet cushion shall meet the requirements of the CRI Green Label Program.
   c. All cove base and carpet edge guard products shall be compliant with one of the following:
      - FloorScore IAQ Certification Program
      - GREEN GUARD Children & Schools Certification Program
      - Emissions criteria of California Section 01350 Program
2. VOC Content
   a. Carpet adhesives shall not exceed 50 g/L limit.
   b. Cove base adhesive shall not exceed 50 g/L limit.
   c. Carpet edge guard adhesive shall not exceed 70 g/L limit.

2.03 MANUFACTURED UNITS

A. All product within the same floor of a project shall be from the same dye lot.

2.04 ACCESSORIES

A. Carpet Edge Guard, Nonmetallic: Extruded or molded heavy-duty vinyl or rubber carpet edge guard of size and profile required with minimum 2-inch wide anchorage flange; colors compatible with carpet furnished. Carpet edge guard shall be compliant with one of the following:

1. FloorScore® IAQ Certification Program
2. GREENGUARD Children & Schools Certification Program
3. Emissions Criteria of California Section 01350 Program

Carpet edge guard adhesive shall not exceed 70 g/L VOC limit.

B. Cutback Underlayment and Patching Compound: "Henry 345" Flooring Underlayment Powder, as manufactured by W. W. Henry Company or approved equal.

C. Wall Base: 4 inches high with toe, 1/8” inch. Wall base shall be compliant with one of the following:

1. FloorScore IAQ Certification Program
2. GREEN GUARD Children & Schools Certification Program
3. Emissions Criteria of California Section 01350 Program

Wall base adhesive shall not exceed 50g/L VOC limit.

D. Miscellaneous Materials: As recommended by manufacturers of carpet and other carpeting products for intended application.

E. Releasable Adhesive for Carpet: Provide water-resistant, low VOC (not to exceed 50 g/L limit); non-staining type as recommended by carpet manufacturer which complies with flame spread rating required for carpet installation.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates for moisture content alkaline presence and other conditions under which carpet tile is to be installed. Provide Calcium Chloride test results to verify amount of moisture in new or existing slabs. Calcium Chloride shall be less than or equal to three (3) pounds per one thousand (1000) square feet in 24 hours. Alkalinity testing shall result in a pH range of 5-9. Notify CPM in writing of conditions detrimental to proper completion of the work. Do not proceed until unsatisfactory conditions have been corrected.

B. Field verify all dimensions and other work conditions affecting the installation of carpet tile.

C. The carpet covered by this specification is intended for end-use applications that have a Severe Use Classification. It is the Contractor's responsibility to provide only products compatible with adjacent materials in the assembly.

3.02 PREPARATION

A. General: Comply with CRI 104, Section 6.2, "Site Conditions; Floor Preparation," and carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile installation.

1. Concrete shall be cured, clean, and dry before installation proceeds.
2. Repair minor holes, cracks, depressions, or rough areas using floor

patching/leveling compound that is compatible with the adhesive to be used. Protrusions over 1/32 inch shall be leveled. Large patched areas shall be primed.

3. Whenever a powdery or porous surface is. encountered, a primer compatible with the adhesive shall be used to provide a suitable surface for glue-down installation.
4. Remove existing brass utility caps and install SNL-furnished grout fill caps; grout level with existing substrate.
5. Remove grease, oils, loose particles, paint, dirt, curing and parting agents, and all other foreign substances. Clear away debris and scrape up cementitious deposits from surfaces to receive carpet tile; vacuum clean immediately before installation.
6. Subfloor shall be level and smooth and free from scaling and irregularities per Carpet and Rug Institute acceptable standards (CRI 104).
7. Coordinate carpet installation with any underfloor electrical/telephone/data so conductors and cables are pulled prior to carpet installation. Accessories (floor power/communications monuments) shall be installed on top of carpet after installation.
8. Sequence carpet tile installation with other work to minimize possibility of damage and soiling of carpet during remainder of construction period.
9. Maintain room temperature at minimum 65 degrees F for at least 24 hours prior to installation and relative humidity at approximately that at which the area is to be maintained.

B. Concrete (No Previous Flooring Material): Apply a concrete sealer coat at the rate recommended by the sealer manufacturer. Use thin, fast-drying primers that are compatible with adhesives. Apply adhesive only after primer is completely dry.

