PROJECT MANUAL FOR:

UNIVERSITY OF MISSOURI
TEACHING HOSPITAL –
ROOF REPLACEMENT

PROJECT NO.: CP200011

AT:
UNIVERSITY OF MISSOURI - COLUMBIA
COLUMBIA, MISSOURI

FOR:
THE CURATORS OF THE
UNIVERSITY OF MISSOURI

PREPARED BY:

PLANNING
DESIGN &
CONSTRUCTION

CAMPUS FACILITIES
UNIVERSITY OF MISSOURI

MARCH 06, 2020
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FOR:

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PREPARED BY:

PLANNING, DESIGN, AND CONSTRUCTION
CAMPUS FACILITIES
GENERAL SERVICES BUILDING
UNIVERSITY OF MISSOURI
(573) 882-6800

DATE: MARCH 06, 2020
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ARCHITECTURAL

The Architects seal on these contract documents has been affixed in accordance with the requirements of Chapter 327, RSMO. In affixing this seal, the Architect takes responsibility for the attached architectural specifications. The Architect hereby disclaims any and all responsibility for project specifications other than these, included in these project documents, they being the responsibility of the other design professionals, whose seals and statements appear herein.

Specification Section 02 8213 and the Hazardous Building Material Survey are technical documents that have been prepared by a qualified third party hazardous materials testing lab. The specification was not prepared under the direct supervision of the architect and therefore is not included as part of the architect’s certification.

06 100 Carpentry Work for Roofing
07 227 Fall Protection Devices
07 552 SBS - Modified Bituminous Membrane Roofing
07 600 Sheet Metal Flashing and Trim
07 700 Non-Penetrating Rooftop Pipe and Duct Supports
07 900 Joint Sealants
23 010 Basic Mechanical Requirements
26 010 Basic Electrical Requirements

(seal) Signature: ________________________________
STRUCTURAL

The Engineers seal on these contract documents has been affixed in accordance with the requirements of Chapter 327, RSMO. In affixing this seal, the engineer takes responsibility for the attached engineering specifications. The Engineer hereby disclaims any and all responsibility for project specifications other than these, included in these project documents, they being the responsibility of the other design professionals, whose seals and statements appear herein.

05 1200 Structural Steel Framing
05 4000 Cold-Formed Metal Framing

(seal) Signature:____________________________
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# PROJECT MANUAL FOR: UNIVERSITY OF MISSOURI TEACHING HOSPITAL – ROOF REPLACEMENT

PROJECT NUMBER: CP200011

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And Disposal
EHS Report EHS/1-7

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END OF SECTION
ADVERTISEMENT FOR BIDS

Sealed bids for:

UNIVERSITY OF MISSOURI TEACHING HOSPITAL –
ROOF REPLACEMENT
UNIVERSITY OF MISSOURI
COLUMBIA, MISSOURI
PROJECT NUMBER: CP200011 CONSTRUCTION ESTIMATE $2,070,000 - $2,300,000

will be received by the Curators of the University of Missouri, Owner, at Campus Facilities,
Planning, Design & Construction, Room L100 (Front Reception Desk), General Services
Building, University of Missouri, Columbia, Missouri 65211, until 1:30 p.m., C.T., March 31, 2020
and then immediately opened and publicly read aloud.

Drawings, specifications, and other related contract information may be obtained at
http://operations-webapps.missouri.edu/pdc/adsite/ad.html. Electronic bid sets are available at
no cost and may be printed as desired by the plan holders. No paper copies will be issued. If
paper copies are desired, it is the responsibility of the user to print the files or have them
printed.

Questions regarding the scope of work and commercial conditions should be directed to Design
Services Project Manager Mark Hoerstkamp at (573) 882-2957 or hoerstkampm@missouri.edu.

A MANDATORY prebid meeting will be held at 1:30 p.m., C.T., March 11, 2020 in the General
Services Bldg., Rm 194B, University of Missouri, Columbia, Missouri, followed by a walk-
through at the site. All interested bidders are invited to attend this meeting. A walk-through
of the project may be scheduled by contacting the Prebid Inspection Guide at (573) 882-2228 or
mucfpmprebidsinspectionguides@missouri.edu. A twenty-four to forty-eight hour advance notice
is required for all walk-through request.

Information regarding bid results will be available the day following the bid opening by calling
(573) 882-1133

A Diversity Participation goal of 10% MBE, 10% Combined WBE, DBE, Veteran and 3% SDVE has been
established for this contract.

The Owner reserves the right to waive informalities in bids and to reject any and all bids.

Individuals with special needs as addressed by the Americans with Disabilities Act may contact
(573) 882-1133.

Advertisement Date: March 6, 2020

Gary L. Ward
Vice Chancellor for Operations and Chief Operating Officer
University of Missouri
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SECTION 1.A

BID FOR LUMP SUM CONTRACT

Date: ______________________________

BID OF
(hereinafter called "Bidder") a corporation* organized and existing under laws of the State of ________________________________,
a partnership* consisting of ________________________________,
an individual* trading as ________________________________,
a joint venture* consisting of ________________________________.

*Insert Corporation(s), partnership or individual, as applicable.

TO: Curators of the University of Missouri
    c/o Associate Vice Chancellor – Facilities
    Room L100, General Services Building
    University of Missouri
    Columbia, Missouri 65211

1. Bidder, in compliance with invitation for bids for construction work in accordance with Drawings and Specifications prepared by Planning, Design, and Construction, entitled "University of Missouri Teaching Hospital – Roof Replacement", project number CP200011, dated March 06, 2020 having examined Contract Documents and site of proposed work, and being familiar with all conditions pertaining to construction of proposed project, including availability of materials and labor, hereby proposes to furnish all labor, materials and supplies to construct project in accordance with Contract Documents, within time set forth herein at prices stated below. Prices shall cover all expenses, including taxes not covered by the University of Missouri's tax exemption status, incurred in performing work required under Contract documents, of which this Bid is a part.

Bidder acknowledges receipt of following addenda:

Addendum No. ____________________ Dated __________
Addendum No. ____________________ Dated __________
Addendum No. ____________________ Dated __________
Addendum No. ____________________ Dated __________

2. In following Bid(s), amount(s) shall be written in both words and figures. In case of discrepancy between words and figures, words shall govern.
3. **BID PRICING**

a. **Base Bid:**

The Bidder agrees to furnish all labor, materials, tools, and equipment required to remove existing roofing and install new modified bitumen roofing all as indicated on the Drawings and described in these Specifications for sum of: __________________________DOLLARS ($________________).

b. **Unit Prices:**

(1) For changing specified quantities of work from those indicated by Contract Drawings and Specifications, upon written instructions of Owner, the following Unit Prices shall prevail in accordance with General Conditions.

(2) The following Unit Prices include all labor, overhead and profit, materials, equipment, appliances, bailing, shoring, shoring removal, etc., to cover all work.

(3) The following Unit Prices are required where applicable to particular Base Bid and/or Alternate being submitted.

(4) Only a single Unit Price shall be given and it shall apply for either MORE or LESS work than that indicated on Drawings and called for in Specifications as indicated to be included in Base Bid and/or Alternates. In the event that more or less units than so indicated is actually furnished, Change Orders will be issued for increased or decreased amounts as approved by the Owner.

(5) Bidder understands that the Owner will not be liable for any Unit Price or any amount in excess of Base Bid and any Alternate(s) accepted at time of award of Contract, except as expressed in written Change Orders duly executed and delivered by Owner's Representative.

(6) Fall Protection Anchor Point,  
Base Bid quantity = 40 Anchor Points $ / per one Anchor Point

4. **PROJECT COMPLETION**

a. **Contract Period** - Contract period begins on the day the Contractor receives unsigned Contract, Performance Bond, Payment Bond, and "Instructions for Execution of Contract, Bonds, and Insurance Certificates." Bidder agrees to complete project within two hundred forty (240) calendar days from receipt of
aforementioned documents. Fifteen (15) calendar days have been allocated in construction schedule for receiving aforementioned documents from Bidder.

b. Commencement - Contractor agrees to commence work on this project after the "Notice to Proceed" is issued by the Owner. "Notice to Proceed" will be issued within seven (7) calendar days after Owner receives properly prepared and executed Contract documents listed in paragraph 4.a. above.

c. All noisy and vibration causing work shall occur after being coordinated and approved at least 48 hours in advance with Owner's Representative.

5. SUPPLIER DIVERSITY PARTICIPATION GOALS

a. The Contractor shall have as a goal, subcontracting with Minority Business Enterprise (MBE) of ten percent (10%), with Service Disabled Veteran Owned Business (SDVE) of three percent (3%); and with Women Business Enterprise (WBE), Disadvantage Business Enterprise (DBE), and/or Veteran Owned Business of ten percent (10%) of awarded contract price for work to be performed.

b. Requests for waiver of this goal shall be submitted on the attached Application For Waiver form. A determination by the Director of Facilities Planning & Development, UM, that a good faith effort has not been made by Contractor to achieve above stated goal may result in rejection of bid.

c. The Undersigned proposes to perform work with following Supplier Diversity participation level:

MBE PERCENTAGE PARTICIPATION:
___________________________ percent (_______%)

SDVE PERCENTAGE PARTICIPATION:
___________________________ percent (_______%)

WBE, DBE, and/or VETERAN PERCENTAGE PARTICIPATION
___________________________ percent (_______%)

d. A Supplier Diversity Compliance Evaluation form shall be submitted with this bid for each diverse subcontractor to be used on this project.
6. **BIDDER’S ACKNOWLEDGMENTS**

   a. Bidder declares that he has had an opportunity to examine the site of the work and he has examined Contract Documents therefore; that he has carefully prepared his bid upon the basis thereof; that he has carefully examined and checked bid, materials, equipment and labor required thereunder, cost thereof, and his figures therefore. Bidder hereby states that amount, or amounts, set forth in bid is, or are, correct and that no mistake or error has occurred in bid or in Bidder's computations upon which this bid is based. Bidder agrees that he will make no claim for reformation, modifications, revisions or correction of bid after scheduled closing time for receipt of bids.

   b. Bidder agrees that bid shall not be withdrawn for a period of ninety(90) days after scheduled closing time for receipt of bids.

   c. Bidder understands that Owner reserves right to reject any or all bids and to waive any informalities in bidding.

   d. Accompanying the bid is a bid bond, or a certified check, or an irrevocable letter of credit, or a cashier's check payable without condition to "The Curators of the University of Missouri" which is an amount at least equal to five percent (5%) of amount of largest possible total bid herein submitted, including consideration of Alternates.

   e. Accompanying the bid is a Bidder's Statement of Qualifications. Failure of Bidder to submit the Bidder's Statement of Qualifications with the bid may cause the bid to be rejected. Owner does not maintain Bidder's Statements of Qualifications on file.

   f. It is understood and agreed that bid security of two (2) lowest and responsive Bidders will be retained until Contract has been executed and an acceptable Performance Bond and Payment Bond has been furnished. It is understood and agreed that if the bid is accepted and the undersigned fails to execute the Contract and furnish acceptable Performance/Payment Bond as required by Contract Documents, accompanying bid security will be realized upon or retained by Owner. Otherwise, the bid security will be returned to the undersigned.

7. **BIDDER’S CERTIFICATE**

   Bidder hereby certifies:

   a. His bid is genuine and is not made in interest of or on behalf of any undisclosed person, firm or corporation, and is not submitted in conformity with any agreement or rules of any group, association or corporation.
b. He has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid.

c. He has not solicited or induced any person, firm or corporation to refrain from bidding.

d. He has not sought by collusion or otherwise to obtain for himself any advantage over any other Bidder or over Owner.

e. He will not discriminate against any employee or applicant for employment because of race, color, religion, sex or national origin in connection with performance of work.

f. By virtue of policy of the Board of Curators, and by virtue of statutory authority, a preference will be given to materials, products, supplies, provisions and all other articles produced, manufactured, mined or grown within the State of Missouri. By virtue of policy of the Board of Curators, preference will also be given to all Missouri firms, corporations, or individuals, all as more fully set forth in "Information For Bidders."

END OF BIDDER’S CERTIFICATE
8. **BIDDER'S SIGNATURE**

Note: All signatures shall be original; not copies, photocopies, stamped, etc.

<table>
<thead>
<tr>
<th>Authorized Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printed Name</td>
<td>Title</td>
</tr>
<tr>
<td>Company Name</td>
<td></td>
</tr>
<tr>
<td>Mailing Address</td>
<td></td>
</tr>
<tr>
<td>City, State, Zip</td>
<td></td>
</tr>
<tr>
<td>Phone No.</td>
<td>Federal Employer ID No.</td>
</tr>
<tr>
<td>Fax No.</td>
<td>E-Mail Address</td>
</tr>
</tbody>
</table>

Circle one: Individual  Partnership  Corporation  Joint Venture

If a corporation, incorporated under the laws of the State of _______

Licensed to do business in the State of Missouri?  ____yes  ____no

(Each Bidder shall complete bid form by manually signing on the proper signature line above and supplying required information called for in connection with the signature. Information is necessary for proper preparation of the Contract, Performance Bond and Payment Bond. Each Bidder shall supply information called for in accompanying "Bidder's Statement of Qualifications.")

**END OF SECTION**
UNIVERSITY OF MISSOURI
BIDDER'S STATEMENT OF QUALIFICATIONS

Submit with Bid for Lump Sum Contract in separate envelope appropriately labeled. Attach additional sheet if necessary.

1. Company Name________________________________________
   Phone# ______________________ Fax #: ______________________
   Address _____________________________________________

2. Number of years in business ______. If not under present firm name, list previous firm names and types of organization.

   ______________________________________________________

3. List contracts on hand (complete the following schedule, include telephone number).

<table>
<thead>
<tr>
<th>Project &amp; Address</th>
<th>Owner/Owner's Representative</th>
<th>Phone Number</th>
<th>Architect</th>
<th>Amount of your Contract</th>
<th>Percent Completed</th>
</tr>
</thead>
</table>

   ______________________________________________________

4. General character of work performed by your company personnel.

   ______________________________________________________

5. List important projects completed in the last five (5) years on a type similar to the work now bid for, including approximate cost and telephone number.

<table>
<thead>
<tr>
<th>Project &amp; Address</th>
<th>Owner/Owner's Representative</th>
<th>Phone Number</th>
<th>Architect</th>
<th>Amount of your Contract</th>
<th>Percent Completed</th>
</tr>
</thead>
</table>

   ______________________________________________________

6. Other experience qualifying you for the work now bid.

   ______________________________________________________

7. No default has been made in any contract complete or incomplete except as noted below:
   (a) Number of contracts on which default was made ______________________
   (b) Description of defaulted contracts and reason therefor

   ______________________________________________________

8. (a) Have you or your company participated in any contract subject to an equal opportunity clause similar to that described in the General Conditions?
   Yes _____ No _____

   (b) Have you filed all required compliance reports?
   Yes _____ No _____
(c) Is fifty percent or more of your company owned by a minority?
   Yes   No

(d) Is fifty percent or more of your company owned by a woman?
   Yes   No

(e) Is fifty percent or more of your company owned by a service disabled veteran?
   Yes   No

(f) Is fifty percent or more of your company owned by a veteran?
   Yes   No

(g) Is your company a Disadvantaged Business Enterprise?
   Yes   No

9. Have you or your company been suspended or debarred from working at any University of Missouri campus?
   Yes   No    (If the answer is "yes", give details.)

   ________________________________________________________
   ________________________________________________________

10. Have any administrative or legal proceedings been started against you or your company alleging violation of any wage and hour regulations or laws?
    Yes   No    (If the answer is "yes", give details.)

    ________________________________________________________
    ________________________________________________________

11. Workers Compensation Experience Modification Rates (last 3 yrs): ___/___/___
    Incidence Rates (last 3 years): __/__/___

12. List banking references.

   ________________________________________________________
   ________________________________________________________

13. (a) Do you have a current confidential financial statement on file with Owner?
    Yes   No    (If not, and if desired, Bidder may submit such statement with bid, in a separate sealed and labeled envelope.)

    ________________________________________________________

    (b) If not, upon request will you file a detailed confidential financial statement within three (3) days?
    Yes   No

    Dated at ________________________________ this __________ day of ___________________ 20___

    ________________________________________________________
    Name of Organization

    ________________________________________________________
    Signature

    ________________________________________________________
    Printed Name

    ________________________________________________________
    Title of Person Signing

END OF SECTION
UNIVERSITY OF MISSOURI
BIDDER'S STATEMENT OF QUALIFICATIONS FOR ASBESTOS ABATEMENT

Submit with Bid for Lump Sum Contract in separate envelope appropriately labeled. Attach additional sheet if necessary.

1. Company Name_____________________________________Phone# __________________________
   Address ____________________________________________________________________________

2. State of Missouri Registration number______________________________

3. Number of years in business ______. If not under present firm name, list previous firm names and types of organization.
   __________________________________________________________________________________

4. List contracts on hand (complete the following schedule, include telephone number).
   Project & Address Owner/Owner's Phone Architect Amount of Percent
   Address Representative Number ____________ Completed
   __________________________________________________________________________________

5. General character of work performed by your company personnel.
   __________________________________________________________________________________

6. List important projects completed in the last five (5) years on a type similar to the work now bid for, including approximate cost and telephone number.
   Project & Address Owner/Owner's Phone Architect Amount of Percent
   Address Representative Number ____________ Completed
   __________________________________________________________________________________

7. Other experience qualifying you for the work now bid.
   __________________________________________________________________________________

8. No default has been made in any contract complete or incomplete except as noted below:
   (a) Number of contracts on which default was made _________________________________
   (b) Description of defaulted contracts and reason therefor

   __________________________________________________________________________________

9. (a) Have you or your company participated in any contract subject to an equal opportunity clause similar to that described in the General Conditions?
   Yes _____  No _____
   (b) Have you filed all required compliance reports?
   Yes _____  No _____
(c) Is fifty percent or more of your company owned by a minority?
   Yes _______  No _______

(d) Is fifty percent or more of your company owned by a woman?
   Yes _______  No _______

(e) Is fifty percent or more of your company owned by a service disabled veteran?
   Yes _______  No _______

(f) Is fifty percent or more of your company owned by a veteran?
   Yes _______  No _______

(g) Is your company a Disadvantaged Business Enterprise?
   Yes _______  No _______

10. Have you or your company been suspended or debarred from working at any University of Missouri campus?
    Yes _______  No _____ (If the answer is "yes", give details.)

11. Have any administrative or legal proceedings been started against you or your company alleging violation of any wage and hour regulations or laws?
    Yes _______  No _____ (If the answer is "yes", give details.)

12. Workers Compensation Experience Modification Rates (last 3 yrs): _____/_____/_____
    Incidence Rates (last 3 years): _____/_____/_____

13. List banking references.

14. (a) Do you have a current confidential financial statement on file with Owner?
    Yes _______  No _____ (If not, and if desired, Bidder may submit such statement with bid, in a separate sealed and labeled envelope.)

(b) If not, upon request will you file a detailed confidential financial statement within three (3) days?
    Yes _______  No _____

Dated at ___________________________ this ________ day of ___________________ 20_____

__________________________________________
Name of Organization

__________________________________________
Signature

__________________________________________
Printed Name

__________________________________________
Title of Person Signing

END OF SECTION
SUPPLIER DIVERSITY COMPLIANCE EVALUATION FORM

This form shall be completed by Bidders and submitted with the Bidder's Statement of Qualifications form for each diverse firm who will function as a subcontractor on the contract.

The undersigned submits the following data with respect to this firm's assurance to meet the goal for Supplier Diversity participation.

I. Project:

II. Name of General Contractor:

III. Name of Diverse Firm:

   Address:

   Phone No.:                      Fax No.:

   Status (check one) MBE _____ WBE _____ Veteran_____ Service Disabled Veteran______ DBE______

IV. Describe the subcontract work to be performed. (List Base Bid work and any Alternate work separately):

   Base Bid:

   ________________________________

   ________________________________

   ________________________________

   ________________________________

V. Dollar amount of contract to be subcontracted to the Diverse firm:

   Base Bid:

   ________________________________

   Alternate(s), (Identify separately):

   ________________________________

   ________________________________

   ________________________________

VI. Is the proposed subcontractor listed in the Directory of M/W/DBE Vendors, Directory of Serviced Disabled Veterans and/or the Directory of Veterans maintained by the State of Missouri?

   Yes _____ No _____
Is the proposed subcontractor certified as a diverse supplier by any of the following: federal government agencies, state agencies, State of Missouri city or county government agencies, Minority and/or WBE certifying agencies?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>If yes, please provide details and attach a copy of the certification.</th>
</tr>
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</table>

Does the proposed subcontractor have a signed document from their attorney certifying the Supplier as a Diverse and meeting the 51% owned and committed requirement?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>If yes, please attach letter.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Signature: ____________________________________________

Name: _______________________________________________

Title: ______________________________________________

Date: _______________________________________________
APPLICATION FOR WAIVER

This form shall be completed and submitted with the Bidder's Statement of Qualifications. Firms wishing to be considered for award are required to demonstrate that a good faith effort has been made to include diverse suppliers. This form will be used to evaluate the extent to which a good faith effort has been made. The undersigned submits the following data with respect to the firm's efforts to meet the goal for Supplier Diversity Participation.

1. List pre-bid conferences your firm attended where Supplier Diversity requirements were discussed.

2. Identify advertising efforts undertaken by your firm which were intended to recruit potential diverse subcontractors for various aspects of this project. Provide names of newspapers, dates of advertisements and copies of ads that were run.

3. Note specific efforts to contact in writing those diverse suppliers capable of and likely to participate as subcontractors for this project.

4. Describe steps taken by your firm to divide work into areas in which diverse suppliers/contractors would be capable of performing.

5. What efforts were taken to negotiate with prospective diverse suppliers/contractors for specific sub-bids? Include the names, addresses, and telephone numbers of diverse suppliers/contractors contacted, a description of the information given to diverse suppliers/contractors regarding plans and specifications for the assigned work, and a statement as to why additional agreements were not made with diverse suppliers/contractors.

6. List reasons for rejecting a diverse supplier/contractor which has been contacted.
8. Describe the follow-up contacts with diverse suppliers/contractors made by your firm after the initial solicitation.

________________________________________________________________________

________________________________________________________________________

9. Describe the efforts made by your firm to provide interested diverse suppliers/contractors with sufficiently detailed information about the plans, specifications and requirements of the contract.

________________________________________________________________________

________________________________________________________________________

10. Describe your firm's efforts to locate diverse suppliers/contractors.

________________________________________________________________________

________________________________________________________________________

Based on the above stated good faith efforts made to include supplier diversity, the bidder hereby requests that the original supplier diversity percentage goal be waived and that the percentage goal for this project be set at ________ percent.

The undersigned hereby certifies, having read the answers contained in the foregoing Application for Waiver, that they are true and correct to the best of his/her knowledge, information and belief.

Signature

Name

Title

Company

Date
AFFIDAVIT

"The undersigned swears that the foregoing statements are true and correct and include all material information necessary to identify and explain the operation of ____________________________ (name of firm) as well as the ownership thereof. Further, the undersigned agrees to provide through the prime contractor or directly to the Contracting Officer current, complete and accurate information regarding actual work performed on the project, the payment therefore and any proposed changes, if any, of the project, the foregoing arrangements and to permit the audit and examination of books, records and files of the named firm. Any material misrepresentation will be grounds for terminating any contract which may be awarded and for initiating action under federal or state laws concerning false statements."

Note - If, after filing this information and before the work of this firm is completed on the contract covered by this regulation, there is any significant change in the information submitted, you must inform the Director of Facilities Planning and Development of the change either through the prime contractor or directly.

Signature ____________________________________________
Name __________________________________________________
Title ____________________________________________________
Date ______________________________________________________

Corporate Seal (where appropriate)

Date ____________________________________________________
State of __________________________________________________
County of _________________________________________________

On this __________________________ day of ______________________, 19__, before me appeared (name) ____________________________________________ to me personally known, who, being duly sworn, did execute the foregoing affidavit, and did state that he or she was properly authorized by (name of firm)

____________________________________________________

____________________________________________________
to execute the affidavit and did so as his or her own free act and deed.

(Seal)

Notary Public ______________________________________________
Commission expires __________________________________________
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AFFIDAVIT FOR AFFIRMATIVE ACTION

State of Missouri )
                       ) ss.
County of )

_______________________________________________________________________ first being duly sworn on his/her oath
states: that he/she is the (sole proprietor, partner, or officer) of ___________________________ a (sole proprietorship, partnership, corporation), and as such (sole proprietor, partner, or officer) is
duly authorized to make this affidavit on behalf of said (sole proprietorship, partnership, corporation); that under the contract
known as "______________________________ Project No. ________________ less than 50 persons in the aggregate will be employed and therefore, the applicable Affirmative
Action requirements as set forth in the "Nondiscrimination in Employment Equal Opportunity," Supplemental Special
Conditions, and Article 13 in the General Conditions do not apply.

__________________________________________

Subscribed and sworn before me this __________ day of ________________________, 19______.

My commission expires __________________________, 19______.
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CERTIFYING SUPPLIER DIVERSITY AGENCIES

Diverse firms are defined in General Conditions Articles 1.1.7 and those businesses must be certified as disadvantaged by an approved agency. The Bidder is responsible for obtaining information regarding the certification status of a firm. A list of certified firms may be obtained by contacting the agencies listed below. Any firm listed as disadvantaged by any of the following agencies will be classified as a diverse firm by the Owner.