C. Concrete (Previous Flooring Materials Removed): Remove existing adhesive by grinding with a concrete grinding machine and moist sand. Do not use solvents to remove adhesive. Apply concrete sealer at rate recommended by the sealer manufacturer. Use thin, fast-drying primers that are compatible with adhesives. Completely cover area with cutback neutralizer per manufacturer's recommendations.

D. Wood: Patch all surface irregularities and seal with wood sealer as recommended by manufacturer.

E. Vinyl Tile: Replace all loose, missing, and broken tiles with tiles of equal thickness, making note of any special requirements with respect to asbestos on the 10bsite Hazard Evaluation. Strip existing tile of wax, dirt, and other foreign substances. Completely cover area with cutback neutralizer per manufacturer's recommendations.

F. Proceed with installation only after unsatisfactory conditions have been corrected.

3.03 INSTALLATION

A. General: Comply with CRI 104, Section 13, "Carpet Modules (Tiles)," and carpet tile manufacturer's written instructions, except where more stringent requirements are shown or specified, and except where project conditions require extra precautions. or provisions to ensure satisfactory performance of the work.

1. Field verify all dimensions and other work conditions affecting the installation of carpet tile.
2. Unless otherwise noted or approved on drawings, begin laying tile at centerline.
3. Comply with carpet tile instructions for direction of carpet tile. Unless otherwise noted on drawings, align pattern and pile in the same direction, parallel to the centerline of the area or room.
4. Extend carpet tile under open-bottomed obstructions and under removable flanges and furnishings, and into alcoves and c1osetsof each space. Existing systems furniture shall be raised or removed to accommodate continuous carpet installation.
5. Provide cut-out where required, and bind cut edges where not concealed by protective edge guards or overlapping flanges.
6. Install carpet edge guard where edge of carpet is exposed; anchor guards to substrate. Use full-length strips only.
7. Expansion Joints: Do not bridge building expansion joints with carpet tile; provide for movement.
8. Carpet tile shall be free from movement when subjected to traffic.
9. Do not use pieces smaller than 1/3 of a standard tile without prior approval by the SDR.
10. Provide mockup for approval by SDR of special cuts/effects such as mitered comers at borders or graphic patters that are prepared and installed onsite.
11. Where there are floor finish material changes at doors, place centerline of abutting materials below door.

B. Glue-Down Installation

1. Fit sections of carpet tile into each space prior to application of adhesive. Trim edges.
2. Apply a full spread of adhesive uniformly to substrate in accordance with manufacturer's instructions unless otherwise indicated by SDR. Follow MSDS instructions for ventilation requirements. Butt carpet tile edges tightly together to form seams without gaps. Butt edges tightly to vertical surfaces. Eliminate air pockets and ensure uniform bond. Remove adhesive promptly from face of carpet tiles.

C. Self-adhesive installation: Install per manufacturer's recommendation.

D. Miscellaneous Installation, Stairway Carpeting: Install per manufacturer's recommendation. Provide vinyl nosing at each riser. Match adjoining carpet installation.

E. Install wall base after completion of carpet work. Use adhesive recommended by wall base manufacturer.

F. Coordinate adhesive blocking areas with SDR when floating carpet tile over access flooring.

3.04 CLEANING AND PROTECTION

A. Remove and dispose of debris and recycle all unusable scraps.

B. Remove excess adhesive and other surface blemishes using cleaner recommended by carpet tile manufacturer. Replace carpet tile where blemishes cannot be removed. Trim protruding face yarn from carpet tile surface. Vacuum carpet tile using commercial quality vacuum cleaner with face-beater element.

C. Protect installed carpet tile to comply with CRI 104, Section 15, "Protection of Indoor Installations."

D. Protect installation with a heavy, non-staining building paper. Do not use a moisture barrier such as plastic film. Maintain protection intact until construction complete.

E. Advise SDR of protection methods and materials necessary to prevent deterioration or damage until construction complete.

3.05 CARPET REMOVAL

A. All carpet tile and scraps removed from SNL projects shall be recycled or reapplied. Disposal of product in landfill is not permitted.