St. Louis Development Corporation
1520 Market St., Ste. 2000
St. Louis, MO 63103
P: 314.982.1400
W: www.stlouis-mo.gov/sldc/

Bi-State Development
211 N. Broadway, Ste. 700
St. Louis, MO 63102
P: 314.982.1400
W: www.metrostlouis.dbesystem.com

St. Louis Minority Business Council
211 N. Broadway, Ste. 1300
St. Louis, MO 63102
P: 314.231.5555
W: www.slmbc.org

U.S. Small Business Administration - St. Louis, MO
8(a) Contractors, Minority Small Business
1222 Spruce Street, Suite 10.103
St. Louis, MO 63101
P: 314.539.6600
W: www.sba.gov

Lambert St. Louis International Airport
Business Diversity Development Office
11495 Navaid
Bridgeton, MO 63044
P: 314-426-8111

City of Kansas City, Missouri
Human Relations Department, MBE/WBE Division
4th Floor, City Hall
414 E. 12th Street
Kansas City, MO 64106
P: 816.513.1836
W: kcmohrd.mwdbce.com/?TN=kcmohrd

Mid-States Minority Supplier Development Council
505 N. 7th Street, Ste. 1820
St. Louis, MO 63101
P: 314.278.5616
W: midstatesdc.org

U.S. Small Business Administration - Kansas City, MO
8(a) Contractors, Minority Small Business
1000 Walnut, Suite 500
Kansas City, MO 64106
P: 816.426.4900
W: kcmohrd.mwdbce.com/?TN=kcmohrd

Missouri Department of Transportation
Division of Construction
1617 Missouri Blvd.
P.O. Box 270
Jefferson City, MO 65102
P: 573.526.2978
W: www.modot.org/mrcc-directory

Illinois Department of Transportation
MBE/WBE Certification Section
2300 Dirksen Parkway
Springfield, IL 62764
217/782-5490; 217/785-1524 (Fax)
W: webapps.dot.illinois.gov/UCP/ExternalSearch

State of Missouri OA
Office of Equal Opportunity
301 W. High St. HSC Rm 870-B
Jefferson City, MO 65101
P: 877.259.2963
W: oeo.mo.gov/
W: ao.mo.gov/sites/default/files/sdvelisting.pdf
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Minority Newspapers

Dos Mundos Bilingual Newspaper
902A Southwest Blvd.
Kansas City, MO 64108
816-221-4747
www.dosmundos.com

Kansas City Hispanic News
2918 Southwest Blvd.
Kansas City, MO 64108
816/472-5246
www.kchispanicnews.com

The Kansas City Globe
615 E. 29th Street
Kansas City, MO 64109
816-531-5253
www.thekcglobe.com/about_us.php

St. Louis American
4144 Lindell
St. Louis, MO 63108
314-533-8000
www.stlamerican.com

St. Louis Chinese American News
1766 Burns Ave, Suite 201
St. Louis, MO 63132
314-432-3858
www.scannews.com

St. Louis Business Journal
815 Olive St., Suite 100
St. Louis, MO 63101
314-421-6200
www.bizjournal.com/stlouis

Kansas City Business Journal
1100 Main Street, Suite 210
Kansas City, MO 64105
816-421-5900
www.bizjournals.com/kansascity
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AFFIDAVIT OF SUPPLIER DIVERSITY PARTICIPATION

The apparent low Bidder shall complete and submit this form within 48 hours of bid opening for each Diverse firm that will participate on the contract.

1. Diverse Firm: __________________________
   Contact Name: __________________________
   Address: ________________________________
   Phone No.: ______________________________ E-Mail: __________________________

   Status (check one) MBE ☐ WBE ☐ Veteran ☐ Service Disabled Veteran ☐ DBE ☐
   If MBE, Certified as (circle one): 1) Black American 2) Hispanic American 3) Native American 4) Asian American

2. Is the proposed diverse firm certified by an approved agency [see IFB article 15]?  Yes ☐ No ☐
   Agency: ________________________________ [attach copy of certification authorization from agency]
   Certification Number: __________________

3. Diverse firm scope work and bid/contract dollar amount of participation (List Base Bid and Alternate work separately). The final Dollar amount will be determined at substantial completion:

<table>
<thead>
<tr>
<th>Scope of Work</th>
<th>Bid/Contract Amount</th>
<th>Final Dollar Amount</th>
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<tbody>
<tr>
<td>Base Bid</td>
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<tr>
<td>Alternate #1</td>
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The undersigned certifies that the information contained herein (i.e. Scope of Work and Bid/Contract Amount) is true and correct to the best of their knowledge, information and belief.

General Contractor: __________________________ Diverse Firm: __________________________
Signature: __________________________ Signature: __________________________
Name: __________________________ Name: __________________________
Title: __________________________ Title: __________________________
Date: __________________________ Date: __________________________

The undersigned certifies that the information contained herein (i.e. Scope of Work and Final Dollar Amount) is true and correct to the best of their knowledge, information and belief. If the Final Dollar Amount is different than the Bid/Contract Amount, then attach justification for the difference.

Contractor: __________________________ Diverse Firm: __________________________
Signature: __________________________ Signature: __________________________
Name: __________________________ Name: __________________________
Title: __________________________ Title: __________________________
Date: __________________________ Date: __________________________
1. **Contract Documents**
   
   1.1 Drawings, specifications, and other contract documents, pursuant to work which is to be done, may be obtained shown in the Advertisement for Bids and Special Conditions.

2. **Bidder Obligations**
   
   2.1 Before submitting bids each bidder shall carefully examine the drawings and specifications and related contract documents, visit site of work and fully inform themselves as to all existing conditions, facilities, restrictions and other matters which can affect the work or the cost thereof.

   2.2 Each bidder shall include in their bid the cost of all work and materials required to complete the contract in a first-class manner as hereinafter specified.

   2.3 Failure or omission of any bidder to receive or examine any form, instrument, addendum, or other document, or to visit the site and acquaint themselves with existing conditions, shall in no way relieve them from any obligation with respect to their bid or contract, and no extra compensation will be allowed by reason of any thing or matter concerning which bidder should have fully informed themselves prior to bidding.

   2.4 Submission of bids shall be deemed acceptance of the above obligations and each and every obligation required to be performed by all of the contract documents in the event the bid is accepted.

3. **Interpretation of Documents**
   
   3.1 If any prospective bidder is in doubt as to the true meaning of any part of the drawings and specifications or contract documents, they shall submit a written request to the Architect for an interpretation.

   3.2 Requests for such interpretations shall be delivered to the Architect at least one (1) week prior to time for receipt of bids.

3.3 Bids shall be based only on interpretations issued in the form of addenda mailed to each person who is on the Architect's record as having received a set of the contract documents.

4. **Bids**
   
   4.1 Bids shall be received separately or in combination as shown in and required by the Bid for Lump Sum contract. Bids will be completed so as to include insertion of amounts for alternate bids, unit prices and cost accounting data.

   4.2 Bidders shall apportion each base bid between various phases of the work, as stipulated in the Bid for Lump Sum contract. All work shall be done as defined in the specifications and as indicated on the drawings.

   4.3 Bids shall be presented in sealed envelopes which shall be plainly marked "Bids for (indicate name of project from cover sheet)", and mailed or delivered to the building and room number specified in the Advertisement for Bids. Bidders shall be responsible for actual delivery of bids during business hours, and it shall not be sufficient to show that a bid was mailed in time to be received before scheduled closing time for receipt of bids, nor shall it be sufficient to show that a bid was somewhere in a university facility.

   4.4 The bidder's price shall include all federal sales, excise, and similar taxes, which may be lawfully assessed in connection with their performance of work and purchase of materials to be incorporated in the work. City & State taxes shall not be included as defined within Article 3.16 of the General Conditions for Construction Contract included in the contract documents.

   4.5 Bids shall be submitted on a single bid form, furnished by the Owner or Architect. Do not remove the bid form from the specifications.

   4.6 No bidder shall stipulate in their bid any conditions not contained in the bid form.
4.7 The Owner reserves the right to waive informalities in bids and to reject any or all bids.

5. Modification and Withdrawal of Bids
5.1 The bidder may withdraw their bid at any time before the scheduled closing time for receipt of bids, but no bidder may withdraw their bid after the scheduled closing time for receipt of bids.

5.2 Only telegrams, letters and other written requests for modifications or correction of previously submitted bids, contained in a sealed envelope which is plainly marked "Modification of Bid on (name of project on cover sheet)," which are addressed in the same manner as bids, and are received by Owner before the scheduled closing time for receipt of bids will be accepted and bids corrected in accordance with such written requests.

6. Signing of Bids
6.1 Bids which are signed for a partnership shall be manually signed in the firm name by at least one partner, or in the firm name by Attorney-in-Fact. If signed by Attorney-in-Fact there should be attached to the bid, a Power of Attorney evidencing authority to sign the bid dated the same date as the bid and executed by all partners of the firm.

6.2 Bids that are signed for a corporation shall have the correct corporate name thereon and the signature of an authorized officer of the corporation manually written below corporate name. Title of office held by the person signing for the corporation shall appear below the signature of the officer.

6.3 Bids that are signed by an individual doing business under a firm name, shall be manually signed in the name of the individual doing business under the proper firm name and style.

6.4 Bids that are signed under joint venture shall be manually signed by officers of the firms having authority to sign for their firm.

7. Bid Security
7.1 Each bid shall be accompanied by a bid bond, certified check, or cashier's check, acceptable to and payable without condition to The Curators of the University of Missouri, in an amount at least equal to five percent (5%) of bidder's bid including additive alternates.

7.2 Bid security is required as a guarantee that bidder will enter into a written contract and furnish a performance bond within the time and in form as specified in these specifications; and if successful bidder fails to do so, the bid security will be realized upon or retained by the Owner. The apparent low bidder shall notify the Owner in writing within 48 hours (2 work days) of the bid opening of any circumstance that may affect the bid security including, but not limited to, a bidding error. This notification will not guarantee release of the bidder’s security and/or the bidder from the Bidder’s Obligations.

7.3 If a bid bond is given as a bid security, the amount of the bond may be stated as an amount equal to at least five percent (5%) of the bid, including additive alternates, described in the bid. The bid bond shall be executed by the bidder and a responsible surety licensed in the State of Missouri with a Best’s rating of no less than A-/XI.

7.4 It is specifically understood that the bid security is a guarantee and shall not be considered as liquidated damages for failure of bidder to execute and deliver their contract and performance bond, nor limit or fix bidder’s liability to Owner for any damages sustained because of failure to execute and deliver the required contract and performance bond.

7.5 Bid security of the two (2) lowest and responsive Bidders will be retained by the Owner until a contract has been executed and an acceptable bond has been furnished, as required hereby, when such bid security will be returned. Surety bonds of all other bidders will be destroyed and all other alternative forms of bid bonds will be returned to them within ten (10) days after Owner has determined the two (2) lowest and responsive bids.

8. Bidder's Statement of Qualifications
8.1 Each bidder submitting a bid shall present evidence of their experience, qualifications, financial responsibility and ability to carry out the terms of the contract by completing and submitting with their bid the schedule of information set forth in the form furnished in the bid form.

8.2 Such information, a single copy required in a separate sealed envelope, will be treated as confidential information by the Owner, within the meaning of Missouri Statue 610.010.

8.3 Bids not accompanied with current Bidder's Statement of Qualifications may be rejected.

9. Award of Contract
9.1 The Owner reserves the right to let other contracts in connection with the work, including, but not by way of limitation, contracts for furnishing and installation of furniture, equipment, machines, appliances, and other apparatus.

9.2 In awarding the contract, the Owner may take into consideration the bidder’s, and their subcontractor’s, ability to handle promptly the additional work, skill, facilities, capacity, experience, ability, responsibility, previous work, financial standing of bidder, and the bidder’s ability to provide the required bonds and insurance; quality, efficiency and construction of equipment proposed to be furnished; period of time within which equipment is proposed to be furnished; period of time within which equipment is proposed to be furnished; success in achieving the specified Supplier Diversity goal, or demonstrating a good faith effort as described in Article 15; necessity of prompt and efficient completion of work herein described, and the bidder’s status as suspended or debarred. Inability of any bidder to meet the requirements mentioned above may be cause for rejection of their bid.

10. Contract Execution
10.1 The Contractor shall submit within fifteen (15) days from receipt of notice, the documents required in Article 9 of the General Conditions for Construction Contract included in the contract documents.
10.2 No bids will be considered binding upon the Owner until the documents listed above have been furnished. Failure of Contractor to execute and submit these documents within the time period specified will be treated, at the option of the Owner, as a breach of the bidder's bid security under Article 7 and the Owner shall be under no further obligation to Bidder.

11. Contract Security

11.1 When the Contract sum exceeds $50,000, the Contractor shall procure and furnish a Performance bond and a Payment bond in the form prepared by Owner. Each bond shall be in the amount equal to one hundred percent (100%) of the contract sum, as well as adjustments to the Contract Sum. The Contractor’s faithful performance of this Contract, including but not limited to Contractor’s obligation to correct defects after final payment has been made as required by the Contract Documents. The Payment Bond shall secure and guarantee payment of all persons performing labor on the Project under this Contract and furnishing materials in connection with this Contract. These Bonds shall be in effect through the duration of the Contract plus the Guaranty Period as required by the Contract Documents.

11.2 The bonds required hereunder shall be all requirements of Article 11 of the General Conditions for Construction Contract included in the contract documents.

11.3 If the surety of any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to conduct business in the State of Missouri is terminated, or it ceases to meet the requirements of this Article 11, Contractor shall within ten (10) days substitute another bond and surety, both of which must be acceptable to Owner. If Contractor fails to make such substitution, Owner may procure such required bonds on behalf of Contractor at Contractor’s expense.

12. Time of Completion

12.1 Contractors shall agree to commence work within five (5) days of the date “Notice to Proceed” is received from the Owner, and the entire work shall be completed by the completion date specified or within the number of consecutive calendar days stated in the Special Conditions. The duration of the construction period, when specified in consecutive calendar days, shall begin when the contractor receives notice requesting the documents required in Article 9 of the General Conditions for Construction Contract included in the contract documents.

13. Number of Contract Documents

13.1 The Owner will furnish the Contractor a copy of the executed contract and performance bond.

13.2 The Owner will furnish the Contractor the number of copies of complete sets of drawings and specifications for the work, as well as, clarification and change order drawings pertaining to change orders required during construction as set forth in the Special Conditions.

14. Missouri Products and Missouri Firms

14.1 The Curators of the University of Missouri have adopted a policy which is binding upon all employees and departments of the University of Missouri, and which by contract, shall be binding upon independent contractors and subcontractors with the University of Missouri whereby all other things being equal, and when the same can be secured without additional cost over foreign products, or products of other states, a preference shall be granted in all construction, repair and purchase contracts, to all products, commodities, materials, supplies and articles mined, grown, produced and manufactured in marketable quantity and quality in the State of Missouri, and to all firms, corporations or individuals doing business as Missouri firms, corporations or individuals. Each bidder submitting a bid agrees to comply with, and be bound by the foregoing policy.

15. SUPPLIER DIVERSITY

15.1 Award of Contract

The Supplier Diversity participation goal for this project is stated on the Bid for Lump Sum Contract Form, and the Owner will take into consideration the bidder’s success in achieving the Supplier Diversity participation goal in awarding the contract. Inability of any bidder to meet this requirement may be cause for rejection of their bid.

The University will grant a three (3) point bonus preference to a Missouri based, certified Service Disabled Veteran Enterprise (SDVE) bidder as defined in Article 1 – (Supplier Diversity Definitions) of the General Conditions of the Contract for Construction included in the contract documents. The three percent (3%) goal can be met, and the bonus points obtained, by a qualified SDVE vendor and/or through the use of qualified subcontractors or suppliers that provide at least three percent (3%) of the total contract value.

15.2 List of Supplier Diversity Firms

15.2.1 The bidder shall submit as part of their bid a list of diverse firms performing as contractor, subcontractors, and/or suppliers. The list shall specify the single designated diverse firm name and address. If acceptance or non-acceptance of alternates will affect the designation of a subcontractor, provide information for each affected category.

15.2.2 Failure to include a complete list of diverse firms may be grounds for rejection of the bid.

15.2.3 The list of diverse firms shall be submitted in addition to any other listing of subcontractors required in the Bid for Lump Sum Contract Form.

15.3 Supplier Diversity Percentage Goal

The bidder shall have a minimum goal of subcontracting with diverse contractors, subcontractors, and suppliers, the percent of contract price stated in the Supplier Diversity goal paragraph of the Bid for Lump Sum Contract Form.

15.4 Supplier Diversity Percent Goal Computation

15.4.1 The total dollar value of the work granted to the diverse firms by the successful bidder is counted towards the applicable goal of the entire contract, unless otherwise noted below.

15.4.2 The bidder may count toward the Supplier Diversity goal only expenditures to diverse firms that perform a commercially useful function in the work of a contract. A diverse firm is considered to perform a commercially useful function when it is responsible for executing a distinct element of the work and carrying out its responsibilities by
actually performing, managing and supervising the work involved. A bidder that is a certified diverse firm may count as 100% of the contract towards the Supplier Diversity goal. For projects with separate MBE, SDVE, and WBE/Veteran/DBE goals, a MBE firm bidding as the prime bidder is expected to obtain the required SDVE, and WBE/Veteran/DBE participation; a WBE or Veteran or DBE firm bidding as the prime bidder is expected to obtain the required MBE and SDVE participation and a SDVE firm bidding as the prime bidder is expected to obtain the required MBE, and WBE/Veteran/DBE participation.

15.4.3 When a MBE, WBE, Veteran Business Enterprise, DBE, or SDVE performs work as a participant in a joint venture, only the portion of the total dollar value of the contract equal to the distinct, clearly defined portion of the work of the contract that the MBE, WBE, Veteran Business Enterprise, DBE, or SDVE performs with its own forces shall count toward the MBE, WBE, Veteran Business Enterprise, DBE, or SDVE individual contract percentages.

15.4.4 The bidder may count toward its Supplier Diversity goal expenditures for materials and supplies obtained from diverse suppliers and manufacturers, provided the diverse firm assumes the actual and contractual responsibility for the provision of the materials and supplies.

15.4.4.1 The bidder may count its entire expenditure to a diverse manufacturer. A manufacturer shall be defined as an individual or firm that produces goods from raw materials or substantially alters them before resale.

15.4.4.2 The bidder may count its entire expenditure to diverse suppliers that are not manufacturers provided the diverse supplier performs a commercially useful function as defined above in the supply process.

15.4.4.3 The bidder may count 25% of its entire expenditures to diverse firms that do not meet the definition of a subcontractor, a manufacturer, nor a supplier. Such diverse firms may arrange for, expedite, or procure portions of the work but are not actively engaged in the business of performing, manufacturing, or supplying that work.

15.4.5 The bidder may count toward the Supplier Diversity goal that portion of the total dollar value of the work awarded to a certified joint venture equal to the percentage of the ownership and control of the diverse partner in the joint venture.

15.4.6 On projects with separate MBE and WBE/Veteran/DBE goals, the Owner may allow MBE participation provided in excess of the MBE goal to be counted towards the WBE/Veteran/DBE goal.

15.5 Certification by Bidder of Diverse Firms

15.5.1 The bidder shall submit with its bid the information requested in the "Supplier Diversity Compliance Evaluation Form" for every diverse firm the bidder intends to award work to on the contract.

15.5.2 Diverse firms are defined in Article 1 – (Supplier Diversity Definitions) of the General Conditions of the Contract for Construction included in the contract documents, and as those businesses certified as disadvantaged by an approved agency. The bidder is responsible for obtaining information regarding the certification status of a firm. A list of certified firms may be obtained by contacting the agencies listed in the proposal form document “Supplier Diversity Certifying Agencies”. Any firm listed as disadvantaged by any of the identified agencies will be classified as a diverse firm by the Owner.

15.5.3 Bidders are urged to encourage their prospective diverse contractors, subcontractors, joint venture participants, team partners, and suppliers who are not currently certified to obtain certification from one of the approved agencies.

15.6 Supplier Diversity Participation Waiver

15.6.1 The bidder is required to make a good faith effort to locate and contract with diverse firms. If a bidder has made a good faith effort to secure the required diverse firms and has failed, the bidder shall submit with the bid, the information requested in "Application for Supplier Diversity Participation Waiver." The Contracting Officer will review the bidder's actions as set forth in the bidder's "Application for Waiver" and any other factors deemed relevant by the Contracting Officer to determine if a good faith effort has been made to meet the applicable percentage goal. If the bidder is judged not to have made a good faith effort, the bid may be rejected. Bidder's who demonstrate that they have made a good faith effort to include Supplier Diversity participation may be awarded the contract regardless of the percent of Supplier Diversity participation, provided the bid is otherwise acceptable and is determined to be the best bid.

15.6.2 To determine good faith effort of the bidder, the Contracting Officer may evaluate factors including, but not limited to, the following:

15.6.2.1 The bidder's attendance at pre-proposal meetings scheduled to inform bidders and diverse firms of contracting and subcontracting opportunities and responsibilities associated with Supplier Diversity participation.

15.6.2.2 The bidder's advertisements in general circulation trade association, and diverse (minority) focused media concerning subcontracting opportunities.

15.6.2.3 The bidder's written notice to specific diverse firms that their services were being solicited in sufficient time to allow for their effective participation.

15.6.2.4 The bidder's follow-up attempts to the initial solicitation(s) to determine with certainty whether diverse firms were interested.

15.6.2.5 The bidder's efforts to divide the work into packages suitable for subcontracting to diverse firms.

15.6.2.6 The bidder's efforts to provide interested diverse firms with sufficiently detailed information about the drawings, specific actions and requirements of the contract, and clear scopes of work for the firms to bid on.
15.6.2.7 The bidder’s efforts to solicit for specific sub-bids from diverse firms in good faith. Documentation should include names, addresses, and telephone numbers of firms contacted a description of all information provided the diverse firms, and an explanation as to why agreements were not reached.

15.6.2.8 The bidder's efforts to locate diverse firms not on the directory list and assist diverse firms in becoming certified as such.

15.6.2.9 The bidder's initiatives to encourage and develop participation by diverse firms.

15.6.2.10 The bidder’s efforts to help diverse firms overcome legal or other barriers impeding the participation of diverse firms in the construction contract.

15.6.2.11 The availability of diverse firms and the adequacy of the bidder's efforts to increase the participation of such business provided by the persons and organizations consulted by the bidder.

15.7 Submittal of Forms
15.7.1 The bidder will include the Supplier Diversity Compliance Evaluation Form(s), or the Application for Waiver and other form(s) as required above in the envelope containing the "Bidder's Statement of Qualifications", see Article 8.

15.8 Additional Bid/Proposer Information
15.8.1 The Contracting Officer reserves the right to request additional information regarding Supplier Diversity participation and supporting documentation from the apparent low bidder. The bidder shall respond in writing to the Contracting Officer within 24 hours (1 work day) of a request.

15.8.2 The Contracting Officer reserves the right to request additional information after the bidder has responded to prior 24 hour requests. This information may include follow up and/or clarification of the information previously submitted.

15.8.3 The Owner reserves the right to consider additional diverse subcontractor and supplier participation submitted by the bidder after bids are opened under the provisions within these contract documents that describe the Owner’s right to accept or reject subcontractors including, but not limited to, Article 16 below. The Owner may elect to waive the good faith effort requirement if such additional participation achieves the Supplier Diversity goal.

15.8.4 The Bidder shall provide the Owner information related to the Supplier Diversity participation included in the bidder’s proposal, including, but is not limited to, the complete Application for Waiver, evidence of diverse certification of participating firms, dollar amount of participation of diverse firms, information supporting a good faith effort as described in Article 15.6 above, and a list of all diverse firms that submitted bids to the Bidder with the diverse firm’s price and the name and the price of the firm awarded the scope of work bid by the diverse firm.

16. List of Subcontractors
16.1 If a list of subcontractors is required on the Bid for Lump Sum Contract Form, the bidders shall list the name, city and state of the firm(s) which will accomplish that portion of the contract requested in the space provided. This list is separate from both the list of diverse firms required in Article 15.2, and the complete list of subcontractors required in Article 10.1 of this document. Should the bidder choose to perform any of the listed portions of the work with its own forces, the bidder shall enter its own name, city and state in the space provided. If acceptance or non-acceptance of alternates will affect the designation of a subcontractor, the bidder shall provide that information on the bid form.

16.2 Failure of the bidder to supply the list of subcontractors required or the listing of more than one subcontractor for any category without designating the portion of the work to be performed by each, shall be grounds for the rejection of the bid. The bidder can petition the Owner to change a listed subcontractor within 48 hours of the bid opening. The Owner reserves the right to make the final determination on a petition to change a subcontractor. The Owner will consider factors such as clerical and mathematical bidding errors, listed subcontractor’s inability to perform the work for the bid used, etc. Any request to change a listed subcontractor shall include at a minimum, contractor’s bid sheet showing tabulation of the bid; all subcontractor bids with documentation of the time they were received by the contractor; and a letter from the listed subcontractor on their letterhead stating why they cannot perform the work if applicable. The Owner reserves the right to ask for additional information.

16.3 Upon award of the contract, the requirements of Article 10 of this document and Article 5 of the General Conditions of the Contract for Construction included in the contract documents will apply.
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General Conditions

of the

Contract

for

Construction

August 2018 Edition
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ARTICLE 1
GENERAL PROVISIONS

1.1 Basic Definitions
As used in the Contract Documents, the following terms shall have the meanings and refer to the parties designated in these definitions.

1.1.1 Owner
The Curators of the University of Missouri. The Owner may act through its Board of Curators or any duly authorized committee or representative thereof.

1.1.2 Contracting Officer
The Contracting Officer is the duly authorized representative of the Owner with the authority to execute contracts. Communications to the Contracting Officer shall be forwarded via the Owner's Representative.

1.1.3 Owner's Representative
The Owner’s Representative is authorized by the Owner as the administrator of the Contract and will represent the Owner during the progress of the Work. Communications from the Architect to the Contractor and from the Contractor to the Architect shall be through the Owner's Representative, unless otherwise indicated in the Contract Documents.

1.1.4 Architect
When the term "Architect" is used herein, it shall refer to the Architect or the Engineer specified and defined in the Contract for Construction or its duly authorized representative. Communications to the Architect shall be forwarded to the address shown in the Contract for Construction.

1.1.5 Contractor
The Contractor is the person or entity with whom the Owner has entered into the Contract for Construction. The term “Contractor” means the Contractor or the Contractor’s authorized representative.

1.1.6 Subcontractor and Lower-tier Subcontractor
A Subcontractor is a person or organization who has a contract with the Contractor to perform any of the Work. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or its authorized representative. The term "Subcontractor" also is applicable to those furnishing materials to be incorporated in the Work whether work performed is at the Owner’s site or off site, or both. A lower-tier Subcontractor is a person or organization who has a contract with a Subcontractor or another lower-tier Subcontractor to perform any of the Work at the site. Nothing contained in the Contract Documents shall create contractual relationships between the Owner or the Architect and any Subcontractor or lower-tier Subcontractor of any tier.

1.1.7 Supplier Diversity Definitions
Businesses that fall into the Supplier Diversity classification shall mean an approved certified business concern which is at least fifty-one percent (51%) owned and controlled by one (1) or more diverse suppliers as described below.

1.1.7.1 Minority Business Enterprises (MBE)
Minority Business Enterprise [MBE] shall mean an approved certified business concern which is at least fifty-one percent (51%) owned and controlled by one (1) or more minorities as defined below or, in the case of any publicly-owned business, in which at least fifty-one percent (51%) of the stock of which is owned by one (1) or more minorities as defined below, and whose management and daily business operations are controlled by one (1) or more minorities as defined herein.

.1.1.7.1.1 "African Americans", which includes persons having origins in any of the black racial groups of Africa.

.1.1.7.1.2 "Hispanic Americans", which includes persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.

.1.1.7.1.3 "Native Americans", which includes persons of American Indian, Eskimo, Aleut, or Native Hawaiian origin.

.1.1.7.1.4 "Asian-Pacific Americans", which includes persons whose origins are from Japan, China, Taiwan, Korea, Vietnam, Laos, Cambodia, the Philippines, Samoa, Guam, the U.S. Trust Territories of the Pacific, or the Northern Marinas.

.1.1.7.1.5 "Asian-Indian Americans", which includes persons whose origins are from India, Pakistan, or Bangladesh.

1.1.7.2 Women Business Enterprise (WBE)
Women Business Enterprise [WBE] shall mean an approved certified business concern which is at least fifty-one percent (51%) owned and controlled by one (1) or more women or, in the case of any publicly-owned business, in which at least fifty-one percent (51%) of the stock of which is owned by one (1) or more women, and whose management and daily business operations are controlled by one (1) or more women.

1.1.7.3 Veteran Owned Business
Veteran Owned Business shall mean an approved certified business concern which is at least fifty-one percent (51%) owned and controlled by one (1) or more Veterans or, in the case of any publicly-owned business, in which at least fifty-one percent (51%) of the stock of which is owned by one (1) or more Veterans, and whose management and daily business operations are controlled by one (1) or more Veterans. Veterans must be certified by the appropriate federal agency responsible for veterans’ affairs.

1.1.7.4 Service Disabled Veteran Enterprise (SDVE)
Service Disabled Veteran Enterprise (SDVE) shall mean a business certified by the State of Missouri Office of Administration as a Service Disabled Veteran Enterprise, which is at least fifty-one percent (51%) owned and controlled by one (1) or more Service Disabled Veterans or,
The Contract Documents consist of (1) the executed Contract for Construction, (2) these General Conditions of the Contract for Construction, (3) any Supplemental Conditions or Special Conditions identified in the Contract for Construction, (4) the Specifications identified in the Contract for Construction, (5) the Drawings identified in the Contract for Construction, (6) Addenda issued prior to the receipt of bids, (7) Contractor’s bid addressed to Owner, including Contractor’s completed Qualification Statement, (8) Contractor’s Performance Bond and Contractor’s Payment Bond, (9) Notice to Proceed, (10) and any other exhibits and/or post bid adjustments identified in the Contract for Construction, (11) Advertisement for Bid, (12) Information for Bidders, and (13) Change Orders issued after execution of the Contract. All other documents and technical reports and information are not Contract Documents, including without limitation, Shop Drawings, and Submittals.

1.1.12 Contract
The Contract Documents form the Contract and are the exclusive statement of agreement between the parties. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior representations or agreements, either written or oral. The Contract Documents shall not be construed to create a contractual relationship of any kind between the Owner and a Subcontractor or any lower-tier Subcontractor.

1.1.13 Change Order
The Contract may be amended or modified without invalidating the Contract, only by a Change Order, subject to the limitations in Article 7 and elsewhere in the Contract Documents. A Change Order is a written instrument signed by the Owner and the Contractor stating their agreement to a change in the Work, the amount of the adjustment to the Contract Sum, if any, and the extent of the adjustment to the Contract Time, if any. Agreement to any Change Order shall constitute a final settlement of all matters relating to the change in the work which is the subject of the Change Order, including, but not limited to, all direct and indirect costs associated with such change and any and all adjustments of the Contract sum, time and schedule.

1.1.14 Substantial Completion
The terms “Substantial Completion” or "substantially complete" as used herein shall be construed to mean the completion of the entire Work, including all submittals required under the Contract Documents, except minor items which in the opinion of the Architect, and/or the Owner's Representative will not interfere with the complete and satisfactory use of the facilities for the purposes intended.

1.1.15 Final Completion
The date when all punch list items are completed, including all closeout submittals and approval by the Architect is given to the Owner in writing.

1.1.16 Supplemental and Special Conditions
The terms “Supplemental Conditions” or “Special Conditions” shall mean the part of the Contract Documents which amend, supplement, delete from, or add to these General Conditions.

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

1.1.18 Knowledge.
The terms “knowledge,” “recognize” and “discover,” their respective derivatives and similar terms in the Contract Documents, as used in reference to the Contractor, shall be interpreted to mean that which the Contractor knows or should know, recognizes or should recognize and discovers or should discover in exercising the care, skill, and diligence of a diligent and prudent contractor familiar with the work. Analogously, the expression “reasonably inferable” and similar terms in the Contract Documents shall be interpreted to mean reasonably inferable by a diligent and prudent contractor familiar with the work.

1.1.19 Punch List
“Punch List” means the list of items, prepared in connection with the inspection of the Project by the Owner’s Representative or Architect in connection with Substantial Completion of the Work or a portion of the Work, which the Owner’s Representative or Architect has designated as remaining to be performed, completed or corrected before the Work will be accepted by the Owner.

1.1.20 Public Works Contracting Minimum Wage
The public works contracting minimum wage shall be equal to one hundred twenty percent of the average hourly wage in a particular locality, as determined by the Missouri economic research and information center within the department of economic development, or any successor agency.

1.2 Specifications and Drawings
1.2.1 The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, construction system, standards and workmanship and performance of related services for the Work identified in the Contract for Construction. Specifications are separated into titled divisions for convenience of reference only. Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade. Such separation will not operate to make the Owner or the Architect an arbiter of labor disputes or work agreements.

1.2.2 The drawings herein referred to, consist of drawings prepared by the Architect and are enumerated in the Contract Documents.

1.2.3 Drawings are intended to show general arrangements, design, and dimensions of work and are partly diagrammatic. Dimensions shall not be determined by scale or rule. If figured dimensions are lacking, they shall be supplied by the Architect on the Contractor's written request to the Owner's Representative.

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

1.2.5 In the event of inconsistencies within or between parts of the Contract Documents, or between the Contract Documents and applicable standards, codes and ordinances, the Contractor shall (1) provide the better quality or greater quantity of Work or (2) comply with the more stringent requirement; either or both in accordance with the Owner’s Representative’s interpretation. On the Drawings, given dimensions shall take precedence over scaled measurements and large scale drawings over small scale drawings. Before ordering any materials or doing any Work, the Contractor and each Subcontractor shall verify measurements at the Work site and shall be responsible for the correctness of such measurements. Any difference which may be found shall be submitted to the Owner’s Representative and Architect for resolution before proceeding with the Work. If a minor change in the Work is found necessary due to actual field conditions, the Contractor shall submit detailed drawings of such change for the approval by the Owner’s Representative and Architect before making the change.

1.2.6 Data in the Contract Documents concerning lot size, ground elevations, present obstructions on or near the site, locations and depths of sewers, conduits, pipes, wires, etc., position of sidewalks, curbs, pavements, etc., and nature of ground and subsurface conditions have been obtained from sources the Architect believes reliable, but the Architect and Owner do not represent or warrant that this information is accurate or complete. The Contractor shall verify such data to the extent possible through normal construction procedures, including but not limited to contacting utility owners and by prospecting.

1.2.7 Only work included in the Contract Documents is authorized, and the Contractor shall do no work other than that described therein.
1.2.8 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents. Contractor represents that it has performed its own investigation and examination of the Work site and its surroundings and satisfied itself before entering into this Contract as to:

1. conditions bearing upon transportation, disposal, handling, and storage of materials;
2. the availability of labor, materials, equipment, water, electrical power, utilities and roads;
3. uncertainties of weather, river stages, flooding and similar characteristics of the site;
4. conditions bearing upon security and protection of material, equipment, and Work in progress;
5. the form and nature of the Work site, including the surface and sub-surface conditions;
6. the extent and nature of Work and materials necessary for the execution of the Work and the remedying of any defects therein; and
7. the means of access to the site and the accommodations it may require and, in general, shall be deemed to have obtained all information as to risks, contingencies and other circumstances.
8. the ability to complete work without disruption to normal campus activities, except as specifically allowed in the contract documents.

The Owner assumes no responsibility or liability for the physical condition or safety of the Work site or any improvements located on the Work site. The Contractor shall be solely responsible for providing a safe place for the performance of the Work. The Owner shall not be required to make any adjustment in either the Contract Sum or Contract Time concerning any failure by the Contractor or any Subcontractor to comply with the requirements of this Paragraph.

1.2.9 Drawings, specifications, and copies thereof furnished by the Owner are and shall remain the Owner’s property. They are not to be used on another project and, with the exception of one contract set for each party to the Contract, shall be returned to the Owner's Representative on request, at the completion of the Work.

1.3 Required Provisions Deemed Inserted
Each and every provision of law and clause required by law to be inserted in this Contract shall be deemed to be inserted herein, and the Contract shall be read and enforced as though it were included herein; and if through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the written application of either party the Contract shall forthwith be physically amended to make such insertion or correction.

ARTICLE 2
OWNER

2.1 Information and Services Required of the Owner
2.1.1 Permits and fees are the responsibility of the Contractor under the Contract Documents, unless specifically stated in the contract documents that the Owner will secure and pay for specific necessary approvals, easements, assessments, and charges required for construction, use or occupancy of permanent structures, or for permanent changes in existing facilities.

2.1.2 When requested in writing by the Contractor, information or services under the Owner's control, which are reasonably necessary to perform the Work, will be furnished by the Owner with reasonable promptness to avoid delay in the orderly progress of the Work.

2.2 Owner's Right to Stop the Work
2.2.1 If the Contractor fails to correct Work which is not in strict accordance with the requirements of the Contract Documents or fails to carry out Work in strict accordance with the Contract Documents, the Owner's Representative may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work will not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity. Owner’s lifting of Stop Work Order shall not prejudice Owner’s right to enforce any provision of this Contract.

2.3 Owner's Right to Carry Out the Work
2.3.1 If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents, and fails within a seven (7) day period after receipt of a written notice from the Owner to correct such default or neglect, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. In such case, an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the cost of correcting such deficiencies, including compensation for the Architect’s additional services and expenses made necessary by such default or neglect. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to Owner. However, such notice shall be waived in the event of an emergency with the potential for property damage or the endangerment of students, faculty, staff, the public or construction personnel, at the sole discretion of the Owner.

2.3.2 In the event the Contractor has not satisfactorily completed all items on the Punch List within thirty (30) days of its receipt, the Owner reserves the right to complete the Punch List without further notice to the Contractor or its representatives.
surety. In such case, Owner shall be entitled to deduct from payments then or thereafter due the Contractor the cost of completing the Punch List items, including compensation for the Architect's additional services. If payments then or thereafter due Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to Owner.

2.4 Extent of Owner Rights

2.4.1 The rights stated in this Article 2 and elsewhere in the Contract Documents are cumulative and not in limitation of any rights of the Owner (1) granted in the Contract Documents, (2) at law or (3) in equity.

2.4.2 In no event shall the Owner have control over, charge of, or any responsibility for construction means, methods, techniques, sequences or procedures or for safety precautions and programs in connection with the Work, notwithstanding any of the rights and authority granted the Owner in the Contract Documents.

ARTICLE 3
CONTRACTOR

3.1 Contractor's Warranty

3.1.1 The Contractor warrants all equipment and materials furnished, and work performed, under this Contract, against defective materials and workmanship for a period of twelve months after acceptance as provided in this Contract, unless a longer period is specified, regardless of whether the same were furnished or performed by the Contractor or any Subcontractors of any tier. Upon written notice from the Owner of any breach of warranty during the applicable warranty period due to defective material or workmanship, the affected part or parts thereof shall be repaired or replaced by the Contractor at no cost to the Owner. Should the Contractor fail or refuse to make the necessary repairs, replacements, and tests when requested by the Owner, the Owner may perform, or cause the necessary work and tests to be performed, at the Contractor's expense, or exercise the Owner's rights under Article 14.

3.1.2 Should one or more defects mentioned above appear within the specified period, the Owner shall have the right to continue to use or operate the defective part or apparatus until the Contr actor makes repairs or replacements or until such time as it can be taken out of service without loss or inconvenience to the Owner.

3.1.3 The above warranties are not intended as a limitation, but are in addition to all other express warranties set forth in this Contract and such other warranties as are implied by law, custom, and usage of trade. The Contractor, and its surety or sureties, if any, shall be liable for the satisfaction and full performance of the warranties set forth herein.

3.1.4 Neither the final payment nor any provision in the Contract Documents nor partial or entire occupancy of the premises by the Owner, nor expiration of warranty stated herein, will constitute an acceptance of Work not done in accordance with the Contract Documents or relieve the Contractor of liability in respect to any responsibility for non-conforming work. The Contractor shall immediately remedy any defects in the Work and pay for any damage to other Work resulting therefrom upon written notice from the Owner. Should the Contractor fail or refuse to remedy the non-conforming work, the Owner may perform, or cause to be performed the work necessary to bring the work into conformance with the Contract Documents at the Contractor's expense.

3.1.5 The Contractor agrees to defend, indemnify, and save harmless The Curators of the University of Missouri, their Officers, Agents, Employees and Volunteers, from and against all loss or expense from any injury or damages to property of others suffered or incurred on account of any breach of the aforesaid obligations and covenants. The Contractor agrees to investigate, handle, respond to and provide defense for and defend against any such liability, claims, and demands at the sole expense of the Contractor, or at the option of the University, agrees to pay to or reimburse the University for the defense costs incurred by the University in connection with any such liability claims, or demands. The parties hereto understand and agree that the University is relying on, and does not waive or intend to waive by any provision of this Contract, any monetary limitations or any other rights, immunities, and protections provided by the State of Missouri, as from time to time amended, or otherwise available to the University, or its officers, employees, agents or volunteers.

3.2 Compliance with Laws, Permits, Regulations and Inspections

3.2.1 The Contractor shall, without additional expense to the Owner, comply with all applicable laws, ordinances, rules, statutes, and regulations (collectively referred to as “Laws”).

3.2.2 Since the Owner is an instrumentality of the State of Missouri, municipal, or political subdivision, ordinances, zoning ordinances, and other like ordinances are not applicable to construction on the Owner's property, and the Contractor will not be required to submit plans and specifications to any municipal or political subdivision authority to obtain construction permits or any other licenses or permits from or submit to, inspection by any municipality or political subdivision relating to the construction on the Owner's property, unless required by the Owner in these Contract Documents or otherwise in writing.
3.2.3 All fees, permits, inspections, or licenses required by municipality or political subdivision for operation on property not belonging to the Owner, shall be obtained by and paid for by the Contractor. The Contractor, of its own expense, is responsible to ensure that all inspections required by said permits or licenses on property, easements, or utilities not belonging to the Owner are conducted as required therein. All connection charges, assessments or transportation fees as may be imposed by any utility company or others are included in the Contract Sum and shall be the Contractor’s responsibility, as stated in 2.1.1 above.

3.2.4 If the Contractor has knowledge that any Contract Documents are at variance with any Laws, including Americans with Disabilities Act – Standards for Accessible Design, ordinances, rules, regulations or codes applying to the Work, Contractor shall promptly notify the Architect and the Owner’s Representative, in writing, and any necessary changes will be adjusted as provided in Contract Documents. However, it is not the Contractor’s primary responsibility to ascertain that the Contract Documents are in accordance with applicable Laws, unless such Laws bear upon performance of the Work.

3.3 Anti-Kickback

3.3.1 No member or delegate to Congress, or resident commissioner, shall be admitted to any share or part of this Contract or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this Contract if made with a corporation for its general benefit.

3.3.2 No official of the Owner who is authorized in such capacity and on behalf of the Owner to negotiate, make, accept or approve, or to take part in negotiating, making, accepting, or approving any architectural, engineering, inspection, construction, or material supply contract or any Subcontract of any tier in connection with the construction of the Work shall have a financial interest in this Contract or in any part thereof, any material supply contract, Subcontract of any tier, insurance contract, or any other contract pertaining to the Work.

3.4 Supervision and Construction Procedures

3.4.1 The Contractor shall supervise and direct the Work, using the Contractor’s best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences, and procedures and for coordinating all portions of the Work under the Contract. The Contractor shall supply sufficient and competent supervision and personnel, and sufficient material, plant, and equipment to prosecute the Work with diligence to ensure completion thereof within the time specified in the Contract Documents, and shall pay when due any laborer, Subcontractor of any tier, or supplier.

3.4.2 The Contractor, if an individual, shall give the Work an adequate amount of personal supervision, and if a partnership or corporation or joint venture the Work shall be given an adequate amount of personal supervision by a partner or executive officer, as determined by the Owner's Representative.

3.4.3 The Contractor and each of its Subcontractors of any tier shall submit to the Owner such schedules of quantities and costs, progress schedules in accordance with 3.17.2 of this document, payrolls, reports, estimates, records, and other data as the Owner may request concerning Work performed or to be performed under the Contract.

3.4.4 The Contractor shall be represented at the site by a competent superintendent from the beginning of the Work until its final acceptance, whenever contract work is being performed, unless otherwise permitted in writing by the Owner's Representative. The superintendent for the Contractor shall exercise general supervision over the Work and such superintendent shall have decision making authority of the Contractor. Communications given to the superintendent shall be binding as if given to the Contractor. The superintendent shall not be changed by the contractor without approval from the Owner’s Representative.

3.4.5 The Contractor shall establish and maintain a permanent bench mark to which access may be had during progress of the Work, and Contractor shall establish all lines and levels, and shall be responsible for the correctness of such. Contractor shall be fully responsible for all layout work for the proper location of Work in strict accordance with the Contract Documents.

3.4.6 The Contractor shall establish and be responsible for wall and partition locations. If applicable, separate contractors shall be entitled to rely upon these locations and for setting their sleeves, openings, or chases.

3.4.7 The Contractor’s scheduled outage/tie-in plan, time, and date for any utilities is subject to approval by the Owner’s Representative. Communication with the appropriate entity and planning for any scheduled outage/tie-in of utilities shall be the responsibility of the Contractor. Failure of Contractor to comply with the provisions of this Paragraph shall cause Contractor to forfeit any right to an adjustment of the Contract Sum or Contract Time for any postponement, rescheduling or other delays ordered by Owner in connection with such Work. The Contractor shall follow the following procedures for all utility outages/tie-ins or disruption of any building system:

.1 All shutting of valves, switches, etc., shall be by the Owner's personnel.
.2 Contractor shall submit its preliminary outage/tie-in schedule with its baseline schedule.
.3 The Contractor shall request an outage/tie-in meeting at least two weeks before the outage/tie-in is required.
.4 The Owner's Representative will schedule an outage/tie-in meeting at least one week prior to the outage/tie-in.

3.4.8 The Contractor shall coordinate all Work so there shall be no prolonged interruption of existing utilities, systems and equipment of Owner. Any existing plumbing, heating, ventilating, air conditioning, or electrical disconnection necessary, which affect portions of this construction or building or any other building, must be scheduled with the Owner's Representative to avoid any disruption of operation within the building under construction or other buildings or utilities. In no case shall utilities be left disconnected at the end of a work day or over a weekend. Any interruption of utilities, either intentionally or accidentally, shall not relieve the Contractor from repairing and restoring the utility to normal service. Repairs and restoration shall be made before the workers responsible for the repair and restoration leave the job.

3.4.9 The Contractor shall be responsible for repair of damage to property on or off the project occurring during construction of project, and all such repairs shall be made to meet code requirements or to the satisfaction of the Owner's Representative if code is not applicable.

3.4.10 The Contractor shall be responsible for all shoring required to protect its work or adjacent property and shall pay for any damage caused by failure to shore or by improper shoring or by failure to give proper notice. Shoring shall be removed only after completion of permanent supports.

3.4.11 The Contractor shall maintain at his own cost and expense, adequate, safe and sufficient walkways, platforms, scaffolds, ladders, hoists and all necessary, proper, and adequate equipment, apparatus, and appliances useful in carrying on the Work and which are necessary to make the place of Work safe and free from avoidable danger for students, faculty, staff, the public and construction personnel, and as may be required by safety provisions of applicable laws, ordinances, rules regulations and building and construction codes.

3.4.12 During the performance of the Work, the Contractor shall be responsible for providing and maintaining warning signs, lights, signal devices, barricades, guard rails, fences, and other devices appropriately located on site which shall give proper and understandable warning to all persons of danger of entry onto land, structure, or equipment, within the limits of the Contractor’s work area.

3.4.13 The Contractor shall pump, bail, or otherwise keep any general excavations free of water. The Contractor shall keep all areas free of water before, during and after concrete placement. The Contractor shall be responsible for protection, including weather protection, and proper maintenance of all equipment and materials installed, or to be installed by him.

3.4.14 The Contractor shall be responsible for care of the Work and must protect same from damage of defacement until acceptance by the Owner. All damaged or defaced Work shall be repaired or replaced to the Owner's satisfaction, without cost to the Owner.

3.4.15 When requested by the Owner's Representative, the Contractor, at no extra charge, shall provide scaffolds or ladders in place as may be required by the Architect or the Owner for examination of Work in progress or completed.

3.4.16 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor’s employees, Subcontractors of any tier and their agents and employees, and any entity or other persons performing portions of the Work.

3.4.17 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Owner’s Representative or Architect in their administration of the Contract, or by tests, inspections or approvals required or performed by persons other than the Contractor.

3.4.18 The Contractor shall be responsible for inspection of portions of the Work already performed under this Contract to determine that such portions are in proper condition to receive subsequent Work.

3.5 Use of Site
3.5.1 The Contractor shall limit operations and storage of material to the area within the Work limit lines shown on Drawings, except as necessary to connect to exiting utilities, shall not encroach on neighboring property, and shall exercise caution to prevent damage to existing structures.

3.5.2 Only materials and equipment, which are to be used directly in the Work, shall be brought to and stored on the Work site by the Contractor. After equipment is no longer required for the Work, it shall be promptly removed from the Work site. Protection of construction materials and equipment stored at the Work site from weather, theft, damage and all other adversity is solely the responsibility of the Contractor.
3.5.3 No project signs shall be erected without the written approval of the Owner's Representative.

3.5.4 The Contractor shall ensure that the Work is at all times performed in a manner that affords reasonable access, both vehicular and pedestrian, to the site of the Work and all adjacent areas. Particular attention shall be paid to access for emergency vehicles, including fire trucks. Wherever there is the possibility of interfering with normal emergency vehicle operations, Contractor shall obtain permission from both campus and municipal emergency response entities prior to limiting any access. The Work shall be performed, to the fullest extent reasonably possible, in such a manner that public areas adjacent to the site of the Work shall be free from all debris, building materials and equipment likely to cause hazardous conditions. Without limitation of any other provision of the Contract Documents, Contractor shall not interfere with the occupancy or beneficial use of (1) any areas and buildings adjacent to the site of the Work or (2) the Work in the event of partial occupancy. Contractor shall assume full responsibility for any damage to the property comprising the Work or to the owner or occupant of any adjacent land or areas resulting from the performance of the Work.

3.5.5 The Contractor shall not permit any workers to use any existing facilities at the Work site, including, without limitation, lavatories, toilets, entrances, and parking areas other than those designated by Owner. The Contractor, Subcontractors of any tier, suppliers and employees shall comply with instructions or regulations of the Owner’s Representative governing access to, operation of, and conduct while in or on the premises and shall perform all Work required under the Contract Documents in such a manner as not to unreasonably interrupt or interfere with the conduct of Owner’s operations. Any request for Work, a suspension of Work or any other request or directive received by the Contractor from occupants of existing buildings shall be referred to the Owner’s Representative for determination.

3.5.6 The Contractor and the Subcontractor of any tier shall have its name, acceptable abbreviation or recognizable logo and the name of the city and state of the mailing address of the principal office of the company, on each motor vehicle and motorized self-propelled piece of equipment which is used in connection with the project. The signs are required on such vehicles during the time the Contractor is working on the project.

3.6 Review of Contract Documents and Field Conditions by Contractor

3.6.1 The Contractor shall carefully study and compare the Contract Documents with each other and with information furnished by the Architect and Owner and shall at once report in writing to the Architect and Owner’s Representative any errors, inconsistencies or omissions discovered. If the Contractor performs any construction activity which it knows or should have known involves a recognized error, inconsistency or omission in the Contract Documents without such written notice to the Architect and Owner’s Representative, the Contractor shall assume appropriate responsibility for such performance and shall bear an appropriate amount of the attributable costs for correction.

3.6.2 The Contractor shall take field measurements and verify field conditions and shall carefully compare such field measurements and conditions and other information known to the Contractor with the Contract Documents before commencing activities. Errors, inconsistencies or omissions discovered shall be reported in writing to the Architect and Owner’s Representative within twenty-four (24) hours. During the progress of work, Contractor shall verify all field measurements prior to fabrication of building components or equipment, and proceed with the fabrication to meet field conditions. Contractor shall consult all Contract Documents to determine the exact location of all work and verify spatial relationships of all work. Any question concerning said location or spatial relationships shall be submitted to the Owner's Representative. Specific locations for equipment, pipelines, ductwork and other such items of work, where not dimensioned on plans, shall be determined in consultation with Owner's Representative and Architect. Contractor shall be responsible for the proper fitting of the Work in place.

3.6.3 The Contractor shall provide, at the proper time, such material as required for support of the Work. If openings or chases are required, whether shown on Drawings or not, the Contractor shall see they are properly constructed. If required openings or chases are omitted, the Contractor shall cut them at the Contractors own expense, but only as directed by the Architect, through the Owner Representative.

3.6.4 Should the Contract Documents fail to particularly describe materials or goods to be used, it shall be the duty of the Contractor to inquire of the Architect and the Owner’s Representative what is to be used and to supply it at the Contractor’s expense, or else thereafter replace it to the Owner’s Representative’s satisfaction. At a minimum, the Contractor shall provide the quality of materials as generally specified throughout the Contract Documents.