B. Vacuum in-place carpet with industrial vacuum prior to demolition or debris-producing renovation.

C. Remove carpet.

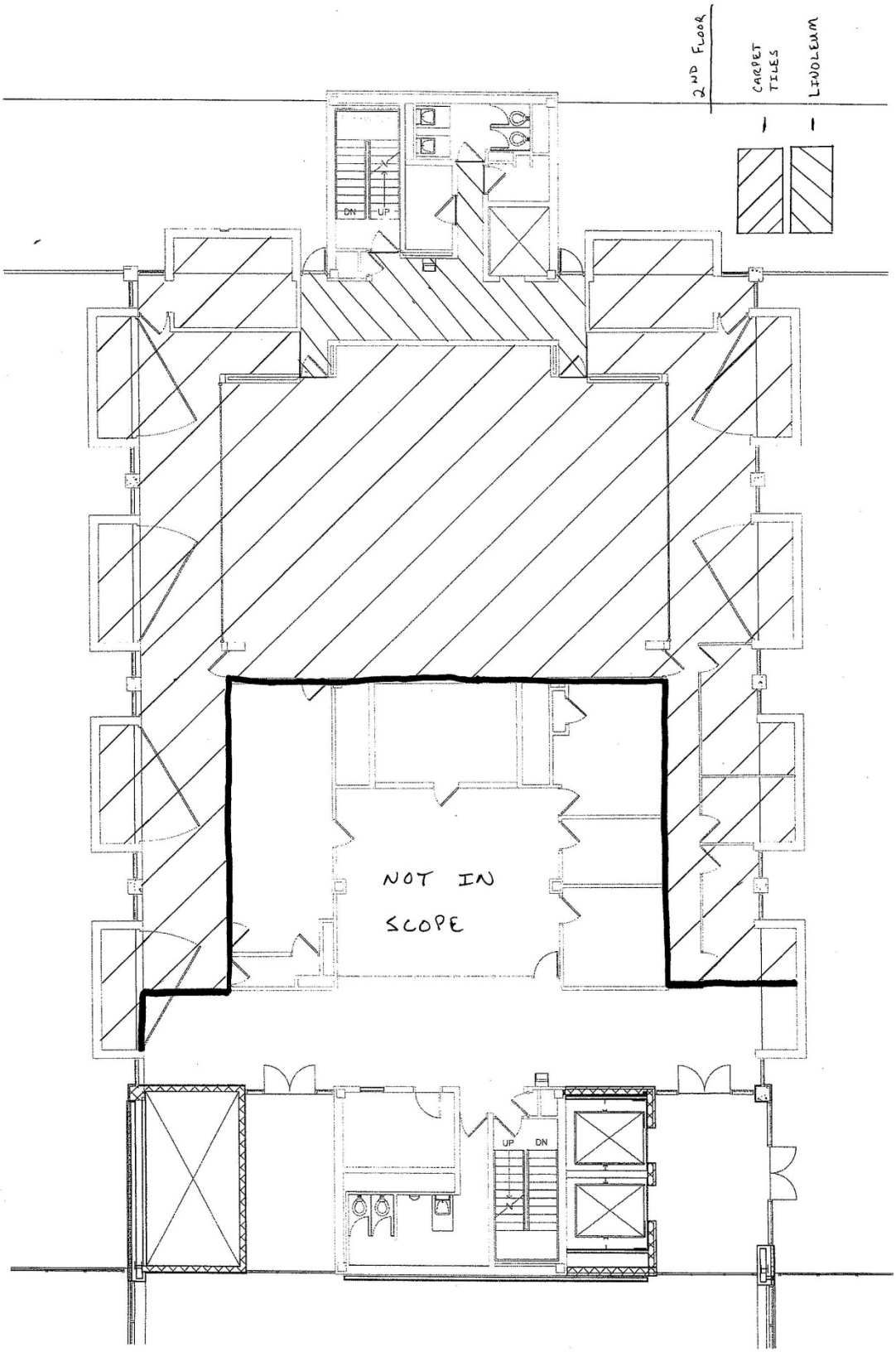
D. Stack on pallets for handling.

E. Store carpet off ground and under cover to prevent contamination of materials by water, foreign matter, or other causes.

F. Coordinate with SNL Pollution Prevention (P2) representative to arrange for delivery to onsite storage area.

END OF SECTION

Floor Covering Plan



Floor Plan – Abatement Work Area