3.7 Cleaning and Removal

3.7.1 The Contractor shall keep the Work site and surrounding areas free from accumulation of waste materials, rubbish, debris, and dirt resulting from the Work and shall
clean the Work site and surrounding areas as requested by the Architect and the Owner's Representative, including mowing of grass greater than 6 inches high. The Contractor shall be responsible for the cost of clean up and removal of debris from premises. The building and premises shall be kept clean, safe, in a workmanlike manner, and in compliance with OSHA standards at all times. At completion of the Work, the Contractor shall remove from and about the Work site tools, construction equipment, machinery, fencing, and surplus materials. Further, at the completion of the work, all dirt, stains, and smudges shall be removed from every part of the building, all glass in doors and windows shall be washed, and entire Work shall be left broom clean in a finished state ready for occupancy. The Contractor shall advise his Subcontractors of any tier of this provision, and the Contractor shall be fully responsible for leaving the premises in a finished state ready for use to the satisfaction of the Owner's Representative. If the Contractor fails to comply with the provisions of this paragraph, the Owner may do so and the cost thereof shall be charged to the Contractor.

3.8 Cutting and Patching

3.8.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly.

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

3.8.3 If the Work involves renovation and/or alteration of existing improvements, Contractor acknowledges that cutting and patching of the Work is essential for the Work to be successfully completed. Contractor shall perform any cutting, altering, patching, and/or fitting of the Work necessary for the Work and the existing improvements to be fully integrated and to present the visual appearance of an entire, completed, and unified project. In performing any Work which requires cutting or patching, Contractor shall use its best efforts to protect and preserve the visual appearance and aesthetics of the Work to the reasonable satisfaction of both the Owner’s Representative and Architect.

3.9 Indemnification

3.9.1 To the fullest extent permitted by law, the Contractor shall defend, indemnify, and hold harmless the Owner, the Architect, Architect’s consultants, and the agents, employees, representatives, insurers and re-insurers of any of the foregoing (hereafter collectively referred to as the “Indemnities”) from and against claims, damages (including loss of use of the Work itself), punitive damages, penalties and civil fines unless expressly prohibited by law, losses and expenses, including, but not limited to, attorneys’ fees, arising out of or resulting from performance of the Work to the extent caused in whole or in part by negligent acts or omissions or other fault of Contractor, a Subcontractor of any tier, or anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by the negligent acts or omissions or other fault of a party indemnified hereunder. The Contractor’s obligations hereunder are in addition to and shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that the Owner may possess. If one or more of the Indemnites demand performance by the Contractor of obligations under this paragraph or other provisions of the Contract Documents and if Contractor refuses to assume or perform, or delays in assuming or performing Contractor’s obligations, Contractor shall pay each Indemnitee who has made such demand its respective attorneys’ fees, costs, and other expenses incurred in enforcing this provision. The defense and indemnity required herein shall be a binding obligation upon Contractor whether or not an Indemnitee has made such demand. Even if a defense is successful to a claim or demand for which Contractor is obligated to indemnify the Indemnites from under this Paragraph, Contractor shall remain liable for all costs of defense.

3.9.2 The indemnity obligations of Contractor under this Section 3.9 shall survive termination of this Contract or final payment thereunder. In the event of any claim or demand made against any party which is entitled to be indemnified hereunder, the Owner may in its sole discretion reserve, return or apply any monies due or to become due the Contractor under the Contract for the purpose of resolving such claims; provided, however, that the Owner may release such funds if the Contractor provides the Owner with reasonable assurance of protection of the Owner’s interests. The Owner shall in its sole discretion determine if such assurances are reasonable. Owner reserves the right to control the defense and settlement of any claim, action or proceeding which Contractor has an obligation to indemnify the Indemnites against under Paragraph 3.9.1.

3.9.3 In claims against any person or entity indemnified under this Section 3.9 by an employee of the Contractor, a Subcontractor of any tier, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under this Section 3.9 shall not be limited by a limitation on amount or type of

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3.9.4 The obligations of the Contractor under Paragraph 3.9.1 shall not extend to the liability of the Architect, his agents or employees, arising out of the preparation and approval of maps, drawings, opinions, reports, surveys, Change Orders, designs, or Specifications.

3.10 Patents
3.10.1 The Contractor shall hold and save harmless the Owner and its officers, agents, servants, and employees from liability of any nature or kind, including cost and expense, for, or on account of, any patented or otherwise protected invention, process, article, or appliance manufactured or used in the performance of the Contract, including its use by the Owner, unless otherwise specifically stipulated in the Contract Documents.

3.10.2 If the Contractor uses any design, device, or material covered by letters patent or copyright, he shall provide for such use by suitable agreement with the Owner of such patented or copyrighted design, device, or material. It is mutually agreed and understood, without exception, that the Contract Sum includes and the Contractor shall pay all royalties, license fees or costs arising from the use of such design, device, or material in any way involved in the Work. The Contractor and/or sureties shall indemnify and save harmless the Owner from any and all claims for infringement by reason of the use of such patented or copyrighted design, device, or material or any trademark or copyright in connection with Work agreed to be performed under this Contract and shall indemnify the Owner for any cost, expense, or damage it may be obligated to pay by reason of such infringement at any time during the prosecution of the Work or after completion of the Work.

3.11 Materials, Labor, and Workmanship
3.11.1 Materials and equipment incorporated into the Work shall strictly conform to the Contract Documents and representations and approved Samples provided by Contractor and shall be of the most suitable grade of their respective kinds for their respective uses, and shall be fit and sufficient for the purpose intended, merchantable, of good new material and workmanship, and free from defect. Workmanship shall be in accordance with the highest standard in the industry and free from defect in strict accordance with the Contract Documents.

3.11.2 Materials and fixtures shall be new and of latest design unless otherwise specified, and shall provide the most efficient operating and maintenance costs to the Owner. All Work shall be performed by competent workers and shall be of best quality.

3.11.3 The Contractor shall carefully examine the Contract Documents and shall be responsible for the proper fitting of his material, equipment, and apparatus into the building.

3.11.4 The Contractor shall base his bid only on the Contract Documents.

3.11.5 Materials and workmanship shall be subject to inspection, examination, and test by the Architect and the Owner's Representative at any and all times during manufacture, installation, and construction of any of them, at places where such manufacture, installation, or construction is performed.

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

3.11.7 Unless otherwise specifically noted, the Contractor shall provide and pay for supervision, labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for the proper execution and completion of the Work.

3.11.8 Substitutions
3.11.8.1 A substitution is a Contractor proposal of an alternate product or method in lieu of has been specified or shown in the Contract Documents, which is not an “or equal” as set forth in Section 3.12.1.

3.11.8.2 Contractor may make a proposal to the Architect and the Owner’s Representative to use substitute products or methods as set forth herein, but the Architect's and the Owner’s Representative’s decision concerning acceptance of a substitute shall be final. The Contractor must do so in writing and setting forth the following:

.1 Full explanation of the proposed substitution and submittal of all supporting data including technical information, catalog cuts, warranties, test results, installation instructions, operating procedures, and other like information necessary for a complete evaluation of the substitution.

.2 Reasons the substitution is advantageous and necessary, including the benefits to the Owner and the Work in the event the substitution is acceptable.

.3 The adjustment, if any, in the Contract Sum, in the event the substitution is acceptable.

.4 The adjustment, if any, in the time of completion of the Contract and the construction schedule in the event the substitution is acceptable.

.5 An affidavit stating that (a) the proposed substitution conforms to and meets all of the
Contract Documents, except as specifically disclosed and set forth in the affidavit and (b) the Contractor accepts the warranty and correction obligations in connection with the proposed substitution as if originally specified by the Architect. Proposals for substitutions shall be submitted to the Architect and Owner’s Representative in sufficient time to allow the architect and Owner’s Representative no less than ten (10) working days for review. No substitution will be considered or allowed without the Contractor's submittal of complete substantiating data and information as stated herein.

3.11.8.3 Substitutions may be rejected without explanation in Owner’s sole discretion and will be considered only under one or more of the following conditions:

1. Required for compliance with interpretation of code requirements or insurance regulations then existing;
2. Unavailability of specified products, through no fault of the Contractor;
3. Material delivered fails to comply with the Contract Documents;
4. Subsequent information discloses inability of specified products to perform properly or to fit in designated space;
5. Manufacturer/fabricator refuses to certify or guarantee performance of specified product as required; or
6. When in the judgment of the Owner or the Architect, a substitution would be substantially to the Owner's best interests, in terms of cost, time, or other considerations.

3.11.8.4 Whether or not any proposed substitution is accepted by the Owner or the Architect, the Contractor shall reimburse the Owner for any fees charged by the Architect or other consultants for evaluating each proposed substitute.

3.12 Approved Equal

3.12.1 Whenever in the Contract Documents any article, appliance, device, or material is designated by the name of a manufacturer, vendor, or by any proprietary or trade name, the words "or approved equal," shall automatically follow and shall be implied unless specifically indicated otherwise. The standard products of manufacturers other than those specified will be accepted when, prior to the ordering or use thereof, it is proven to the satisfaction of the Owner’s Representative and the Architect they are equal in design, appearance, spare parts availability, strength, durability, usefulness, serviceability, operation cost, maintenance cost, and convenience for the purpose intended. Any general listings of approved manufacturers in any Contract Document shall be for informational purposes only and it shall be the Contractor’s sole responsibility to ensure that any proposed “or equal” complies with the requirements of the Contract Documents.

3.12.2 The Contractor shall submit to Architect and Owner’s Representative a written and full description of the proposed “or equal” including all supporting data, including technical information, catalog cuts, warranties, test results, installation instructions, operating procedures, and similar information demonstrating that the proposed “or equal” strictly complies with the Contract Documents. The Architect or Owner’s Representative shall take appropriate action with respect to the submission of a proposed “or equal” item. If Contractor fails to submit proposed “or equals” as set forth herein, it shall waive any right to supply such items. The Contract Sum and Contract Time shall not be adjusted as a result of any failure by Contractor to submit proposed “or equals” as provided for herein. All documents submitted in connection with preparing an “or equal” shall be clearly and obviously marked as a proposed “or equal” submission.

3.12.3 No approvals or action taken by the Architect or Owner’s Representative shall relieve Contractor from its obligation to ensure that an “or equal” article, appliance, devise or material strictly complies with the requirements of the Contract Documents. Contractor shall not propose “or equal” items in connection with Shop Drawings or other Submittals, and Contractor acknowledges and agrees that no approvals or action taken by the Architect or Owner’s Representative with respect to Shop Drawings or other Submittals shall constitute approval of any “or equal” item or relieve Contractor from its sole and exclusive responsibility. Any changes required in the details and dimensions indicated in the Contract Documents for the incorporation or installation of any “or equal” item supplied by the Contractor shall be properly made and approved by the Architect at the expense of the Contractor. No ‘or equal’ items will be permitted for components of or extensions to existing systems when, in the opinion of the Architect, the named manufacturer must be provided in order to ensure compatibility with the existing systems, including, but not limited to, mechanical systems, electrical systems, fire alarms, smoke detectors, etc. No action will be taken by the Architect with respect to proposed “or equal” items prior to receipt of bids, unless otherwise noted in the Special Conditions.

3.13 Shop Drawings, Product Data, Samples, and Coordination Drawings/BIM Models

3.13.1 Shop Drawings are drawings, diagrams, schedules and other data specifically prepared for the Work by the Contractor or a Subcontractor, sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.
3.13.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

3.13.3 Samples are physical samples which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

3.13.4 Coordination Drawings are drawings for the integration of the Work, including work first shown in detail on shop drawings or product data. Coordination drawings show sequencing and relationship of separate units of work which must interface in a restricted manner to fit in the space provided, or function as indicated. Coordination Drawings are the responsibility of the contractor and are submitted for informational purposes. The Special Conditions will state whether coordination drawings are required. BIM models may be used for coordination in lieu of coordination drawings at the contractor’s discretion, unless required in the Special Conditions. The final coordination drawings/BIM Model will not change the contract documents, unless approved by a fully executed change order describing the specific modifications that are being made to the contract documents.

3.13.5 Shop Drawings, Coordination Drawings/BIM Models, Product Data, Samples and similar submittals (collectively referred to as “Submittals”) are not Contract Documents. The purpose of their submittal is to demonstrate for those portions of the Work for which submittals are required the way the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents.

3.13.6 The Contractor shall schedule submittal of Shop Drawings and Product Data to the Architect so that no delays will result in delivery of materials and equipment, advising the Architect of priority for checking of Shop Drawings and Product Data, but a minimum of two weeks shall be provided for this purpose. Because time is of the essence in this contract, unless noted otherwise in the Special Conditions or Technical Specifications, all submittals, shop drawings and samples must be submitted as required to maintain the contractor’s plan for proceeding, but must be submitted within 90 days of the Notice To Proceed. If Contractor believes that this milestone is unreasonable for any submittal, Contractor shall request an extension of this milestone, within 60 days of Notice To Proceed, for each submittal that cannot meet the milestone. The request shall contain a reasonable explanation as to why the 90 day milestone is unrealistic, and shall specify a date on which the submittal will be transmitted, for approval by the Owner’s Representative. Failure of the Contractor to comply with this section may result in delays in the submittal approval process and/or charges for expediting approval, both of which will be the responsibility of the Contractor.

3.13.7 The Contractor, at its own expense, shall submit Samples required by the Contract Documents with reasonable promptness as to cause no delay in the Work or the activities of separate contractors and no later than twenty (20) days before materials are required to be ordered for scheduled delivery to the Work site. Samples shall be labeled to designate material or products represented, grade, place of origin, name of producer, name of Contractor and the name and number of the Owner’s project. Quantities of Samples shall be twice the number required for testing so that Architect can return one set of the Samples. Materials delivered before receipt of Architect’s approval may be rejected by Architect and in such event, Contractor shall immediately remove all such materials from the Work site. When requested by Architect or Owner’s Representative, samples of finished masonry and field applied paints and finishes shall be located as directed and shall include sample panels built at the site of approximately twenty (20) square feet each.

3.13.8 The Contractor shall perform no portion of the Work requiring submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect. Such Work shall be in accordance with approved submittals.

3.13.9 By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents such Submittals strictly comply with the requirements of the Contract Documents and that the Contractor has determined and verified field measurements and field construction criteria related thereto, that materials are fit for their intended use and that the fabrication, shipping, handling, storage, assembly and installation of all materials, systems and equipment are in accordance with best practices in the industry and are in strict compliance with any applicable requirements of the Contract Documents. Contractor shall also coordinate each Submittal with other Submittals.

3.13.10 Contractor shall be responsible for the correctness and accuracy of the dimensions, measurements and other information contained in the Submittals.

3.13.11 Each Submittal will bear a stamp or specific indication that the Submittal complies with the Contract Documents and Contractor has satisfied its obligations under the Contract Documents with respect to Contractor’s review and approval of that Submittal. Each Submittal shall bear the signature of the representative of Contractor who approved the Submittal, together with the Contractor’s name, Owner’s name, number of the Project, and the item name and specification section number.

3.13.12 The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data,
Samples or similar submittals. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect's approval thereof. Specifically, but not by way of limitation, Contractor acknowledges that Architect's approval of Shop Drawings shall not relieve Contractor for responsibility for errors and omissions in the Shop Drawings since Contractor is responsible for the correctness of dimensions, details and the design of adequate connections and details contained in the Shop Drawings.

3.13.13 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Architect on previous Submittals.

3.13.14 The Contractor represents and warrants that all Shop Drawings shall be prepared by persons and entities possessing expertise and experience in the trade for which the Shop Drawing is prepared and, if required by the Architect or applicable Laws, by a licensed engineer or other design professional.

3.14 Record Drawings
3.14.1 The Contractor shall maintain a set of Record Drawings on site in good condition and shall use colored pencils to mark up said set with "record information" in a legible manner to show: (1) bidding addendums, (2) executed change orders, (3) deviations from the Drawings made during construction; (4) details in the Work not previously shown; (5) changes to existing conditions or existing conditions found to differ from those shown on any existing drawings; (6) the actual installed position of equipment, piping, conduits, light switches, electric fixtures, circuiting, ducts, dampers, access panels, control valves, drains, openings, and stub-outs; and (7) such other information as either Owner or Architect may reasonably request. The prints for Record Drawing use will be a set of "blue line" prints provided by Architect to Contractor at the start of construction. Upon Substantial Completion of the Work, Contractor shall deliver all Record Drawings to Owner and Architect for approval. If not approved, Contractor shall make the revisions requested by Architect or Owner's Representative. Final payment and any retainage shall not be due and owing to Contractor until the final Record Drawings marked by Contractor as required above are delivered to Owner.

3.15 Operating Instructions and Service Manuals
3.15.1 The Contractor shall submit four (4) volumes of operating instructions and service manuals to the Architect before completing 50% of the adjusted contract amount. Payments beyond 50% of the adjusted contract amount may be withheld until all operating instructions and service manuals are received. The operating instructions and service manuals shall contain:

.1 Start-up and Shutdown Procedures: Provide a step-by-step write up of all major equipment. When manufacturer's printed start-up, trouble shooting and shut-down procedures are available, they may be incorporated into the operating manual for reference.
.2 Operating Instructions: Written operating instructions shall be included for the efficient and safe operation of all equipment.
.3 Equipment List: List of all major equipment as installed shall include model number, capacities, flow rate, and name-plate data.
.4 Service Instructions: The Contractor shall be required to provide the following information for all pieces of equipment.
(a) Recommended spare parts including catalog number and name of local suppliers or factory representative.
(b) Belt sizes, types, and lengths.
(c) Wiring diagrams.
.5 Manufacturer's Certificate of Warranty: Manufacturer's certificates of warranty shall be obtained for all major equipment. Warranty shall be obtained for at least one year from the date of Substantial Completion. Where longer period is required by the Contract Documents, the longer period shall govern.
.6 Parts catalogs: For each piece of equipment furnished, a parts catalog or similar document shall be provided which identifies the components by number for replacement ordering.

3.15.2 Submission
.1 Manuals shall be bound into volumes of standard 8 1/2" x 11" hard binders. Large drawings too bulky to be folded into 8 1/2" x 11" shall be separately bound or folded and in brown envelopes, cross-referenced and indexed with the manuals.
.2 The manuals shall identify the Owner’s project name, project number, and include the name and address of the Contractor and major Subcontractors of any tier who were involved with the activity described in that particular manual.

3.16 Taxes
3.16.1 The Contractor shall pay all applicable sales, consumer, use, and similar taxes for the Work which are legally enacted when the bids are received, whether or not yet effective or scheduled to go into effect. However, certain purchases by the Contractor of materials incorporated in or consumed in the Work are exempt from certain sales tax pursuant to RSMo § 144.062. The Contractor shall be issued a Project Tax Exemption Certificate for this Work to obtain the benefits of RSMo § 144.062.

3.16.2 The Contractor shall furnish this certificate to all subcontractors, and any person or entity purchasing materials
for the Work shall present such certificate to all material suppliers as authorization to purchase, on behalf of the Owner, all tangible personal property and materials to be incorporated into or consumed in the Work and no other on a tax-exempt basis. Such suppliers shall provide to the purchasing party invoices bearing the name of the exempt entity and the project identification number. Nothing in this section shall be deemed to exempt from any sales or similar tax the purchase of any construction machinery, equipment or tools used in construction, repairing or remodeling facilities for the Owner. All invoices for all personal property and materials purchased under a Project Tax Exemption Certificate shall be retained by the Contractor for a period of five years and shall be subject to audit by the Director of Revenue.

3.17.1 The Contractor, within fifteen (15) days after the issuance of the Notice to Proceed, shall prepare and submit for the Owner's and Architect's information Contractor's construction schedule for the Work and shall set forth interim dates for completion of various components of the Work and Work Milestone Dates as defined herein. The schedule shall not exceed time limits current under the Contract Documents, shall be revised on a monthly basis or as requested by the Owner’s Representative as required by the conditions of the Work, and shall provide for expeditious and practicable execution of the Work. The Contractor shall conform to the most recent schedule.

3.17.2 The construction schedule shall be in a detailed format satisfactory to the Owner’s Representative and the Architect and in accordance with the detailed schedule requirements set forth in this document and the Special Conditions. If the Owner’s Representative or Architect has a reasonable objection to the schedule submitted by Contractor, the construction schedule shall be promptly revised by the Contractor. The Contractor shall monitor the progress of the Work for conformance with the requirements of the construction schedule and shall promptly advise the Owner of any delays or potential delays.

3.17.3 As time is of the essence to this contract, the University expects that the Contractor will take all necessary steps to ensure that the project construction schedule shall be prepared in accordance with the specific requirements of the Special Conditions to this contract. At a minimum, contractor shall comply with the following:

1. The schedule shall be prepared using Primavera P3, Oracle P6, Microsoft Project or other software acceptable to the Owner’s Representative.
2. The schedule shall be prepared and maintained in CPM format, in accordance with Construction CPM Scheduling, published by the Associated General Contractors of American (AGC).
3. Prior to submittal to the Owner’s Representative for review, Contractor shall obtain full buy-in to the schedule from all major subcontractors, in writing if so requested by Owner’s Representative.
4. Schedule shall be updated, in accordance with Construction CPM Scheduling, published by the AGC, on a monthly basis at minimum, prior to, and submitted with, the monthly pay application or as requested by the Owner’s Representative.
5. Along with the update the Contractor shall submit a narrative report addressing all changes, delays and impacts, including weather to the schedule during the last month, and explain how the end date has been impacted by same.
6. The submission of the updated certifies that all delays and impacts that have occurred on or to the project during the previous month have been factored into the update and are fully integrated into the schedule and the projected completion date.

Failure to comply with any of these requirements will be considered a material breach of this contract. See Special Conditions for detailed scheduling requirements.

3.17.4 In the event the Owner’s Representative or Architect determines that the performance of the Work, as of a Milestone Date, has not progressed or reached the level of completion required by the Contract Documents, the Owner shall have the
right to order the Contractor to take corrective measures necessary to expedite the progress of construction, including, without limitation, (1) working additional shifts or overtime, (2) supplying additional manpower, equipment, facilities, (3) expediting delivery of materials, and (4) other similar measures (hereinafter referred to collectively as Extraordinary Measures). Such Extraordinary Measures shall continue until the progress of the Work complies with the stage of completion required by the Contract Documents. The Owner's right to require Extraordinary Measures is solely for the purpose of ensuring the Contractor's compliance with the construction schedule. The Contractor shall not be entitled to an adjustment in the Contract Sum concerning Extraordinary Measures required by the Owner under or pursuant to this Paragraph 3.17.3. The Owner may exercise the rights furnished the Owner under or pursuant to this Paragraph 3.17.3 as frequently as the Owner deems necessary to ensure that the Contractor's performance of the Work will comply with any Milestone Date or completion date set forth in the Contract Documents.

**ARTICLE 4
ADMINISTRATION OF THE CONTRACT**

4.1 Rights of the Owner
4.1.1 The Owner's Representative will administer the Construction Contract. The Architect will assist the Owner's Representative with the administration of the Contract as indicated in these Contract Documents.

4.1.2 If, in the judgment of the Owner's Representative, it becomes necessary to accelerate the work, the Contractor, when directed by the Owner's Representative in writing, shall cease work at any point and transfer its workers to such point or points and execute such portions of the work as may be required to enable others to hasten and properly engage and carry out the work, all as directed by the Owner's Representative. The additional cost of accelerating the work, if any, will be borne by the Owner, unless the Contractor's work progress is behind schedule as shown on the most recent progress schedule.

4.1.3 If the Contractor refuses, for any reason, to proceed with what the Owner believes to be contract work, the Owner may issue a Construction Directive, directing the Contractor to proceed. Contractor shall be obligated to promptly proceed with this work. If Contractor feels that it is entitled to additional compensation for this work, it may file a claim for additional compensation and/or time, in accordance with 4.4 of this document.

4.1.4 The Owner's Representative, may, by written notice, require a Contractor to remove from involvement with the Work, any of Contractor’s personnel or the personnel of its Subcontractors of any tier whom the Owner's Representative may deem abusive, incompetent, careless, or a hindrance to proper and timely execution of the Work. The Contractor shall comply with such notice promptly, but without detriment to the Work or its progress.

4.1.5 The Owner's Representative will schedule Work status meetings that shall be attended by representatives of the Contractor and appropriate Subcontractors of any tier. Material suppliers shall attend status meetings if required by the Owner's Representative. These meetings shall include preconstruction meetings.

4.1.6 The Owner does not allow smoking on University property.

4.2 Rights of the Architect
4.2.1 The Architect will interpret requirements of the Contract Documents with respect to the quality, quantity and other technical requirements of the Work itself within a reasonable time after written request of the Contractor. Contractor shall provide Owner's Representative a copy of such written request.

4.3 Review of the Work
4.3.1 The Architect and Owner's Representative shall, at all times, have access to the Work; and the Contractor shall provide proper and safe facilities for such access.

4.3.2 The Owner's Representative shall have authority to reject Work that does not strictly comply with the requirements of the Contract Documents. Whenever the Owner's Representative considers it necessary or advisable for implementation of the intent of the Contract Documents, Owner's Representative shall have the authority to require additional inspection or testing of the Work, whether or not such Work is fabricated, installed or completed.

4.3.3 The fact that the Architect or the Owner's Representative observed, or failed to observe, faulty Work, or Work done which is not in accordance with the Contract Documents, regardless of whether or not the Owner has released final payment, shall not relieve the Contractor from responsibility for all damages and additional costs of the Owner as a result of defective or faulty Work.

4.4 Claims
4.4.1 A Claim is a demand or assertion by Contractor seeking, as a matter of right, adjustment or interpretation of Contract terms, payment of money, extension of time or any other relief with respect to the terms of the Contract. The term "Claim(s)" also includes demands and assertions of Contractor arising out of or relating to the Contract Documents, including Claims based upon breach of contract, mistake, misrepresentation, or other cause for Contract Modification or
Claims must be made by written notice. Contractor shall have the responsibility to substantiate Claims.

4.4.2 Claims by Contractor must be made promptly, and no later than within fourteen (14) days after occurrence of the event giving rise to such Claim. Claims must be made by written notice. Such notice shall include a detailed statement setting forth all reasons for the Claim and the amount of additional money and additional time claimed by Contractor. The notice of Claims shall also strictly comply with all other provisions of the Contract Documents. Contractor shall not be entitled to rely upon any grounds or basis for additional money on additional time not specifically set forth in the notice of Claim. All Claims not made in the manner provided herein shall be deemed waived and of no effect. Contractor shall furnish the Owner and Architect such timely written notice of any Claim provided for herein, including, without limitation, those in connection with alleged concealed or unknown conditions, and shall cooperate with the Owner and Architect in any effort to mitigate the alleged or potential damages, delay or other adverse consequences arising out of the condition which is the cause of such a Claim.

4.4.3 Pending final resolution of a Claim, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments that are not in dispute in accordance with the Contract Documents.

4.5 Claims for Concealed or Unknown Conditions

4.5.1 If conditions are encountered at the site which are (1) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents, or (2) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, then notice by the Contractor shall be given to the Owner's Representative promptly before conditions are disturbed, and in no event later than three (3) days after first observance of the conditions. The Owner's Representative will promptly investigate such conditions. If such conditions differ materially, as provided for above and cause an increase or decrease in the Contractor’s cost, or time, required for performance of the Work, an equitable adjustment in the Contract sum or Contract Time, or both, shall be made, subject to the provisions and restrictions set for herein. If the Owner's Representative determines that the conditions at the site are not materially different from those indicated in the Contract Documents, and that no change in the terms of the Contract is justified, the Owner's Representative will so notify the Contractor in writing. If the Contractor disputes the finding of the Owner’s Representative that no change in the terms of the Contract terms is justified, Contractor shall proceed with the Work, taking whatever steps are necessary to overcome or correct such conditions so that Contractor can proceed in a timely manner. The Contractor may have the right to file a Claim in accordance with the Contract Documents.

4.5.2 It is expressly agreed that no adjustment in the Contract Time or Contract Sum shall be permitted, however, in connection with a concealed or unknown condition which does not differ materially from those conditions disclosed or which reasonably should have been disclosed by the Contractor’s (1) prior inspections, tests, reviews and preconstruction investigations for the Project, or (2) inspections, tests, reviews and preconstruction inspections which the Contractor had the opportunity to make or should have performed in connection with the Project.

4.6 Claim for Additional Cost

4.6.1 If the Contractor makes a Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. In addition to all other requirements for notice of a Claim, said notice shall detail and itemize the amount of all Claims and shall contain sufficient data to permit evaluation of same by Owner.

4.7 Claims for Additional Time

4.7.1 If the Contractor makes a Claim for an increase in the Contract Time, written notice as provided herein shall be given. In addition to other requirements for notice of a Claim, Contractor shall include an estimate of the probable effect of delay upon the progress of the Work, utilizing a CPM Time Impact Schedule Analysis, (TIA) as defined in the AGC Scheduling Manual. In the case of a continuing delay, only one Claim is necessary.

.1 Time extensions will be considered for excusable delays only. That is, delays that are beyond the control and/or contractual responsibility of the contractor.

4.7.2 If weather days are the basis for a Claim for additional time, such Claim shall be documented by the Contractor by data acceptable to the Owner's Representative substantiating that weather conditions for the period of time in question, had an adverse effect on the critical path of the scheduled construction. Weather days shall be defined as days on which critical path work cannot proceed due to weather conditions (including but not limited to rain, snow, etc.), in excess of the number of days shown on the Anticipated Weather Day schedule in the Special Conditions. To be considered a weather day, at least four hours must be lost due to the weather conditions on a critical path scope item for that day. - Weather days and Anticipated weather days listed in the Special Conditions shall only apply to Monday through Friday. A weather day claim cannot be made for Saturdays, Sundays, New Year’s Day, Martin Luther King Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the day after Thanksgiving Day and
for time extensions due to changes or other events beyond in conjunction with the monthly application for payment. with the submission of the Contractor's updated schedule, the control of the Contractor on a monthly basis only,

4.7.4 is submitted in accordance with the contract requirements. The Owner will consider and evaluate requests for non-compensable time extensions for critical path activities as follows:

2.1 If the Contractor cannot work on a critical path activity due to adverse weather, after implementing all reasonable temporary weather protection, the Contractor will so notify the Owner’s Representative. Each week, the Contractor will notify the Owner’s Representative of the number of adverse weather days that it believes it has experienced in the previous week. As provided in the contract, until such time as the weather days acknowledged by the Owner’s Representative exceed the number of days of adverse weather contemplated in the Special Conditions, no request for extension of the contract completion time will be considered.

2.2 If the Contractor has accumulated in excess of the number of adverse weather days contemplated in the Special Conditions due to the stoppage of work on critical path activities due to adverse weather, the Owner will consider a time extension request from the Contractor that is submitted in accordance with the contract requirements. The Owner will provide a change order extending the time for contract completion or direct an acceleration of the work in accordance with the contract terms and conditions to recover the time lost due to adverse weather in excess of the number of adverse weather working days contemplated in the Special Conditions.

4.7.3 If any other Force Majeure event results in the delay to the critical path of the project, the Owner will consider a time extension request from the Contractor that is submitted in accordance with the contract requirements.

4.7.4 The Owner will consider and evaluate requests for time extensions due to changes or other events beyond the control of the Contractor on a monthly basis only, with the submission of the Contractor’s updated schedule, in conjunction with the monthly application for payment.

4.8 Resolution of Claims and Disputes

4.8.1 The Owner's Representative will review Claims and take one or more of the following preliminary actions within ten days of receipt of a Claim: (1) request additional supporting data from the Contractor, (2) reject the Claim in whole or in part, (3) approve the Claim, or (4) suggest a compromise.

4.8.2 If a Claim has not been resolved, the Contractor shall, within ten days after the Owner's Representative's preliminary response, take one or more of the following actions: (1) submit additional supporting data requested, (2) modify the initial Claim, or (3) notify the Owner's Representative that the initial Claim stands.

4.8.3 If a Claim has not been resolved after consideration of the foregoing and of further information presented by the Contractor, the Contractor has the right to seek administrative review as set forth in Section 4.9. However, Owner’s Representative’s decisions on matters relating to aesthetics will be final.

4.9 Administrative Review

4.9.1 Claims not resolved pursuant to the procedures set forth in the Contract Documents except with respect to Owner's Representative's decision on matters relating to aesthetic effect, and except for claims which have been waived by the making or acceptance of final payment, or the Contractor's acceptance of payments in full for changes in work may be submitted to administrative review as provided in this section. All requests for administrative review shall be made in writing.

4.9.2 Upon written request from the Contractor, the Owner’s Review Administrator authorized by the Campus Contracting Officer will convene a review meeting between the Contractor and Owner’s Representative’s within fifteen (15) days of receipt of such written request. The Contractor and Owner’s Representative will be allowed to present written documentation with respect to the claim(s) before or during the meeting. The Contractor and Owner’s Representative will be allowed to present the testimony of any knowledgeable person regarding the claim at the review meeting. The Owner’s Review Administrator will issue a written summary of the review meeting and decision to resolve the Claim within fifteen (15) days. If the Contractor is in agreement with the decision the Contractor shall notify the Owner’s Review Administrator in writing within five (5) days, and appropriate documentation will be signed by the parties to resolve the Claim.

4.9.3 If the Contractor is not in agreement with the proposal of the Owner’s Review Administrator as to the resolution of the claim, the Contractor may file a written appeal with the UM System Contracting Officer, [in care of the Director of Facilities Planning and Development,
ARTICLE 5
SUBCONTRACTORS

5.1 Award of Subcontracts
5.1.1 Pursuant to Article 9, the Contractor shall furnish the Owner and the Architect, in writing, with the name, and trade for each Subcontractor and the names of all persons or entities proposed as manufacturers of products, materials and equipment identified in the Contract Documents and where applicable, the name of the installing contractor. The Owner’s Representative will reply to the Contractor in writing if the Owner has reasonable objection to any such proposed person or entity. The Contractor shall not contract with a proposed person or entity to whom the Owner has made reasonable and timely objection.

5.1.2 The Contractor may request to change a Subcontractor. Any such request shall be made in writing to the Owner’s Representative. The Contractor shall not change a Subcontractor, person, or entity previously disclosed if the Owner makes reasonable objection to such change.

5.1.3 The Contractor shall be responsible to the Owner for acts, defaults, and omissions of its Subcontractors of any tier.

5.2 Subcontractual Relations
5.2.1 By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor of any tier, to the extent of the Work to be performed by the Subcontractor of any tier, to be bound to the Contractor by terms of the Contract Documents and to assume toward the Contractor all the obligations and responsibilities which the Contractor, by these Documents, assumes toward the Owner and the Architect. Each subcontract agreement of any tier shall preserve and protect the rights of the Owner and the Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor of any tier so that subcontracting thereof will not prejudice such rights and shall allow to the Subcontractor of any tier, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with its sub-subcontractors. The Contractor shall make available to each proposed Subcontractor of any tier, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor of any tier shall be bound. Subcontractors of any tier shall similarly make copies of applicable portions of such documents available to their respective proposed Subcontractors of any tier.

5.2.2 All agreements between the Contractor and a Subcontractor or supplier shall contain provisions whereby Subcontractor or supplier waives all rights against the Owner, contractor, Owner’s representative, Architect and all other additional insureds for all losses and damages caused by, arising out of, or resulting from any of the perils covered by property or builders risk insurance coverage required of the Contractor in the Contract Documents. If Contractor fails to include said provisions in all subcontracts, Contractor shall indemnify, defend and hold all the above entities harmless in the event of any legal action by Subcontractor or supplier. If insureds on any such policies require separate
waiver forms to be signed by any Subcontractors of any tier or suppliers, Contractor shall obtain the same.

5.3 Contingent Assignment of Subcontract
5.3.1 No assignment by the Contractor of any amount or any part of the Contract or of the funds to be received thereunder will be recognized unless such assignment has had the written approval of the Owner, and the surety has been given due notice of such assignment and has furnished written consent hereto. In addition to the usual recitals in assignment Contracts, the following language must be set forth: "it is agreed that the funds to be paid to the assignee under this assignment are subject to performance by the Contractor of the contract and to claims and to liens for services rendered or materials supplied for the performance of the Work called for in said contract in favor of all persons, firms or corporations rendering such services or supplying such materials.

ARTICLE 6
SEPARATE CONTRACTS AND COOPERATION

6.1 The Owner reserves the right to let other contracts in connection with the Work.

6.2 It shall be the duty of each Contractor to whom Work may be awarded, as well as all Subcontractors of any tier employed by them, to communicate immediately with each other in order to schedule Work, locate storage facilities, etc., in a manner that will permit all Contractors to work in harmony in order that Work may be completed in the manner and within the time specified in the Contract Documents.

6.3 No Contractor shall delay another Contractor by neglecting to perform his work at the proper time. Each Contractor shall be required to coordinate his work with other Contractors to afford others reasonable opportunity for execution of their work. Any costs caused by defective or ill-timed work, including actual damages and liquidated damages for delay, if applicable, shall be borne by the Contractor responsible therefor.

6.4 Each Contractor shall be responsible for damage to Owner's or other Contractor's property done by him or persons in his employ, through his or their fault or negligence. If any Contractor shall cause damage to any other Contractor, the Contractor causing such damage shall upon notice of any claim, settle with such Contractor.

6.5 The Contractor shall not claim from the Owner money damages or extra compensation under this Contract when delayed in initiating or completing his performance hereunder, when the delay is caused by labor disputes, acts of God, or the failure of any other Contractor to complete his performance under any Contract with the Owner, where any such cause is beyond the Owner's reasonable control.

6.6 Progress schedule of the Contractor for the Work shall be submitted to other Contractors as necessary to permit coordinating their progress schedules.

6.7 If Contractors or Subcontractors of any tier refuse to cooperate with the instructions and reasonable requests of other contractors performing work for the Owner under separate contract, in the overall coordinating of the Work, the Owner's Representative may take such appropriate action and issue such instructions as in his judgement may be required to avoid unnecessary and unwarranted delay.

ARTICLE 7
CHANGES IN THE WORK

7.1 CHANGE ORDERS
7.1.1 A change order is a written instrument prepared by the Owner and signed by the Owner and Contractor formalizing their agreement on the following:
   .1 a change in the Work
   .2 the amount of an adjustment, if any, in the Contract amount
   .3 an adjustment, if any, in the Contract time

7.1.2 The Owner may at any time, order additions, deletions, or revisions in the Work by a Change Order or a Construction Change Directive. Such Change Order or Construction Change Directive shall not invalidate the Contract and requires no notice to the surety. Upon receipt of any such document, or written authorization from the Owner’s Representative directing the Contractor to proceed pending receipt of the document, Contractor shall promptly proceed with the Work involved in accordance with the terms set forth therein.

7.1.3 Until such time as the change order is formalized and signed by both the Owner and the Contractor it shall be considered a Change Order Request.

7.1.4 The amount of adjustment in the contract price for authorized Change Orders will be agreed upon before such Change Orders becomes effective and will be determined as follows:
   .1 By a lump sum proposal from the Contractor and the Subcontractors of any tier, including overhead and profit.
   .2 By a time and material basis with or without a specified maximum. The Contractor shall submit to the Owner’s Representative itemized time and material sheets depicting labor, materials, equipment utilized in completing the Work on a daily basis for the Owner’s Representative approval. If this pricing option is utilized, the
Contractor may be required to submit weekly reports summarizing costs to date on time and material change orders not yet finalized.

.3 By unit prices contained in the Contractor's original bid and incorporated in the Construction Contract or subsequently agreed upon. Such unit prices contained in the Contractor's original proposal are understood to include the Contractor's overhead and profit. If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are so changed in a proposed Change Order that application of such unit prices to quantities of the Work proposed will cause substantial inequity to the Owner or to the Contractor, the applicable unit prices shall be equitably adjusted.

7.1.5 The Contractor shall submit all fully documented change order requests with corresponding back-up documentation within the time requested by the Owner but no later than fourteen (14) working days following 1.) the Owner's request for change order pricing in the case of a lump sum; or 2.) the completion of unit price or time and material work.

7.1.6 The Contractor shall submit change order requests in sufficient detail to allow evaluation by the Owner. Such requests shall be fully itemized by units of labor, material and equipment and overhead and profit. Such breakdowns shall be itemized as follows:

.1 Labor: The Contractor's proposal shall include breakdowns by labor, by trade, indicating number of hours and cost per hour for each Subcontractor as applicable. Such breakdowns shall only include employees in the direct employ of Contractor or Subcontractors in the performance of the Work. Such employees shall only include laborers at the site, mechanics, craftsmen and foremen. Payroll cost shall include base rate salaries and wages plus the cost of fringe benefits required by agreement or custom and social security contributions, unemployment, payroll taxes and workers' or workmen's compensation insurance and other customary and legally required taxes paid by the Contractor or Subcontractors. Any item or expense outside of these categories is not allowed. The expense of performing Work after regular working hours, on Saturdays, Sundays or legal holidays shall not be included in the above, unless approved in writing and in advance by Owner.

.2 Material, supplies, consumables and equipment to be incorporated into the Work at actual invoice cost to the Contractor or Subcontractors; breakdowns showing all material, installed equipment and consumables fully itemized with number of units installed and cost per unit extended. Any singular item or items in aggregate greater than one thousand dollars ($1,000) in cost shall be supported with supplier invoices at the request of the Owner's Representative. Normal hand tools are not compensable.

.3 Equipment: Breakdown for required equipment shall itemize (at a minimum) delivery / pick-up charge, hourly rate and hours used. Operator hours and rate shall not be included in the equipment breakdown. Contractor must use the most cost effective equipment available in the area and should not exceed the rates listed in the Rental Rate Blue Book for Construction Equipment (Blue Book). Contractor shall submit documentation for the Blue Book to support the rate being requested.

7.2 Construction Change Directive

7.2.1 A construction change directive is a written order prepared and signed by the Owner, issued with supporting documents prepared by the Architect (if applicable), directing a change in the Work prior to agreement on adjustment of the Contract amount or Contract time, or both. A Construction Change Directive shall be used in the absence of complete agreement between the Owner and Contractor on the terms of a change order. If the Construction Change Directive allows an adjustment of the contract amount or time, such adjustment amount shall be based on one of the following methods:

.1 A lump sum agreement, properly itemized and supported by substantiating documents of sufficient detail to allow evaluation.

.2 By unit prices contained in the Contractor's original proposal and incorporated in the Construction Contract or subsequently agreed upon.

.3 A method agreed to by both the Owner and the contractor with a mutually agreeable fee for overhead and profit.

.4 In the absence of an agreement between the Owner and the Contractor on the method of establishing an adjustment of the contract amount, the Owner, with the assistance of the architect, shall determine the adjustment amount on the basis of expenditures by the Contractor for labor, materials, equipment and other costs consistent with other provisions of the Contract. The contractor shall keep and submit to the Owner an itemized accounting of all cost components, either expended or saved, while performing the Work covered under the Construction Change Directive.

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

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

7.3 Overhead and Profit

7.3.1 Overhead and Profit on Change Orders shall be applied as follows:

.1 The overhead and profit charged by the Contractor and Subcontractors shall be considered to include, but not limited to, job site office and clerical expense, normal hand tools, incidental job supervision, field supervision, payroll costs and other compensation for project manager, officers, executives, principals, general managers, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, time-keepers, and other personnel employed whether at the site or in principal or a branch office for general superintendent and administration of the Work.

.2 The percentages for overhead and profit charged on Change Orders shall be negotiated and may vary according to the nature, extent, and complexity of the Work involved but in no case shall exceed the following:

15% To the Contractor or the Subcontractor of any tier for Work performed with their respective forces or materials purchased
5% To the Contractor on Work performed by his forces
5% To first tier Subcontractor on Work performed by his Subcontractor

.3 The Contractor will be allowed to add 2% for the cost of bonding and insurance to their cost of work. This shall be allowed on the total cost of the added work, including overhead and profit.

.4 Not more than three mark-ups, not to exceed individual maximums shown above, shall be allowed regardless of the number of tier subcontractors. Overhead and profit shall be shown separately for each subcontractor of any tier and the Contractor.

.5 On proposals covering both increases and decreases in the amount of the Contract, the application of overhead and profit shall be on the net change in direct cost for the Contractor or Subcontractor of any tier performing the Work.

.6 The percentages for overhead and profit credit to the Owner on Change Orders that are strictly decreases in the quantity of work or materials shall be negotiated and may vary according to the nature, extent, and complexity of the Work involved, but shall not be less than the following:

Overhead and Profit
7.5% Credit to the Owner from the Contractor or Subcontractor of any tier for Work performed with their respective forces or materials purchased
2.5% Credit to the Owner from the Contractor on Work performed by other than his forces
2.5% Credit to the Owner from the first tier Subcontractor on Work performed by his Subcontractor of any tier

7.4 Extended General Conditions

7.4.1 The Contractor acknowledges that the percentage mark-up allowed on change orders for overhead and profit cover the Contractor’s cost of administering and executing the Work, inclusive of change orders that increase the contract time. Contractor further acknowledges that no compensation beyond the specified mark-up percentages for extended overhead shall be due or payable as a result of an increase in the Contract Time.

7.4.2 The Owner may reimburse the Contractor for extended overhead if an extension of the Contract Time is granted by the Owner, in accordance with Article 4.7.1 and the Owner determines that the extension of the Contract Time creates an inequitable condition for the Contractor. If these conditions are determined by the Owner to exist the Contractor may be reimbursed by unit prices contained in the Contractor’s original bid and incorporated in the Construction Contract or by unit prices subsequently agreed upon.

7.4.3 If unit prices are subsequently agreed upon, the Contractor’s compensation shall be limited as follows:

.1 For the portion of the direct payroll cost of the Contractor’s project manager expended in completing the Work and the direct payroll cost of other onsite administrative staff not included in Article 7.3.1. Direct payroll cost shall include base rate salaries and wages plus the cost of fringe benefits required by agreement or custom and social security contributions, unemployment, payroll taxes and workers’ or workmen's compensation insurance and other customary and legally required taxes paid by the Contractor;

.2 Cost of Contractor’s temporary office, including temporary office utilities expense;

.3 Cost of temporary utilities required in the performance of the work;

.4 Profit not to exceed 5% of the total extended overhead direct costs;

7.4.4 All costs not falling into one of these categories and costs of the Contractors staff not employed onsite are not allowed.

7.5 Emergency Work

7.5.1 If, during the course of the Work, the Owner has need to engage the Contractor in emergency work, whether related to the Work or not, the Contractor shall immediately
proceed with the emergency work as directed by the Owner under the applicable provisions of the contract. In so doing, Contractor agrees that all provisions of the contract remain in full force and effect and the schedule for the Work is not impacted in any way unless explicitly agreed to in writing by the Owner.

**ARTICLE 8**
**TIME**

**8.1** **Progress and Completion**

**8.1.1** Contractor acknowledges and agrees that time is of the essence of this Contract

**8.1.2** Contract Time is the period of time set forth in the Contract for Construction required for Substantial Completion and Final Completion of the entire Work or portions of the Work as defined in the Contract Documents. Time limits stated in the Contract Documents are of the essence of the Contract. The Contract Time may only be changed by a Change Order. By executing the Contract, the Contractor confirms that the Contract Time is a sufficient period for performing the Work in its entirety.

**8.1.3** The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance and bonds required by Article 11 to be furnished by the Contractor.

**8.1.4** The Contractor shall proceed expeditiously and diligently with adequate forces and shall achieve Substantial Completion and Final Completion within the time specified in the Contract Documents.

**8.2** **Delay in Completion**

**8.2.1** The Contractor shall be liable for all of the Owner's damages for delay in achieving Substantial Completion and/or Final Completion of the entire Work or portions of Work as set forth in the Contract Documents within the Contract Time unless liquidated damages are specifically provided for in the Contract Documents. If liquidated damages are specifically provided for in the Contract for Construction, Contractor shall be liable for such liquidated damages as set forth in Paragraph 8.3.

**8.2.2** All time limits stated in the Contract are of the essence of the Contract. However, if the Contractor is delayed at any time in the progress of the Work by any act or neglect of the Owner or by the Owner's Representative, by changes ordered in the Work, by strikes, lockouts, abnormal weather conditions, jurisdictional disputes, or any other causes beyond the Contractor's reasonable control which the Owner's Representative determines may justify delay then, upon submission of the Time Impact Schedule Analysis (TIA) called out in Section 4.7 of these General Conditions, the Contract Time may be extended for a reasonable time to the extent such delay will prevent Contractor from achieving Substantial Completion and/or Final Completion within the Contract Time and if performance of the Work is not, was not or would not have been delayed by any other cause for which the Contractor is not entitled to an extension in the Contract Time under the Contract Documents. It shall be a condition precedent to any adjustment of the Contract Time that Contractor provide the Owner's Representative with written notice of the cause of delay within seven (7) days from the occurrence of the event or condition which caused the claimed delay. Written notices hereunder shall be in accordance with the applicable provisions of Section 4.7.

**8.2.3** The Contractor further acknowledges and agrees that adjustments in the Contract Time will be permitted for a delay only to the extent such delay (1) is not caused, or could not have been anticipated, by the Contractor, (2) could not be limited or avoided by the Contractor's timely notice to the Owner of the delay, (3) prevents Contractor from completing its Work by the Contract Time, and (4) is of a duration not less than one (1) day. Delays attributable to and within the control of a Subcontractor or supplier shall not justify an extension of the Contract Time.

**8.2.4** Notwithstanding anything to the contrary in the Contract Documents, except as otherwise noted in these General Conditions, an extension in the Contract Time, to the extent permitted under this Article, shall be the sole remedy of the Contractor for any (1) delay in the commencement, prosecution or completion of the Work, (2) hindrance or obstruction in the performance of the Work, (3) loss of productivity, or (4) other similar claims due to or caused by any events beyond the control of both the Owner and Contractor. In no event shall the Contractor be entitled to any compensation or recovery of any damages or any portion of damages resulting from delays caused by or within the control of Contractor or by acts or omissions of Contractor or its Subcontractors of any tier or delays beyond the control of both Owner and Contractor. If the Contractor contends that delay, hindrance, obstruction or other adverse condition results from acts or omissions of the Owner, the Owner's Representative or the Architect, Contractor shall promptly provide written notice to the Owner. Contractor shall only be entitled to an adjustment in the Contract Sum to the extent that such acts or omissions continue after the Contractor's written notice to the Owner of such acts or omissions. The Owner's exercise of any of its rights or remedies under the Contract Documents (including, without limitation, ordering changes in the Work, or directing suspension, rescheduling or correction of the Work) regardless of the extent or frequency of the Owner's exercise of such rights or remedies, shall not be the basis of any Claim for an increase in the Contract Sum or Contract.
Time. In the event Contractor is entitled to an adjustment in the Contract Sum for any delay, hindrance, obstruction or other adverse condition caused by the acts or omissions of the Owner, the Owner’s Representative or the Architect, Contractor shall only be entitled to its actual direct costs caused thereby and Contractor shall not be entitled to and waives any right to special, indirect, or consequential damages including loss of profits, loss of savings or revenues, loss of anticipated profits, labor inefficiencies, idle equipment, home office overhead, and similar type of damages.

8.2.5 If the Contractor submits a progress report or any construction schedule indicating, or otherwise expressing an intention to achieve completion of the Work prior to any completion date required by the Contract Documents or expiration of the Contract Time, no liability of the Owner to the Contractor for any failure of the Contractor to so complete the Work shall be created or implied. Further, the Contractor acknowledges and agrees that even if Contractor intends or is able to complete the Work prior to the Contract Time, it shall assert no Claim and the Owner shall not be liable to Contractor for any failure of the Contractor, regardless of the cause of the failure, to complete the Work prior to the Contract Time.

8.3 Liquidated Damages
8.3.1 If Liquidated Damages are prescribed on the Bid Form and Special Conditions in the Contract Documents, the Owner may deduct from the Contract Sum and retain as Liquidated Damages, and not as penalty or forfeiture, the sum stipulated in the Contract Documents for each calendar day after the date specified for completion of the Work that the entire Work is not substantially complete and/or finally complete.

8.3.2 The Owner’s Representative shall establish the date of Substantial completion and the date of Final Completion of the Work which shall be conclusive and binding on the Owner and Contractor for the purpose of determining whether or not Liquidated Damages shall be assessed under terms hereof and the sum total amount due.

8.3.3 Liquidated Damages or any matter related thereto shall not relieve the Contractor or his surety of any responsibility or obligation under this Contract.

ARTICLE 9
PAYMENTS AND COMPLETION

9.1 Commencement, Prosecution, and Completion
9.1.1 The Contractor shall commence Work within five (5) days upon the date of a “Notice to Proceed” from the Owner or the date fixed in the Notice to Proceed. Contractor shall prosecute the Work with faithfulness and diligence, and the Contractor shall complete the Work within the Contract Time set forth in the Contract Documents.

9.1.2 The Owner will prepare and forward three (3) copies of the Contract and Performance Bond to the bidder to whom the contract for the Work is awarded and such bidder shall return two (2) properly executed prescribed copies of the Contract and Bond to the Owner.

9.1.3 The construction period, when specified in consecutive calendar days, shall begin when the Contractor receives notice requesting the instruments listed in below. Before the Owner will issue Notice to Proceed to permit the Contractor to begin Work, the Owner shall have received the following instruments, properly executed as described in the Contract Documents. The documents below shall have been received by the Owner within fifteen (15) days after receipt of request for documents:

- Contract
- Bond (See Article 11)
- Insurance (See Article 11)
- List of Subcontractors of any tier
- Affirmative Action Plan (see Article 13.4)

9.1.4 In the event Contractor fails to provide Owner such documents, Contractor may not enter upon the site of the Work until such documents are provided. The date the Contractor is required to commence and complete the Work shall not be affected by the Owner denying Contractor access to the site as a result of Contractor’s failure to provide such documents and Contractor shall not be entitled to an adjustment of the Contract Time or Contract sum as a result of its failure to comply with the provisions of this Paragraph

9.1.5 Contracts executed by partnerships shall be signed by all general partners of the partnership. Contracts signed by corporations shall be signed by the President or Vice President and the Secretary or Assistant Secretary. In case the Assistant Secretary or Vice President signs, it shall be so indicated by writing the word "Asst." or "Vice" in front of the words "Secretary" and "President". The corporate seal of the corporation shall be affixed. For all other types of entities, the Contractor and the person signing the Contract on behalf of Contractor represent and warrant that the person signing the Contract has the legal authority to bind Contractor to the Contract.

9.1.6 Any successful bidder which is a corporation organized in a state other than Missouri or any bidder doing business in the State of Missouri under a fictitious name shall furnish, at no cost to the Owner, no later than the time at which the executed Contract for Construction, the Payment Bond, and the Performance Bond are returned, a properly certified copy of its current Certificate of Authority and License to do business in the State of Missouri. No contract will be executed by the Owner until such certificate is furnished by the bidder, unless there already is on file with
the Owner a current certificate, in which event, no additional certificate will be required during the period of time for which such current certificate remains in effect.

9.1.7 Within fifteen (15) calendar days of the issuance of a Notice to Proceed, the Contractor shall submit one (1) signed copy of the following instruments. No payment will be processed until all of these instruments are received and approved by the Owner's Representative.
   .1 Reproducible progress and payment schedule
   .2 Contractor's Schedule of Values
   .3 List of material suppliers
   .4 Itemized breakdown of all labor rates for each classification. Overhead and profit shall not be included. Payroll cost shall include base rate salaries and wages plus the cost of fringe benefits required by agreement or custom and social security contributions, unemployment, payroll taxes and workers' or workmen's compensation insurance and other customary and legally required taxes paid by the Contractor or Subcontractors. Any item or expense outside of these categories is not allowed. The expense of performing Work after regular working hours, on Saturdays, Sundays or legal holidays shall not be included in the above, unless approved in writing and in advance by Owner.
   .5 Itemized breakdown of anticipated equipment rates (breakout operator rate). Overhead and profit shall not be included. Breakdown for required equipment shall itemize (at a minimum) delivery/ pick-up charge, hourly rate and hours used. Operator hours and rate shall not be included in the equipment breakdown. Contractor must use the most cost effective equipment available in the area and should not exceed the rates listed in the Rental Rate Blue Book for Construction Equipment (Blue Book). Contractor shall submit documentation for the Blue Book to support the rate being requested.

9.1.8 The Contractor shall be paid electronically using the Owner’s web-based payment program with a direct electronic transfer from the Owner’s account into the Contractor’s account. The Contractor must submit the following information to the Owner’s Representative:
   .1 Bank Transit Number for the Contractor’s bank into which the electronic deposit will be made.
   .2 Bank Account Number for the Contractor’s account into which the electronic deposit will be made.
   .3 Contractor’s E-Mail address so that formal notification of the deposit by the Owner can be provided.

9.2 Contract Sum

9.2.1 The Owner shall compensate Contractor for all Work described herein and in the Contract Documents the Contract Sum set forth in the Contract for Construction, subject to additions and deletions as provided hereunder.

9.3 Schedule of Values
9.3.1 Within fifteen (15) days after receipt of the Notice to Proceed, the Contractor shall submit to the Owner’s Representative a schedule of values allocated to various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the Owner’s Representative may require. This schedule, unless objected to by the Owner’s Representative, shall be used as a basis for reviewing the Contractor's Applications for Payment. The values set forth in such schedule may, at the Owner’s option be used in any manner as fixing a basis for additions to or deletions from the Contract Sum.

9.3.2 The progress and payment schedule of values shall show the following:
   .1 Enough detail as necessary to adequately evaluate the actual percent complete of any line item on a monthly basis, as determined by the Owner’s Representative.
   .2 Line items, when being performed by a subcontractor or material supplier, shall correlate directly back to the subcontract or purchase order amount if requested by the Owner’s Representative.

9.4 Applications for Payment
9.4.1 The Contractor shall submit monthly to the Owner’s Representative and the Architect an itemized Application for Payment for operations completed in accordance with the Schedule of Values. Such application shall be supported by such data substantiating the Contractor's right to payment as the Owner’s Representative or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and reflecting retainage as provided for herein.

9.4.2 Such applications shall not include requests for payment of amounts the Contractor does not intend to pay to a Subcontractor or material supplier.

9.4.3 Progress payments shall be made on account of materials and equipment delivered to the site and incorporated in the Work. No payments will be made for materials and equipment stored at the Project site but not yet incorporated into the Work except as provided in Paragraph 9.4.4.

9.4.4 If approved in writing and in advance by Owner, progress payments may be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. Owner may in its sole discretion refuse to grant approval for payments for materials and equipment stored at the Project site but not yet incorporated in the Work. Any approval by Owner for payment for materials and equipment delivered and suitably...
stored at the site, or stored offsite as noted below, for subsequent incorporation in the Work shall be conditioned upon Contractor’s demonstrating that such materials and equipment are adequately protected from weather, damage, vandalism and theft and that such materials and equipment have been inventoried and stored in accordance with procedures established by or approved by the Owner. Nothing in this clause shall imply or create any liability on the part of the Owner for the Contractor’s inventory and storage procedures or for any loss or damage to material, equipment or supplies stored on the site, whether incorporated into the work or not. In the event any such loss or damage occurs, the Contractor remains solely responsible for all costs associated with replacement of the affected materials, supplies and equipment including labor and incidental costs, and shall have no claim against the Owner for such loss.

No allowance shall be made in the project pay requests for materials not delivered to the site of the work and incorporated into the work, except as noted below. For the purposes of this Article, Offsite is defined as any location not owned or leased by the Owner. Contractor shall submit a list of materials that are requesting payment for offsite storage within 60 days of Notice Proceed.

.1 Items considered to be major items of considerable magnitude, if suitably stored, may be allowed in project pay requests on the basis of ninety percent (90%) of invoices

.2 Determination of acceptable “major items of considerable magnitude” and “suitably stored” shall be made by the Owner’s Representative.

.3 Aggregate quantities of materials not considered unique to this project will not be considered for offsite storage payment.

.4 Contractor shall submit to the Owner’s Representative a list of the material for which application for payment for offsite storage is anticipated no less than forty-five days prior to the submission of the applicable pay request. The list shall include a material description, applicable division, quantity and discounts offered to the Owner for early payment. Contractor shall also submit the location the material will be stored and the method of protection

.5 The storage facility shall be subject to approval by the Owner’s representative, shall be located within an acceptable distance of the project sites as established by the Owner’s Representative and all materials for the Owner’s project must be stored separately from all other items within the storage facility and shall be labeled and stored in the name of the Curators of the University of Missouri.

.6 The Owner’s representative shall be provided a minimum of two weeks to visit the storage facility and inspect the stored material prior to submission of the pay request.

.7 Upon favorable inspection by the Owner’s Representative, the Contractor shall, at the Owner’s option, submit the appropriate UCC filing, transferring title of the material or equipment to The Curators of the University of Missouri.

.8 An invoice provided by the supplier shall be included with the applicable pay request.

.9 The contractor shall remain fully responsible for all items, until acceptance of the project by the Owner.

.10 The contractor shall reimburse all costs incurred by the Owner in inspecting and verifying all material stored offsite, including mileage, airfare, meals, lodging and time, charged at a reasonable hourly rate.

9.4.5 The Application for Payment shall constitute a representation by the Contractor to the Owner that the Work has progressed to the point indicated; the quality of the Work covered by the Application for Payment is in accordance with the Contract Documents; and the Contractor is entitled to payment in the amount requested.

9.4.6 The Contractor will be reimbursed for ninety-five percent (95%) of the value of all labor furnished and material installed and computed in the same manner, less all previous payments made. On projects where a bond is not required, the contractor will be reimbursed for ninety percent (90%) of the value of all labor furnished and material installed and computed in the same manner, less all previous payments made

9.5 Approval for Payment

9.5.1 The Owner’s Representative will, within fifteen (15) days after receipt of the Contractor's Application for Payment, either approve Contractor’s Application for Payment for such amount as the Owner’s Representative determines is properly due, or notify the Contractor of the Owner’s Representative's reasons for withholding certification in whole or in part as provided in Section 9.6.

9.6 Decisions to Withhold Approval

9.6.1 The Owner’s Representative may decide not to certify payment and may withhold approval in whole or in part, to the extent reasonably necessary to protect the Owner. If the Owner’s Representative is unable to approve payment in the amount of the Application, the Owner’s Representative will notify the Contractor as provided in Paragraph 9.5.1. If the Contractor and Owner’s Representative cannot agree on a revised amount, the Owner’s Representative will promptly issue approval for payment for the amount for which the Owner’s Representative is able to determine is due Contractor. The Owner’s Representative may also decide not to approve payment or, because of subsequently discovered evidence or subsequent observations, may nullify the whole or a part of approval for payment previously issued, to such extent as may
be necessary in the Owner’s Representative opinion to protect the Owner from loss because of:

1. defective Work not remedied or damage to completed Work;
2. failure to supply sufficient skilled workers or suitable materials;
3. third party claims filed or reasonable evidence indicating probable filing of such claims;
4. failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment, Owner may, at its sole option issue joint checks to subcontractors who have presented evidence that it has not been paid in accordance with the Contract;
5. reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
6. damage to the Owner or another contractor;
7. reasonable evidence that the Work will not be completed within the Contract Time or an unsatisfactory rate of progress made by Contractor;
8. Contractor's failure to comply with applicable Laws;
9. Contractor’s or Subcontractor’s failure to comply with contract Prevailing Wage requirements; or
10. Contractor’s failure to carry out the Work in strict accordance with the Contract Documents.

9.6.2 When the above reasons for withholding approval are removed, approval will be made for amounts previously withheld.

9.7 Progress Payments
9.7.1 Based upon Applications for Payment submitted to the Owner by the Contractor and approvals issued by the Owner’s Representative, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.
9.7.2 The period covered by each Application for Payment shall be one (1) calendar month.
9.7.3 The Owner shall make payment to Contractor for amounts due and approved by Owner’s Representative not later than thirty (30) days after the Owner approves a properly detailed Application for Payment which is in compliance with the Contract Documents. The Owner shall not have the obligation to process or pay such Application for Payment until it receives an Application for Payment satisfying such requirements.
9.7.4 Based on the Schedule of Values submitted by Contractor, Applications for Payment submitted by Contractor shall indicate the actual percentage of completion of each portion of Contractor's Work as of the end of the period covered by the Application for Payment.

9.7.5 The Contractor shall promptly pay each Subcontractor and Supplier, upon receipt of payment from the Owner, out of the amount paid to the Contractor on account of such Subcontractor's or supplier's portion of the Work, the amount to which said Subcontractor or supplier is entitled, reflecting percentages actually retained from payments to the Contractor on account of each Subcontractor's or supplier's portion of the Work, in full compliance with state statute. The Contractor shall, by appropriate agreement with each Subcontractor or supplier, require each Subcontractor or supplier to make payments to Sub-subcontractors in similar manner.

9.7.6 Neither the Owner nor Architect shall have an obligation to pay or to see to the payment of money to a Subcontractor of any tier nor a laborer or employee of Contractor except to the extent required by law. Retainage provided for by the Contract Documents are to be retained and held for the sole protection of Owner, and no other person, firm or corporation shall have any claim or right whatsoever thereto.

9.7.7 An approval for payment by Owner’s Representative, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

9.8 Failure of Payment
9.8.1 If the Owner is entitled to reimbursement or payment from the Contractor under or pursuant to the Contract Documents, such payment by Contractor shall be made promptly upon demand by the Owner. Notwithstanding anything contained in the Contract Documents to the contrary, if the Contractor fails to promptly make any payment due the Owner, or the Owner incurs any costs and expenses to cure any default of the Contractor or to correct defective Work, the Owner shall have an absolute right to offset such amount against the Contract Sum and may, in the Owner’s sole discretion, elect either to: (1) deduct an amount equal to that to which the Owner is entitled from any payment then or thereafter due the Contractor from the Owner, or (2) issue a written notice to the Contractor reducing the Contract Sum by an amount equal to that to which the Owner is entitled.

9.9 Substantial Completion
9.9.1 Substantial Completion is the stage in the progress of the Work as defined in Paragraph 1.1.9 as certified by the Owner.
9.9.2 When the Contractor considers the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall notify the Owner and the Architect. The Owner’s Representative will make an inspection to determine whether the Work or designated
9.9.3 At the date of Substantial Completion, the Contractor may apply for, and if approved by Owner's Representative, the owner, subject to the provisions herein, shall increase total payments to one hundred percent (100%) of the Contract Sum less one hundred fifty percent (150%) of the value of any incomplete Work and unsettled claims, as determined by the Owner's Representative.

9.10 Partial Occupancy or Use
9.10.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, security, maintenance, heat, utilities, damage to the Work and insurance. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by the Owner's Representative.

9.10.2 Immediately before such partial occupancy or use, the Owner, and Contractor shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work. Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

9.11 Final Completion and Final Payment
9.11.1 Upon receipt of written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Owner’s Representative and the Architect will promptly make such inspection and, when the Owner’s Representative and Architect find the Work acceptable under the Contract Documents and the Contract fully performed, the Owner’s Representative will promptly issue a final approval for payment; otherwise, Owner’s Representative will return Contractor's Final Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application. Submission of a Final Application for Payment shall constitute a further representation that conditions listed in Paragraph 9.11.2 as precedent to the Contractor's being entitled to final payment have been fulfilled. All warranties and guarantees required under or pursuant to the Contract Documents shall be assembled and delivered by the Contractor to the Owner’s Representative as part of the final Application for Payment. The final approval for payment will not be issued by the Owner’s Representative until all warranties and guarantees have been received and accepted by the Owner.

9.11.2 The Owner will request the Contractor to submit the application for final payment along with a manually signed notarized letter on the Contractor's letterhead certifying that:

.1 Labor costs, prevailing wage rates, fringe benefits and material costs have been paid.
.2 Subcontractors of any tier and manufacturers furnishing materials and labor for the project have fully completed their Work and have been paid in full.
.3 The project has been fully completed in accordance with the Contract Documents as modified by Change Orders.
.4 The acceptance by Contractor of its Final Payment, by check or electronic transfer, shall be and operate as a release of all claims of Contractor against Owner for all things done or furnished or relating to the Work and for every act or alleged neglect of Owner arising out of the Work.

9.11.3 Final Payment constituting the entire unpaid balance due shall be paid by the Owner to the Contractor within thirty (30) days after Owner's receipt of Contractor's Final Application for Payment which satisfies all the requirements of the Contract Documents and Owner's receipt of all information and documents set forth in Section 9.11.

9.11.4 No payment under this Contract, including but not limited to final payment, shall constitute acceptance by Owner of any Work or act not in accordance with the requirements of the Contract Documents.

9.11.5 No recourse shall be had against any member of the Board of Curators, or officer thereof, for any payment under the Contract or any claim based thereon.

ARTICLE 10
PROTECTION OF PERSONS AND PROPERTY
10.1 Safety Precautions and Programs

10.1.1 The Contractor shall at all times conduct operations under this Contract in a manner to avoid the risk of bodily harm to persons or risk of damage to any property. The Contractor shall promptly take precautions which are necessary and adequate against conditions created during the progress of the Contractor's activities hereunder which involve a risk of bodily harm to persons or a risk of damage to property. The Contractor shall continuously inspect Work, materials, and equipment to discover and determine any such conditions and shall be solely responsible for discovery, determination, and correction of any such conditions. The Contractor shall comply with applicable safety laws, standards, codes, and regulations in the jurisdiction where the Work is being performed, specifically, but without limiting the generality of the foregoing, with rules regulations, and standards adopted pursuant to the Williams-Steiger Occupational Safety and Health Act of 1970 and applicable amendments.

10.1.2 All contractors, subcontractors and workers on this project are subject to the Construction Safety Training provisions 292.675 RSMo.

10.1.3 In the event the Contractor encounters on the site, material reasonably believed to be asbestos, polychlorinated biphenyl (PCB), lead, mercury, or other material known to be hazardous, which has not been rendered harmless, the Contractor shall immediately stop Work in the area affected and report the condition to the Owner's Representative and the Architect in writing. The Work in the affected area shall not thereafter be resumed except by written agreement of the Owner's Representative and Contractor if in fact the material is asbestos or polychlorinated biphenyl (PCB) and has not been rendered harmless. The Work in the affected area shall be resumed in the absence of asbestos or polychlorinated biphenyl (PCB), or when it has been rendered harmless by written agreement of the Owner's Representative and the Contractor. “Rendered Harmless” shall mean that levels of such materials are less than any applicable exposure standards, including but limited to OSHA regulations.

10.2 Safety Of Persons And Property

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

.1 students, faculty, staff, the public, construction personnel, and other persons who may be affected thereby;

.2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor or the Contractor's Subcontractors of any tier; and other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

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

10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, safeguards for safety and protection, including, but not limited to, posting danger signs and other warnings against hazards, promulgating safety regulations, and notifying owners and users of adjacent sites and utilities.

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

10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Article 10 caused in whole or in part by the Contractor, a Subcontractor of any tier, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable, and for which the Contractor is responsible under Article 10, except damage or loss attributable solely to acts or omissions of Owner or the Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's other obligations stated elsewhere in the Contract.

10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents, and the maintaining, enforcing and supervising of safety precautions and programs. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner's Representative and Architect. The Contractor shall hold regularly scheduled safety meetings to instruct Contractor personnel on safety practices, accident avoidance and prevention, and the Project Safety Program. The Contractor shall furnish safety equipment, and enforce the use of such equipment by it's employees and it's subcontractors of any tier.

10.2.7 The Contractor shall not load or permit any part of the construction or site to be loaded so as to endanger its safety.
10.2.8 The Contractor shall promptly report in writing to the Owner all accidents arising out of or in connection with the Work which cause death, lost time injury, personal injury, or property damage, giving full details and statements of any witnesses. In addition, if death, serious personal injuries, or serious property damages are caused, the accident shall be reported immediately by telephone or messenger to the Owner.

10.2.9 The Contractor shall promptly notify in writing to the Owner of any claims for injury or damage to personal property related to the work, either by or against the Contractor.

ARTICLE 11
INSURANCE & BONDS

11.1 Insurance
11.1.1 Contractor shall secure from the date of the Contract for Construction and maintain for such periods of time as set forth below, insurance of such types and in such amounts specified below, to protect Contractor, Owner and others against all hazards or risks of loss described below. The form of such insurance together with carriers thereof, in each case, shall be approved by Owner, but, regardless of such approval, it shall be the responsibility of Contractor to maintain the insurance coverages set forth herein.

11.1.2 The contractor shall not be allowed on the Owners property without proof of the insurance coverages set forth herein.

11.2 Commercial General Liability
11.2.1 Contractor shall secure and maintain from the date of the Contract and for a period of at least five (5) years from the date of Final Completion of the entire Work Commercial General Liability insurance (“CGL”) with a combined single limit of not less than $2,000,000 per occurrence, $5,000,000 general aggregate, $5,000,000 products and completed operations aggregate and $1,000,000 personal injury and advertising injury. General Aggregate should apply per project. An umbrella policy may be used to satisfy these limits. If the General Aggregate is not on a per project basis, the contractor shall provide an additional $2,000,000 general aggregate.

11.2.2 CGL insurance shall be written on a comprehensive form and shall cover claims and liability in connection with or resulting from the Contractor’s operations and activities under the Contract, for personal injuries, occupational sickness, disease, death or damage to property of others, including loss of use resulting therefrom, arising out of any operations or activities of the Contractor, its agents, or any Subcontractors of any tier or by anyone directly or indirectly employed by either of them.

11.2.3 CGL insurance shall include premises, operations, independent contractors, products-completed operations, personal injury and advertising injury and liability assumed under an insured contract (including the tort liability of another assumed in a business contract) coverages. In particular, and not by way of any limitation, the CGL insurance shall cover the Contractor’s indemnity obligations contained in the Contract Documents.

11.2.4 There shall be no endorsement or modification of the CGL policy limiting the scope of coverage for liability arising from blasting, explosion, collapse, or underground property damage.

11.2.5 “The Curators of the University of Missouri” shall be endorsed as an “additional insured” under the CGL policy. The additional insured status must be conveyed by using the ISO CG 2 10 (2004) edition or equivalent and the ISO CG 20 37 (2004) edition. The policy shall be endorsed to be primary coverage and any other insurance carried by the Owner shall be excess only and will not contribute with Contractors’ insurance. To confirm, the Endorsement should accompany the insurance certificate.

11.2.6 Contractor waives all rights against Owner and its agents, officers, representatives and employees for recovery of damages to the extent those damages are covered by the CGL policy required hereunder.

11.3 Licensed for Use Vehicle Liability
11.3.1 Contractor shall secure and maintain from the date of the Contract for Construction until the date of Final Completion of the entire Work, insurance, to be on comprehensive form, which shall protect Contractor against any and all claims for all injuries and all damage to property arising from the use of automobiles, trucks and motorized vehicles, in connection with the performance of Work under this Contract, and shall cover the operation on or off the site of the Work of all motor vehicles licensed for highway use whether they are owned, non-owned or hired. Such insurance shall include contractual liability coverage and shall provide coverage on the basis of the date of any accident. The liability limits under such policy shall not be less than $2,000,000 combined single limit for bodily injury and property damage per accident.

11.3.2 Contractor waives all rights against Owner and its agents, officers, directors and employees for recovery of damages to the extent such damages are covered by the automobile liability insurance required hereunder.

11.4 Workers’ Compensation Insurance
11.4.1 Contractor shall purchase and maintain workers’ compensation insurance and employers’ liability insurance.
which shall protect Contractor from claims for injury, sickness, disease or death of Contractor’s employees or statutory employees. The insurance policies required hereunder shall include an “all states” or “other states” endorsement. In case any Work is sublet, Contractor shall require any Subcontractor of any tier to provide the insurance coverages required under this Section 11.4.

11.4.2 Contractor’s workers’ compensation insurance coverage shall be in compliance with all applicable Laws, including the statutes of the State of Missouri. Contractor’s employers’ liability coverage limits shall not be less than $1,000,000 each accident for bodily injury by accident or $1,000,000 each employee for bodily injury by disease.

11.5 Liability Insurance General Requirements
11.5.1 All insurance coverages procured by Contractor shall be provided by agencies and insurance companies acceptable to and approved by Owner. Any insurance coverage shall be provided by insurance companies that are duly licensed to conduct business in the State of Missouri as an admitted carrier. The form and content of all insurance coverage provided by Contractor are subject to the approval of Owner. All required insurance coverages shall be obtained and paid for by Contractor. Any approval of the form, content or insurance company by Owner shall not relieve the Contractor from the obligation to provide the coverages required herein.

11.5.2 All insurance coverage procured by the Contractor shall be provided by insurance companies having policyholder ratings no lower than "A-" and financial ratings not lower than "XI" in the Best's Insurance Guide, latest edition in effect as of the date of the Contract, and subsequently in effect at the time of renewal of any policies required by the Contract Documents. Insurance coverages required hereunder shall not be subject to a deductible amount on a per-claim basis of more than $10,000.00 and shall not be subject to a per-occurrence deductible of more than $25,000.00. Insurance procured by Contractor covering the additional insureds shall be primary insurance and any insurance maintained by Owner shall be excess insurance.

11.5.3 All insurance required hereunder shall provide that the insurer’s cost of providing the insureds a defense and appeal, including attorneys’ fees, shall be supplementary and shall not be included as part of the policy limits but shall remain the insurer’s separate responsibility. Contractor shall cause its insurance carriers to waive all rights of subrogation, except for Workers’ Compensation, against the Owner and its officers, employees and agents.

11.5.4 The Contractor shall furnish the Owner with certificates, Additional Insured endorsements, policies, or binders which indicate the Contractor and/or the Owner and other Contractors (where required) are covered by the required insurance showing type, amount, class of operations covered, effective dates and dates of expiration of policies prior to commencement of the work. Contractor is required to maintain coverages as stated and required to notify the University of a Carrier Change or cancellation within 2 business days. The University reserves the right to request a copy of the policy. Contractor fails to provide, procure and deliver acceptable policies of insurance or satisfactory certificates or other evidence thereof, the Owner may obtain such insurance at the cost and expense of the Contractor without notice to the Contractor.

11.5.5 With respect to all insurance coverages required to remain in force and affect after final payment, Contractor shall provide Owner additional certificates, policies and binders evidencing continuation of such insurance coverages along with Contractor’s application for final payment and shall provide certificates, policies and binders thereafter as requested by Owner.

11.5.6 The maintenance in full current force and effect of such forms and amounts of insurance and bonds required by the Contract Documents shall be a condition precedent to Contractor’s exercise or enforcement of any rights under the Contract Documents.

11.5.7 Failure of Owner to demand certificates, policies and binders evidencing insurance coverages required by the Contract Documents, approval by Owner of such certificates, policies and binders or failure of Owner to identify a deficiency from evidence that is provided by Contractor shall not be construed as a waiver of Contractor’s obligations to maintain the insurance required by the Contract Documents.

11.5.8 The Owner shall have the right to terminate the Contract if Contractor fails to maintain the insurance required by the Contract Documents.

11.5.9 If Contractor fails to maintain the insurance required by the Contract Document, Owner shall have the right, but not the obligation, to purchase said insurance at Contractor’s expense. If Owner is damaged by Contractor’s failure to maintain the insurance required by the Contract Documents, Contractor shall bear all reasonable costs properly attributable to such failure.

11.5.10 By requiring the insurance set forth herein and in the Contract Documents, Owner does not represent or warrant that coverage and limits will necessarily be adequate to protect Contractor, and such coverages and limits shall not be deemed as a limitation on Contractor’s liability under the indemnities granted to Owner in the Contract Documents.

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11.5.11 If Contractor’s liability policies do not contain a standard separation of insureds provision, such policies shall be endorsed to provide cross-liability coverage.

11.5.12 If a part of the Work hereunder is to be subcontracted, the Contractor shall: (1) cover any and all Subcontractors in its insurance policies; (2) require each Subcontractor to secure insurance which will protect said Subcontractor and supplier against all applicable hazards or risks of loss designated in accordance with Article 11 hereunder; and (3) require each Subcontractor or supplier to assist in every manner possible in the reporting and investigation of any accident, and upon request, to cooperate with any insurance carrier in the handling of any claim by securing and giving evidence and obtaining the attendance of witnesses as required by any claim or suit.

11.5.13 It is understood and agreed that the insurance coverages required by the provisions of this Article 11 are required in the public interest and that the Owner does not assume any liability for acts of Contractor or Subcontractors of any tier or their employees in the performance of the Contract or Work.

11.6 Builder’s Risk Insurance

11.6.1 The Contractor shall purchase and maintain, in a company or companies lawfully authorized to do business in the State of Missouri, as an admitted carrier, builder’s risk insurance on the entire Work. Such insurance shall be written on a completed value form for the entire Work. The insurance shall apply on a replacement cost basis.

11.6.2 The insurance as required herein shall name as insureds the Owner, Contractor and all Subcontractors of any tier. The insurance policy shall contain a provision that the insurance will not be canceled, allowed to expire or materially changed until at least thirty (30) days prior written notice has been given to Owner.

11.6.3 The insurance as required herein shall cover the entire Work, including reasonable compensation for Architect’s services and expenses made necessary by an insured loss. Insured property shall include portions of the Work located away from the site (including all offsite stored materials) but intended for use at the site, and shall also cover portions of the Work in transit, including ocean transit. The policy shall include as insured property scaffolding, falsework, and temporary buildings located at the site. The policy shall cover the cost of removing debris, including demolition as may be made legally necessary by the operation of any law, ordinance or regulation.

11.6.4 The insurance required herein shall be on an all risk form and shall be written to cover all risks of physical loss or damage to the insured party and shall insure at least against the perils of fire and extended coverage, theft, vandalism, malicious mischief, collapse, lightning, earthquake, flood, frost, water damage, windstorm and freezing.

11.6.5 If there are any deductibles applicable to the insurance required herein, Contractor shall pay any part of any loss not covered because of the operation of such deductibles.

11.6.6 The insurance as required herein shall be maintained in effect until the earliest of the following dates:

.1 the date which all persons and organization who are insureds under the policy agree in writing that it shall be terminated;

.2 the date on which final payment of this Contract has been made by Owner to Contractor; or

.3 the date on which the insurable interests in the property of all insureds other than the Owner have ceased.

11.6.7 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors of any tier, suppliers, agents and employees, each of the other, (2) the Architect and Architect’s consultants, and (3) separate contractors described in Article 6, if any, and any of their subcontractors of any tier, suppliers, agents and employees, for damages caused by fire or other perils to the extent covered by property insurance obtained pursuant to this Section 11.7 or other insurance applicable to the Work, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require of the Architect, Architect’s consultants, separate contractors described in Article 6, if any, and the subcontractors of any tier, suppliers, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity directly or indirectly, was at fault or was negligent in causing the loss and whether or not the person or entity had an interest in the property damaged.

11.6.8 A loss insured under Contractor’s property insurance shall be adjusted by the Owner in good faith and made payable to the Owner for the insureds, subject to requirements of the Contract Documents. The Contractor shall pay Subcontractors of any tier their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors of any tier to make payments to their Sub-subcontractors in similar manner.

11.7 Bonds
11.7.1 When the Contract sum exceeds Fifty Thousand Dollars ($50,000), the Contractor shall procure and furnish a Performance Bond and a Payment Bond in the form prepared by the Owner, each in an amount equal to one hundred percent (100%) of the Contract Sum, as well as adjustments to the Contract Sum. The Performance Bond shall secure and guarantee Contractor’s faithful performance of this Contract, including but not limited to Contractor’s obligation to correct defects after final payment has been made as required by the Contract Documents. The Payment Bond shall secure and guarantee payment of all persons performing labor on the Project under this Contract and furnishing materials in connection with this Contract. These Bonds shall be in effect through the duration of the Contract plus the Guaranty Period as required by the Contract Documents.

11.7.2 The bonds required hereunder shall be executed by a responsible surety licensed in the State of Missouri, with a Best’s rating of no less than A-/XI. The Contractor shall require the attorney in fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of this power of attorney indicating the monetary limit of such power.

11.7.3 If the surety of any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to conduct business in the State of Missouri is terminated, or it ceases to meet the requirements of this paragraph, Contractor shall within ten (10) days substitute another bond and surety, both of which must be acceptable to Owner. If Contractor fails to make such substitution, Owner may procure such required bonds on behalf of Contractor at Contractor’s expense.

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

11.7.5 The Contractor shall keep the surety informed of the progress of the Work, and, where necessary, obtain the surety's consent to or waiver of: (1) notice of changes in the Work; (2) request for reduction or release of retention; (3) request for final payment; and (4) any other material required by the surety. The Owner shall be notified by the Contractor, in writing, of all communications with the surety, as it relates to items one through four. The Owner may, in the Owner's sole discretion, inform surety of the progress of the Work, any defects in the Work, or any defaults of Contractor under the Contract Documents and obtain consents as necessary to protect the Owner's rights, interest, privileges and benefits under and pursuant to any bond issued in connection with the Work.

11.7.6 Contractor shall indemnify and hold harmless the Owner and any agents, employees, representative or member of the Board of Curators from and against any claims, expenses, losses, costs, including reasonable attorneys’ fees, as a result of any failure of Contractor to procure the bonds required herein.

**ARTICLE 12**

**UNCOVERING AND CORRECTION OF THE WORK**

12.1 Uncovering of the Work

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

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

12.2 Correction of the Work

12.2.1 The Architect or Owner’s Representative shall have the right to reject Work not in strict compliance with the requirements of the Contract Documents. The Contractor shall promptly correct Work rejected by the Architect or the Owner's Representative for failing to conform to the requirements of the Contract Documents, whether observed before or after final completion and whether or not fabricated, installed, or completed. If Work has been rejected by Architect or Owner’s Representative, the Architect or Owner's Representative shall have the right to require the Contractor to remove it from the Project site and replace it with Work that strictly conforms to the requirements of the Contract Documents regardless if such removal and replacement results in “economic waste.” Contractor shall pay all claims, costs, losses and damages caused by or resulting from the correction, removal or replacement of defective Work, including but not limited to, all costs of repair or replacement of Work of others. The Contractor shall bear costs of correcting, removing and replacing such rejected Work, including additional testing and inspections and compensation for the Architect's services and expenses made necessary thereby. If prior to the date of final payment, the Contractor, a Subcontractor or anyone for whom either is responsible uses or damages any portion of
the Work, including, without limitation, mechanical, electrical, plumbing and other building systems, machinery, equipment or other mechanical device, the Contractor shall cause such item to be restored to “like new” condition at no expense to the Owner.

12.2.2 If, within twelve (12) months after the date of Final Completion of the Work or designated portion thereof, or after the date for commencement of warranties, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found not to be in strict accordance with the requirements of the Contract Documents, the Contractor shall correct or remove and replace such defective Work, at the Owner’s discretion. Such twelve (12) month period is referred to as the “Guarantee Period.” The obligations under this Paragraph 12.2.2 shall cover any repairs, removal and replacement to any part of the Work or other property caused by the defective Work.

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

12.2.4 If the Contractor fails to correct nonconforming Work within a reasonable time, the Owner may correct or remove it and replace such nonconforming Work. If the Contractor does not proceed with correction of such nonconforming Work within a reasonable time fixed by written notice from the Owner, the Owner may take action to correct or remove the nonconforming work at the contractor’s expense.

12.2.5 The Contractor shall bear the cost of correcting destroyed or damaged Work or property, whether completed or partially completed, of the Owner or of others caused by the Contractor's correction or removal of Work which is not in accordance with the requirements of the Contract Documents.

12.2.6 Nothing contained in Article 12 shall be construed to establish a period of limitation with respect to other obligations that the Contractor might have under the Contract Documents. Establishment of the twelve (12) month Guarantee Period as described in Article 12 relates only to the specific obligation of the Contractor to correct, remove or replace the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations under the Contract Documents. The requirements of Article 12 are in addition to and not in limitation of any of the other requirements of the Contract for warranties or conformance of the Work to the requirements of the Contract Documents.

12.3 Acceptance of Nonconforming Work
12.3.1 The Owner may accept Work which is not in accordance with the Contract Documents, instead of requiring its removal and correction, in its sole discretion. In such case the Contract Sum will be adjusted as appropriate and equitable. Such adjustment shall be made whether or not final payment has been made. Nothing contained herein shall impose any obligation upon the Owner to accept nonconforming or defective Work.

ARTICLE 13
MISCELLANEOUS PROVISIONS

13.1 Written Notice
13.1.1 All notices required to be given by the contractor under the terms of this Contract shall be made in writing. Written notice when served by the Owner will be deemed to have been duly served if delivered in person to the individual or a member of the firm or entity or to an office of the corporation for which it was intended, or if delivered at or sent to the last business address known to the party giving notice.

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

13.2.2 No action or failure to act by the Owner, the Architect, or the Owner’s Representative will constitute a waiver of a right or duty afforded to the Owner under the Contract Documents, nor will such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed in writing.

13.2.3 The terms of this Contract and all representations, indemnifications, warranties and guarantees made in, required by or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion and acceptance of the Work and termination or completion of the Work and shall remain in effect so long as the Owner is entitled to protection of its rights under applicable law.

13.2.4 Contractor shall carry out the Work and adhere to the current construction schedule during all disputes or disagreements with the Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements except as the Owner and Contractor may otherwise agree to in writing.
13.3 Tests and Inspections
13.3.1 Tests, inspections, and approvals of portions of the Work required by the Contract Documents or by laws, ordinances, rules or regulations shall be made at an appropriate time. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, and shall bear related costs of tests, inspections, and approvals. The Contractor shall give the Architect and the Owner's Representative timely notice of when and where tests and inspections are to be made so the Architect and/or the Owner's Representative may observe procedures.

13.3.2 If the Architect or the Owner's Representative determine that portions of the Work require additional testing, inspection or approval not included in the Contract Documents, or required by law, the Architect, or the Owner's Representative will instruct the Contractor to make arrangements for such additional testing, inspection, or approval by an entity acceptable to the Owner's Representative and the Contractor shall give timely notice to the Architect, and the Owner's Representative, of when and where tests and inspections are to be made so the Architect and/or the Owner's Representative may observe such procedures. The Owner will bear such costs except as provided elsewhere in Article 13.

13.3.3 If such procedures for testing, inspection, or approval under Article 13 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, the Contractor shall bear all costs made necessary by such failure including those of repeated procedures and compensation for the Architect's services and expenses.

13.3.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Owner's Representative and Architect.

13.3.5 Contractor shall take all necessary actions to ensure that all tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

13.3.6 Contractor shall arrange for and pay for all costs of all testing required by the Contract Documents or any applicable Laws for materials to be tested or certified at or on the place or premises of the source of the material to be supplied. The Owner shall have the right to require testing of all materials at the place of the source of the material to be supplied if not required by the Contract Documents or any applicable Laws. The Owner shall bear the costs of such tests and inspections not required by the Contract Documents or by applicable Laws unless prior defective Work provides Architect or Owner with a reasonable belief that additional defective Work may be found, in which case Contractor shall be responsible for all costs of tests and inspections ordered by the Owner or Architect, whether or not such tests or inspection reveals that Work is in compliance with the Contract Documents.

13.4 Nondiscrimination in Employment Equal Opportunity
13.4.1 The University serves from time to time as a contractor for the United States government. Accordingly, the provider of goods and/or services shall comply with federal laws, rules and regulations applicable to subcontractors of government contracts including those relating to equal employment opportunity and affirmative action in the employment of minorities (Executive Order 11246), women (Executive Order 11375), persons with disabilities (29 USC 706) and Executive Order 11758, and certain veterans (38 USC 4212 formerly [2012]) contracting with business concerns with small disadvantaged business concerns (Publication L. 95-507). Contract clauses required by the Government in such circumstances are incorporated herein by reference.

13.5 Supplier Diversity Goal Program
13.5.1 The Contractor shall subcontract with diverse firms no less than the amount pledged in the Contractor’s Bid and/or the amount accepted by the Owner.

13.5.2 If the Contractor must remove any diverse subcontractor of any tier, the Contractor shall replace the diverse subcontractor of any tier with another diverse subcontractor(s) of equal dollar value to the diverse supplier removed. The Contractor shall immediately notify the Owner’s Representative in writing of the Contractor’s intent to remove any, and the Contractor’s plan to maintain subcontracts with diverse firms of no less than amount pledged in the Contractor’s Bid and/or the amount accepted by the Owner. All changes of diverse subcontractor of any tier shall be approved by the Director of Facilities Planning & Development.

13.5.3 If the Contractor fails to meet or maintain the contractor’s Supplier Diversity subcontracting pledge, the Contractor shall immediately notify in writing the Owner’s Representative, and the Director of Facilities Planning & Development. Such notice shall include a description of the Contractor’s good faith effort to comply with their Supplier Diversity subcontracting pledge.

13.5.4 If the Director of Facilities Planning & Development finds the Contractor has failed to comply in good faith with the Owner’s Supplier Diversity goal program, the Director may take appropriate action, including but not limited to, declaring the Contractor ineligible to participate in any contracts with the Owner for a period not to exceed six (6) months, and/or directing that the Contractor's actions be
declared a material breach of the Contract and that the Contract be terminated.

13.5.5 The Contractor and his subcontractors shall develop, implement, maintain, and submit in writing to the Director of Facilities Planning & Development, an affirmative action program if at least fifty (50) persons in the aggregate are employed under this contract. If less than fifty (50) persons in the aggregate are to be employed under this contract, the Contractor shall submit, in lieu of the written affirmative action program, a properly executed "Affidavit for Affirmative Action" in the form as included in the Contract Documents. For the purpose of this section, an "Affirmative Action Program" means positive actions to influence all employment practices (including, but not limited to, recruiting, hiring, promoting, and training) in providing equal employment opportunity regardless of race, color, sex, national origin, religion, age (where the person affected is between 40 and 70), disabled and Vietnam-era veteran status, and handicapped otherwise qualified status. Such affirmative action program shall include:

.1 A written policy statement committing the total organization to affirmative action and assigning management responsibilities and procedures for evaluation and dissemination.

.2 The identification of a person designated to handle affirmative action.

.3 The establishment of non-discriminatory selection standards, objective measures to analyze recruitment, an upward mobility system, a wage and salary structure, and standards applicable to lay-off, recall, discharge, demotion, and discipline.

.4 The exclusion of discrimination from collective bargaining agreements.

.5 Performance of an internal audit of the reporting system to monitor execution and to provide for future planning.

13.5.6 In the enforcement of this non-discrimination requirement, the Owner may use any reasonable procedures available, including but not limited to: requests, reports, site visits, and inspection of relevant documents of Contractors and Subcontractors of any tier. The contractor shall submit a final Affidavit of Supplier Diversity Participation for each diverse firm at the end of the project stating the actual amount paid to the diverse firm.

13.6 Wage Rates (If the contract amount is less than $75,000, the requirements of this section will not apply. Any contract adjustments that increase the contract above $75,000 will be subject to this section.)

13.6.1 The Contractor shall pay workers employed in the execution of this contract in full each week and not less than the predetermined wage rates and overtime for work of a similar character that have been made a part of this Contract. These rates are determined by the University of Missouri Director of Facilities Planning and Development. The rates are based on wage rates published in the Annual Wage Orders of the Missouri Department of Labor and Industrial Relations (MDLIR). The Contractor is to use MDLIR 8 CSR 30-3.020; .030; .040, .060 in determining the appropriate occupational titles and rates for workers used in the execution of this contract. All determinations and/or interpretations regarding wage rates and classification of workers will be made by the office of the University of Missouri Director of Facilities Planning and Development. The Contractor is responsible for the payment of the aggregate of the Basic Hourly Rate and the Total Fringe Benefits to the workers on the project. Fringe benefit payments may be made to the worker in cash, or irrevocably made by a Contractor or Subcontractor to a third person pursuant to a fund, plan or program, or pursuant to an enforceable commitment, or any combination thereof, to carry out a financially responsible plan or program which was communicated in writing to the workmen affected, for medical or hospital care, pensions on retirement or death, compensation for injuries or illness resulting from occupational activity, or insurance to provide any of the foregoing, for unemployment benefits, life insurance, disability and sickness insurance, accident insurance, for vacation and holiday pay, for defraying costs of apprenticeship or other similar programs, or for other bona fide fringe benefits, but only where the Contractor or Subcontractor is not required by other federal or state law to provide any of the benefits as referenced in §290.210(5) RSMo 1994. Pay for travel, mileage, meals, bonuses, or other expenses are not fringe benefits and cannot be considered part of the workers wage rate. The Contractor shall not make any deductions for food, sleeping accommodations, transportation, use of small tools, uniforms, or anything of any kind or description, unless the Contractor and employee enter into an agreement in writing at the beginning of the worker’s term of employment, and such agreement is approved by the Owner. In the event the contract contains more than one wage determination the Contractor shall comply with both.

13.6.2 The Contractor shall submit to the Owner with the Contractor’s periodic pay request, certified payroll records for labor performed by the Contractor and Subcontractors of any tier. The Contractor shall submit all required certified payroll information records electronically in pdf format using the Owner’s web-based payment program. The certified payroll forms shall contain the name, address, personal identification number, and occupational title of the workers as well as the hours they work each day. The Owner’s acceptance of certified payroll records does not in any way relieve the Contractor of any responsibility for the payment of prevailing wages to workers on the project. The Contractor shall also maintain copies of the certified payroll.
records. The Owner may, at any time, request copies of, and/or inspect all of the Contractor's payroll records for the Work to verify compliance. The Contractor shall furnish the Owner copies of payroll records within 10 days of the Owner's written request. The Contractor shall provide copies of workers I-9 forms within 24 hours of written notice. (If applicable, and required by Owner, the Contractor will demonstrate that the Contractor is enrolled and participating in a federal work authorization program with respect to the employees working in connection with this project.) Such payroll records shall be maintained in accordance with Article 13.7.1 and shall be available for inspection for two (2) years after final completion of the Work. The contractor further agrees, in the event the records are not presented as requested, he will abide by any decision made by the Owner regarding underpayment of wages to workers and amounts owed them as well as liquidated damages for underpayment of wages. Falsification of the certified payroll records may result in the debarment of the contractor or subcontractor from future work with the University.

13.6.3 The acquisition of products or services is subject to the supplier's conformance to the rules and regulations of the President's Committee on Equal Employment Opportunity (41 CFR, Ch. 60).

13.6.4 The Contractor shall comply with the Copeland Regulations of the Secretary of Labor (29 CFR, Part 3), which are incorporated herein by reference. In addition, the Weekly Statement of Compliance required by these Regulations shall also contain a statement that the applicable fringe benefits paid are equal to or greater than those set forth in the minimum wage decision.

13.6.5 Contractor acknowledges that violation of the requirements of Article 13.6 result in additional costs to Owner, including, but not limited to, cost of construction delays, of additional work for Owner’s staff and legal expense. The cost of Contractor’s violation of the provisions of Article 13.6 would be and is difficult to approximate the investigative cost resulting to the Owner for such violations. To approximate the delay costs, Owner shall be entitled to retain or recover from the Contractor, as liquidated damages and not as a penalty, the sum of Fifty Dollars ($50.00) per day per individual who is paid less than the applicable prevailing wage, to approximate the investigative cost resulting to the Owner for such violations. To approximate the delay costs, Owner shall be entitled to retain or recover from the Contractor, as liquidated damages and not as a penalty, the sum of One Hundred Dollars ($100.00) per day for each day the Contract cannot be closed out and final payment made because of Contractor’s failure to comply with the provisions of this Article 13.6. Such liquidated damages shall be collected regardless of whether the Work has been completed. The liquidated damages and other amounts set forth in this Article 13.6 shall be in addition to all other liquidated damages the Owner may be entitled as set forth in the Contract Documents.

13.6.6 The Owner may deduct liquidated damages described Article 13 and the amounts set forth in Article 13 from any unpaid amounts then or thereafter due the Contractor under the Contract. Any liquidated damages not so deducted from any unpaid amounts due the Contractor shall be payable to the Owner at the demand of the Owner.

13.6.7 The Contractor shall specifically incorporate the obligations of Article 13 into the subcontracts, supply agreements and purchase orders for the Work and require the same of any Subcontractors of any tier.

13.6.8 Contractor acknowledges and recognizes that a material factor in its selection by the Owner is the Contractor’s willingness to undertake and comply with the requirements of this Article 13.6. If Contractor fails to comply with the provisions of this Article 13.6, Owner may, in its sole discretion, immediately terminate the Contract upon written notice. The rights and remedies of Owner provided herein shall not be exclusive and are in addition to other rights and remedies provided by law or under this Contract.

13.6.9 Only such workers who are individually registered in a bona fide apprenticeship program approved by the U.S. Department of Labor, Office of Apprenticeship can be paid less than the journeyperson rate of pay. “Entry Level Workers; must be registered apprentices. The apprenticeship ratio will be one to one with a journeyperson of the same classification. Any worker not registered as an apprentice per this section will be paid as a journeyperson.

13.6.10 The Contractor shall post the wage rates for the contract in a conspicuous place at the field office on the project. On projects where there is no field office the Contractor may post the wage rates at their local office, as long as they provide a copy of the wage rates to a worker upon request. The wage rates shall be kept in a clearly legible condition for the duration of the project.

13.6.11 Neither the Contractor, nor any Subcontractor of any tier, nor any person hired by them or acting on their behalf, shall request or demand that workers pay back, return, donate, contribute or give any part, or all, of said workers wages, salary, or any thing of value, upon the statement, representation or understanding that failure to comply with such request or demand will prevent such worker from procuring or retaining employment. The exception being to an agent or representative of a duly constituted labor organization acting in the collection of dues or assessments of such organization.
13.6.12 No contractor or subcontractor may directly or indirectly receive a wage subsidy, bid supplement, or rebate for employment on this project if such wage subsidy, bid supplement, or rebate has the effect of reducing the wage rate paid by the employer on a given occupational title below the prevailing wage rate as provided in contract. In the event a wage subsidy, bid supplement, or rebate is provided or received, the entity receiving such subsidy, supplement, or rebate shall report the date and amount of such subsidy, supplement, or rebate to the University within thirty days of receipt of payment. This disclosure report shall be a matter of public record. Any employer not in compliance with this Article shall owe to the University double the dollar amount per hour that the wage subsidy, bid supplement, or rebate has reduced the wage rate paid by the employer below the prevailing wage rate for each hour that work was performed.

13.6.13 Time and one half overtime will be paid on all hours over 10 hours per day or 40 hours per week. The wage rate is the total of the “Basic Hourly Rate” plus “Total Fringe Benefits” or the “public works contracting minimum wage”. For all work performed on a Sunday or Holiday, not less than twice the prevailing hourly rate of pay or public works contracting minimum wage will apply. Holidays are as follows: January first, the last Monday in May, July fourth, the first Monday in September, November 11, the fourth Thursday in November, December twenty-fifth. If any holiday falls on a Sunday, the following Monday shall be considered a holiday.

13.7 Records

13.7.1 The Owner, or any parties it deems necessary, shall have access to and the right to examine any accounting or other records of the Contractor involving transactions and Work related to this Contract for five (5) years after final payment or five (5) years after the final resolution of any on going disputes at the time of final payment. All records shall be maintained in accordance with generally accepted accounting procedures, consistently applied. Subcontractors of any tier shall be required by Contractor to maintain records and to permit audits as required of Contractor herein.

13.8 Codes and Standards

13.8.1 The Work shall be performed to comply with the International Code Council (ICC) Codes, and the codes and standards noted below. The latest editions and supplements of these Codes and Standards in effect on the date of the execution of the Contract for Construction shall be applicable unless otherwise designated in the Contract Documents. Codes and standards required by accreditation agencies will also be used unless the ICC requirements are more stringent. In the event that special design features and/or construction systems are not covered in the ICC codes, the applicable edition of the National Fire Protection Association (NFPA) family of standards and/or the NFPA 101 Life Safety Code shall be used.

.1 ICC International Building Code and reference standards
.2 ICC International Plumbing Code
.3 ICC International Mechanical Code
.4 NFPA 70 National Electric Code (NEC)
.5 Americans with Disabilities Act – Standards for Accessible Design.
.6 American National Standard Safety Code for Elevators, Dumbwaiters, Escalators, and Moving Walks as published by the American Society of Mechanical Engineers (ASME), American National Standards Institute (ANSI) A17.1
.7 NFPA 101 Life Safety Code (as noted above)
.8 American Concrete Institute (ACI)
.9 American National Standards Institute (ANSI)
.10 American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE)
.11 American Refrigeration Institute (ARI)
.12 American Society for Testing and Materials (ASTM)
.13 Missouri Standard Specification for Highway Construction, Missouri State Highway Commission
.14 National Electrical Manufacturers Association (NEMA)
.15 Underwriter's Laboratories, Inc. (UL), Federal Specifications
.16 Williams Steiger Occupational Safety and Health Act of 1970 (OSHA)

13.9 General Provisions

13.9.1 Any specific requirement in this Contract that the responsibilities or obligations of the Contractor also apply to a Subcontractor is added for emphasis and are also hereby deemed to include a Subcontractor of any tier. The omission of a reference to a Subcontractor in connection with any of the Contractor's responsibilities or obligations shall not be construed to diminish, abrogate or limit any responsibilities or obligations of a Subcontractor of any tier under the Contract Documents or the applicable subcontract.

13.9.2 This Contract shall be interpreted, construed, enforced and regulated under and by the laws of the State of Missouri. Whenever possible, each provision of this Contract shall be interpreted in a manner as to be effective and valid under applicable law. If, however, any provision of this Contract, or a portion thereof, is prohibited by law or found invalid under any law, only such provision or portion thereof shall be ineffective, without invalidating or affecting the remaining provisions of this Contract or valid portions of such provision, which are hereby deemed severable. Contractor and Owner further agree that in the event any provision of this Contract, or a portion thereof, is prohibited by law or found
invalid under any law, this Contract shall be reformed to replace such prohibited or invalid provision or portion thereof with a valid and enforceable provision which comes as close as possible to expressing the intention of the prohibited or invalid provision.

13.9.3 Contractor and Owner each agree that the State of Missouri Circuit Court for the County where the Project is located shall have exclusive jurisdiction to resolve all Claims and any issue and disputes between Contractor and Owner. Contractor agrees that it shall not file any petition, complaint, lawsuit or legal proceeding against Owner in any other court other than the State of Missouri Circuit Court for the County where the Project is located.

13.9.4 Owner’s total liability to Contractor and anyone claiming by, through, or under Contractor for any Claim, cost, loss, expense or damage caused in part by the fault of Owner and in part by the fault of Contractor or any other entity or individual shall not exceed the percentage share that Owner’s fault bears to the total fault of Owner, Contractor and all other entities and individuals as determined on the basis of comparative fault principles.

13.9.5 Contractor agrees that Owner shall not be liable to Contractor for any special, indirect, incidental, or consequential damage whatsoever, whether caused by Owner’s negligence, fault, errors or omissions, strict liability, breach of contract, breach of warranty or other cause or causes whatsoever. Such special, indirect, incidental or consequential damages include, but are not limited to loss of profits, loss of savings or revenue, loss of anticipated profits, labor inefficiencies, idle equipment, home office overhead, and similar types of damages.

13.9.6 Nothing contained in this Contract or the Contract Documents shall create any contractual relationship with or cause of action in favor of a third party against the Owner.

13.9.7 No member or officer of the Board of Curators of the University incurs or assumes any individual or personal liability under the Contract or by reason of the default of the Owner in the performance of any terms thereof. Contractor releases and discharges all members or officers of the Board of Curators of the University from any liability as a condition of and as consideration for the award of the Contract to Contractor.

13.9.8 The Contractor hereby binds itself, its partners, successors, assigns and legal representatives to the Owner in respect to covenants, agreements and obligations contained in the Contract Documents. Contractor shall not assign the Contract or proceeds hereof without written consent of the Owner. If Contractor attempts to make such an assignment without such consent, it shall be void and confer no rights on third parties, and Contractor shall nevertheless remain legally responsible for all obligations under the Contract. The Owner’s consent to any assignment is conditioned upon Contractor entering into a written assignment which contains the following language: “it is agreed that the funds to be paid to the assignee under this assignment are subject to performance by the Contractor and to claims and to liens for services rendered or materials supplied for the performance of the Work required in said Contract in favor of all persons, firms, corporations rendering such services or supplying such materials.”

13.10 Debarment and Suspension Certification
The contractor certifies to the best of its knowledge and belief that it and its principals are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency in accordance with Executive Order 12549 (2/18/86).

ARTICLE 14
TERMINATION OR SUSPENSION OF THE CONTRACT

14.1 Termination by Owner for Cause
14.1.1 In addition to other rights and remedies granted to Owner under the Contract Documents and by law, the Owner may terminate the Contract if the Contractor:
.1 refuses or fails to supply enough properly skilled workers, superintendents, foremen, or managers;
.2 refuses or fails to supply sufficient or proper materials;
.3 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
.4 disregards laws, ordinances, rules, or regulations or orders of a public authority having jurisdiction;
.5 disregards the authority of the Owner’s Representative or Architect;
.6 breaches any warranty or representations made by the Contractor under or pursuant to the Contract Documents;
.7 fails to furnish the Owner with assurances satisfactory to the Owner evidencing the Contractor's ability to complete the Work in compliance with all the requirements of the Contract Documents;
.8 fails after commencement of the Work to proceed continuously with the construction and completion of the Work for more than ten (10) days, except as permitted under the Contract Documents;
.9 fails to maintain a satisfactory rate of progress with the Work or fails to comply with approved progress schedules; or
.10 violates in any substantial way any provisions of the Contract Documents.

14.1.2 When any of the above reasons exist, the Owner may, without prejudice to any other rights or remedies of the Owner,
terminate this Contract by delivering a written notice of termination to Contractor and Contractor’s surety, and may:

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

2. accept assignment of subcontracts pursuant to Paragraph 5.3; and

3. finish the Work by whatever reasonable method the Owner may deem expedient, including turning the Work over to the surety.

14.1.3 The Contractor, in the event of a termination under Section 14.1, shall not be entitled to receive any further payments under the Contract until the Work is completed in its entirety. Then, if the unpaid balance under the Contract shall exceed all expenses of the Owner in finishing the Work, including additional compensation for the Architect's services and expenses made necessary thereby, such excess will be paid to the Contractor; but, if such expenses of Owner to finish the Work shall exceed the unpaid balance, the Contractor and its surety shall be liable for, and shall pay the difference and any damages to the Owner. The obligation of the Contractor and its surety for payment of said amounts shall survive termination of the Contract.

14.1.4 In exercising the Owner's right to secure completion of the Work under any of the provisions hereof, the Owner shall have the right to exercise the Owner's sole discretion as to the manner, methods, and reasonableness of costs of completing the Work.

14.1.5 The rights of the Owner to terminate pursuant to Article 14.1 will be cumulative and not exclusive and shall be in addition to any other remedy provided by law or the Contract Documents.

14.1.6 Should the Contractor fail to achieve Final Completion of the Work within thirty (30) calendar days following the date of Substantial Completion, the Owner may exercise its rights under Article 14.1.

14.2 Suspension by the Owner for Convenience

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

14.2.2 An adjustment will be made to the Contract Sum for increases in the cost of performance of the Contract caused by suspension, delay or interruption. However, in the event of a suspension under this Article 14.2, Contractor hereby waives and forfeits any claims for payment of any special, indirect, incidental or consequential damages such as lost profits, loss of savings or revenue, loss of anticipated profits, idle labor or equipment, home office overhead, and similar type damages. No adjustment will be made to the extent:

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

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

14.3 Owner's Termination for Convenience

14.3.1 The Owner may, at any time, terminate the Contract in whole or in part for the Owner's convenience and without cause. Termination by the Owner under this Paragraph shall be by a notice of termination delivered to the Contractor specifying the extent of termination and the effective date.

14.3.2 Upon receipt of a notice of termination for convenience, the Contractor shall immediately, in accordance with instructions from the Owner, proceed with performance of the following duties regardless of delay in determining or adjusting amounts due under this Paragraph:

1. cease operation as specified in the notice;

2. place no further orders and enter into no further subcontracts for materials, labor, services or facilities except as necessary to complete Work not terminated;

3. terminate all subcontracts and orders to the extent they relate to the Work terminated;

4. proceed to complete the performance of Work not terminated; and

5. take actions that may be necessary, or that the Owner may direct, for the protection and preservation of the terminated Work.

14.3.3 Upon such termination, the Contractor shall recover as its sole remedy payment for Work properly performed in connection with the terminated portion of the Work prior to the effective date of termination and for items properly and timely fabricated off the Project site, delivered and stored in accordance with the Owner's instructions and for all Owner approved claims, costs, losses and damages incurred in settlement of terminated contracts with Subcontractors and suppliers. The Contractor hereby waives and forfeits all other claims for payment and damages, including, without limitation, anticipated profits, consequential damages and other economic losses.

14.3.4 The Owner shall be credited for (1) payments previously made to the Contractor for the terminated portion of the Work, (2) claims which the Owner has against the Contractor under the Contract and (3) the value of the materials, supplies, equipment or other items that are to be disposed of by the Contractor that are part of the Contract Sum.

14.3.5 Upon determination by a court that termination of Contractor or its successor in interest pursuant to Paragraph 14.1 was wrongful, such termination will be deemed converted...
to a termination for convenience pursuant to Paragraph 14.3, and Contractor's sole and exclusive remedy for wrongful termination is limited to recovery of the payments permitted for termination for convenience as set forth in Paragraph 14.3.
SECTION 1.E

SPECIAL CONDITIONS

1. DEFINITIONS

a. "Drawings"

Drawings referred to in and accompanying Project Manual consist of Drawings prepared by and bearing name of below defined Architect, bearing Date of MARCH 06, 2020, entitled "University of Missouri Teaching Hospital – Roof Replacement", project number CP200011.

b. Architect / Engineer
RMT Roofing & waterproofing Consultants, Inc.
410 Sovereign Court #18
Manchester, MO 63011
636-391-2185

c. Project Management
Planning, Design and Construction
Campus Facilities
University of Missouri
Columbia, MO 65211
(573) 882-6800

d. Other Definitions: See Article 1., General Conditions.

2. SPECIAL SCHEDULING REQUIREMENTS

a. Contractor to provide daily updates and plan diagrams to the owner’s representative that forecasts a minimum 48-hour advance for upcoming work activities in specific roofing areas as well as daily material rooftop storage quantities and locations.

b. Contractor may begin on-site mobilization prior to approval of shop drawings and materials procurement.

c. Work shall be continuous with no down time.

d. Roof work shall be coordinated with CP200012 “Remove Cooling Tower Support Structure” and with Owner’s Representative for access, lay down, haul-off and overall construction coordination.

e. Utility Shut-Downs, Outages, and Tie-ins – Contractor shall submit a Utility Outage Request Form including a written plan outlining the required shut-downs, outages, and tie-ins fourteen (14) calendar days prior to starting the work.

g. AHU S2-8 on Roof “Y” will be out of service by July 31st, 2020 and removal of unit will need to be coordinated with Owners Representative.

h. EHS Radiation Safety must be notified prior to the start of the project so that a confirmatory survey shall be performed on the vent stack labelled “Serves Nuclear Medicine” on Roof “R”. Furthermore, EHS Radiation Safety requests notification of the project start date and duration be sent to Owner’s Representative to ensure volatile radioiodine work is suspended for the duration of the project.

3. SCOPE OF WORK

a. The Contractor shall furnish all labor, materials, tools, equipment necessary for, and incidental to, construction of this project as indicated on Drawings and specified herein.

b. Work shall include everything requisite and necessary to finish work properly, notwithstanding that every item of labor or materials or accessories required to make project complete may not be specifically mentioned.

c. General Description of Work:

   (1) Project consists of installing roofing per plans and specifications for multiple roofs at the University of Missouri Teaching Hospital.

   (2) Demolition shall consist of removal of existing membrane, coverboard, insulation and vapor barrier down to existing concrete deck in various locations per plans and specifications..

   (3) Architectural work shall consist of installation of new vapor barrier, insulation, coverboard, roof membrane, and installation of membrane and sheet metal flashing per plans and specifications..

4. LOCATION

a. Work shall be performed under this Contract on campus of the University of Missouri - Columbia, at the University Hospital & Clinics Complex, 1 Hospital Drive, Columbia, MO.

5. NUMBER OF CONSTRUCTION DOCUMENTS

a. The Owner's Representative will furnish the Contractor a copy of executed Contract and a complete sets of Drawings and Specifications in PDF format.
b. The Owner will furnish explanatory and changed Drawings in PDF format to Contractor as issued during project.

c. Hard copy prints of any documents (bid or explanatory) will be printed at the Contractor's expense through a printer of their choosing.

6. SUBMITTALS

a. The Contractor shall submit for approval to the Architect, equipment lists and Shop Drawings, as expeditiously as possible. Failure of the Contractor to submit Shop Drawings in a timely manner will result in the Owner holding back Contractor payments. (See General Conditions)

b. The material and equipment lists shall be submitted and approved before any material or equipment is purchased and shall be corrected to as-built conditions before the completion of the project.

c. The Contractor shall submit electronic versions of all required Shop Drawings, material and equipment lists. The Contractor shall upload all Shop Drawings to a secure information sharing website determined by the Owner notifying the Owner and Consultant that these shop drawings are available for review. Each submittal shall have the General Contractors digital stamp affixed to the first page signifying their review and acceptance. Review comments, approvals, and rejections will be posted on this same site with notification to the contractor. Submittals requiring a professional seal shall be submitted hard copy with a manual seal affixed.

1. The Contractor shall identify each submittal item with the following:

   (a) Project Title and Location
   (b) Project Number
   (c) Supplier’s Name
   (d) Manufacturer’s Name
   (e) Contract Specification Section and Article Number
   (f) Contract Drawing Number
   (g) Acrobat file name: Spec Section_Times Submitted-Spec Title:
       (Example - 033000 _01-Cast In Place Concrete.pdf)

2. Reference the accompanying Shop Drawing and Submittal Log at the end of this section (1.E.5) for required submittal information.

d. The Contractor shall submit to the Architect one (1) electronic copy, in PDF form of all required Operating Instructions and Service Manuals with one PDF file per specification division for the Architect’s and the Owner’s sole use prior to completing 50% of the adjusted contract. Payments beyond 50% of the contract amount may be withheld until all Operating Instructions and Service Manuals are received as referenced in the accompanying
Operating Instructions and Service Manual Log at the end of this section (1.E.6).

e. The Contractor shall submit to the Owner's Representative all items referenced in the accompanying Closeout Log (1.E.7) within 30 days following substantial completion of the work. The Owner's Representative will maintain the closeout log and include as an agenda item at all coordination meetings.

7. NOTIFICATION

a. Before beginning Demolition Work or service outages, the Contractor shall provide, at minimum, seventy-two (72) hours advance notice to Owner's Representative for purpose of verifying utility locations including, but not limited to, gas, telecommunications, electric, water, steam, sewer, and nitrogen. Contractor shall minimize the number of outages, minimize the length of outages and related work shall be continuous until the utility is restored.

8. USE OF PREMISES

a. Access: Access to construction site shall be as indicated below and as directed by the Owner's Representative.

   (1) Daily rooftop access shall be by the way of the western loading dock, enter the building and take elevator E100 down to ground floor. Go to the "Purple" service elevators [EG05] and proceed up to 7th floor. Once on the 7th floor access the roof via stair N70A.

b. Parking:

   (1) The Owner will issue Contractor two (2) service vehicle parking permits for use in University Parking lot WG-1. The permits will be issued at no cost to the contractor up to the contract completion date. After the contract completion date, the permits will be re-issued on an as available basis at the contractors’ expense. These permits are to be used for general contractor or subcontractor owned and labeled vehicles only. Personal vehicles are prohibited from use of these permits. Violation of this requirement may result in ticketing and/or towing at the vehicle owner’s expense and suspension of progress payments.

   (2) Parking of personal vehicles within project access/lay down/staging areas is prohibited. Violation of this requirement may result in ticketing and/or towing at the vehicle owner’s expense and suspension of progress payments.
(3) Parking or driving on sidewalks, landscaped areas, within fire and service lanes or generally in areas not designated for vehicular traffic is prohibited except as allowed in the contract documents. Violation of this requirement may result in ticketing and/or towing at the vehicle owner's expense and suspension of progress payments.

(4) Free parking for contractor employees is available in the Ashland Road Contractor lot on an as available basis. This space is for use by contractor employees for parking their personal vehicles only and is not to be used for staging or storage.

(5) Vendor Permits may be purchased by contractor management personnel on an as available basis by contacting the Parking and Transportation office in the General Services Building. These permits will allow contractor management personnel to park in various University lots while conducting business on University construction projects.

(6) Temporary University parking permits may be purchased by contractor employees for use with their personal vehicles on an as available basis by contacting the Parking and Transportation office in the Turner Avenue Parking Structure.

(7) Conley Avenue between Missouri Avenue and University Avenue and Hitt Street between University Avenue and the Memorial Union are designated for pedestrian use only during the work week between the hours of 8:15 AM and 3:45 PM. Unless otherwise indicated in the contract documents, this area is strictly off limits to vehicular traffic without authorization from the Owner's Representative.

c. Storage of materials: The Contractor shall store all materials within project limits. The Contractor shall confine apparatus, materials, and operation of workers to location established by the Owner's Representative. The Contractor shall not unreasonably encumber premises with materials. In addition, storage trailer locations may be available within 1-1/2 miles of project site as directed by the Owner's Representative. Storage trailer locations shall be subject to approval by the Owner's Representative and are available to the Contractor without cost.

d. Utilities: Drinking water, water required to carry on work, and 120 volt electrical power required for small tool operation may be obtained without cost to the Contractor from existing utilities at locations designated by the Owner's Representative. Provisions for obtaining power, including temporary extensions, shall be furnished and maintained by the Contractor. Upon completion of work such extensions shall be removed and any damage caused by use of such extensions shall be repaired to satisfaction of the Owner's Representative, at no cost to the Owner.
e. Restroom: The Contractor shall provide and maintain, in a sanitary
condition, chemical type portable toilet facilities at work site for use by his
personnel. Toilets and toilet location shall be subject to approval by the
Owner's Representative.

f. Smoking is prohibited at the University of Missouri and all properties owned,
operated, leased or controlled by the University of Missouri. Violation of the
policy is defined as smoking any tobacco products, including e-cigarettes.

g. Landfill: The Contractor shall not use the Owner’s landfill. Dumping or
disposal of excavated or demolition materials on Owner’s property shall not
be permitted. The Contractor shall remove and legally dispose of excavated
or demolished materials off the Owner’s property.

h. Care of Project Work Site: The contractor shall be responsible for
maintaining the construction site in a reasonably neat and orderly condition
by regular cleaning and mowing of the premises as determined by the
Owner's Representative.

i. Discharge to Sewer Request: The University of Missouri's MS4 permit and
NPDES Storm Water Discharge Permits along with the City of Columbia's
POTW Operating Permit as well as local ordinances, and state and federal
environmental regulations prohibit hazardous materials from being
disposed into either the storm water or sanitary sewer systems. Unless
specifically approved, all chemical products such as paints, dyes, lawn care
products, maintenance products, and oil is are prohibited from drain
disposal. Any product, including contaminated water, being discarded into
the storm water or sanitary sewer systems requires written approval from
the Owner through a formal “Discharge to Sewer Request” form obtained at
Discharge to Sewer Request Form. The contractor should submit the form
to the Owner’s Representative, not to the Department of Environmental
Health and Safety as the form indicates.

j. All concrete waste material including washout water shall be totally
contained and removed from the Owner’s property.

k. Artifacts Found During Construction: Contractor shall immediately notify
the Owner’s Representative when artifacts are uncovered or found during
the demolition or construction process. Artifacts include, but are not limited
to, tools, drawings (construction or other), photographs, books and other
objects/devices which may hold historical importance/significance. Do not
remove or disturb the object(s) in question. Artifacts are not considered
part of demolished materials and shall remain the property of the
University of Missouri.
I. Permit Required Confined Space Entry Communication and Coordination:
(See OSHA 1926 subpart aa – Construction Confined Space for the
definition of “permit required confined spaces” - Note: OSHA does not
apply to the University. However, the University will provide a list of all
known “permit required confined spaces”)

There are no known “permit required confined spaces” within the project
limits. Each contractor shall conduct a survey to confirm whether or not
any confined spaces exist within the project limits. It is incumbent upon
each contractor to list all “permit required spaces”.

The Contractor shall notify the Owner’s Representative if 1) conditions
change resulting in a non-permit required confined space being
reclassified to a “permit required confined space” after evaluation of the
space by a competent person; 2) a space previously thought to be non-
permit required space is classified as a “permit required confined space”;
or 3) during the course of construction a “permit required confined space”
is created after evaluation by a competent person.

The Contractor shall submit to the Owner’s Representative a copy of the
cancelled confined space entry permit and a written report summarizing the
permit space program followed and all hazards confronted or created during
entry operations. This information shall be submitted within one week of
cancelling the permit.

9. PROTECTION OF OWNER'S PROPERTY

a. The Contractor shall be responsible for repair of damage to building exterior
and interior, drives, curbs, streets, walks, grass, shrubbery and trees, which
was caused by workmen or equipment employed during progress of work.
All such repairs shall be made to satisfaction of the Owner's Representative,
at no cost to the Owner, or reimburse the Owner if the Owner elects to make
repairs. For landscape damage, the Owner shall make such repairs.
Compensation for these repairs shall be determined by the Owner's
Representative using the "Valuation of Landscape Trees, Shrubs, and other
Plants" as published by the International Society of Arboriculture, as last
revised.

b. Construction Project Fencing:

(1) Fencing requirements, as indicated on Drawings, shall be
constructed of 9 or 11-gauge chain link not less than six (6) feet in
height and not more than 2-inch mesh with posts spaced not more
than ten (10) feet apart and all corner and gate posts anchored with
sand bags. All other posts shall be sufficiently secured in ground to
maintain proper and adequate support of fence. Fenced in area shall
have at least two (2) access gates and all gates shall be lockable.
Using existing landmarks, lamp posts, trees or other Owner property for support of fencing is strictly prohibited unless a written waiver is obtained from Owner's Representative.

Use of ribbon, snow fence, chicken wire, rope, and wooden barricades as fencing is prohibited.

Fencing shall be maintained in an "as-installed" condition throughout the life of the project.

The Contractor may use used fencing provided it is in good condition and is satisfactory to the Owner's Representative.

c. Preserving and Protecting Existing Vegetation:

(1) Protection and compensation for damages:

(a) Trees and shrubs within work area designated to remain shall be protected from damage during construction by fencing or armoring as indicated on Drawings or specified herein. Plant protection devices shall be installed before work has begun and shall be maintained for duration of work unless otherwise directed by Owner's Representative.

(2) Plants within work area designated for removal shall be removed by Contractor.

(3) To prevent compaction of soil over tree roots, vehicles or equipment shall not at any time park or travel over, nor shall any materials be stored within drip line of trees designated to remain.

(4) Owner's Representative will stop work immediately when proper measures are not being employed to protect trees and shrubs. Contractor will be notified to resume work after required protection measures are implemented.

(5) Pruning of limbs necessary to repair damage or provide clearance for work shall be done by the MUHC Hospital Landscape Division at the direction of the Owner's Representative. Limbs shall be cut off cleanly and cut surfaces treated according to established horticultural standards.

d. Hot Work Permitting:

(1) Hot work Requirements – The contractor shall comply with the following hot work requirements and the requirements of NFPA 51B.
(a) Hot work shall be defined as any work involving burning, welding, grinding, cutting, or similar operation that is capable of initiating fires or explosions.

(b) A Hot Work Permit shall be used on all hot work outside a designated hot work area. This permit shall be clearly visible within proximity of the hot work. The permit authorizing individual(s) shall be as designated by the Contractor. These permits may be obtained from the Owner’s Representative.

(c) Notify the Owner’s Representative prior to starting hot work in buildings where fire alarm / fire suppression systems exist so Campus Maintenance can be notified.

(d) Hot Work Permits must be requested from and completed by Owner’s Representative, posted and signed off by Contractor’s performing work involving open flames or work that produces heat and/or sparks. This includes, but is not limited to, brazing, cutting, soldering, thawing pipes, torch applied roofing and welding within Hospital property. At least one day notice is required prior to fire alarm shut down.

(e) Contractor shall submit their Hot Work Plan to Projex4 for Owner’s review. A copy of each completed Hot Work Permit shall be uploaded to Projex4 within 24 hours of completion of such work.

(f) Energized Work Permit: Contractors are required to comply with applicable Safety and Health regulations such as OSHA, NFPA, and EPA. Energized work is to be avoided unless absolutely necessary. Live parts shall be de-energized before working on or near them unless an exception is warranted per 2004 for later edition of NFPA 70E. When working on or near live parts (including testing and troubleshooting), contractor shall select the appropriate Personal Protective Equipment and follow an electrical work safety program per NFPA 70E. If unable to determine the necessary level of protection using the NFPA 70E tables, an Arc Flash Hazard Electrical Analysis must be performed by a Professional Electrical Engineer licensed in the state of Missouri.

A copy of the Contractor’s completed Energized Electrical Work Permit shall be submitted to the Owner’s Representative before any Energized Work begins. Contractors may be required to submit copies of their Safety Program to the Owner’s Representative upon request.
10. SUBSTITUTIONS and EQUALS
   a. Substitutions are defined in General Conditions article 3.11.8 for and Equals are defined General Conditions Article 3.12.
   b. Use of materials, products or equipment other than those named and described in the Contract Documents are substitutions and/or equal. Substitutions and/or equals submitted during the bidding period shall be received by both the Architect and the Owner at least ten calendar days prior to the date for receipt of bids. To be considered, bidder’s proposal shall include a complete description of the proposed substitution and/or equal and a comparison of significant qualities of the proposed substitution and/or equal with those specified including drawings, performance and test data, and other information necessary for an evaluation. The Architect's decision on the approval or disapproval of a proposed substitution and/or equal shall be final.
   c. If the Architect and Owner approve a proposed substitution prior to receipt of Bids, such approval will be set forth in an Addendum. Bidders shall not rely upon approval made in any other manner.

11. CODES AND STANDARDS
   a. The Contractor shall comply with applicable codes and standards as listed in General Conditions.

12. PERMITS
   a. The Owner’s Representative shall secure University Authority Having Jurisdiction building permits required for the project and shall provide a list of required inspections to the Contractor. The Contractor shall work with the Owner’s Representative to coordinate and provide reasonable scheduling and access to the Work for the Owner’s inspection.
   b. Red Tag Permit: Prior to disruption of Fire Protection System service Contractor must obtain a permit.
   c. Fire Alarm Outage Permit: Prior to disruption of Fire Alarm System service Contractor must obtain a permit.

13. SPECIALTIES
   a. Roofing Protection Requirements: For all construction staging to occur on existing roof areas, or for use as an access pathway to construction areas or facilitating removal of demolition materials, shall incorporate a minimum of two (2) layers of ¾” plywood protection on top of 1” polystyrene boards so as to not harm existing roof membrane or substrates, nor void any
existing roof warranties. See Special Conditions Article 15, Roof Warranty Requirements.

14. PRE-BID INSPECTION

a. All pre-bid inspections of work areas shall be scheduled with pre-bid inspection guide, telephone: (573) 882-2228.

15. ROOF WARRANTY REQUIREMENT

a. The Contractor shall submit, before issuance of the "Notice to Proceed", a copy of University of Missouri Roofing System Manufacturer's No Dollar Limit Guarantee, which shall be manually signed by an authorized representative of Manufacturer of each proposed roofing system. Certification shall have original signature. The Guarantee Expiration Date shall be completed following final acceptance of the roof and a manually signed original shall be re-submitted to the Owner.

b. The Contractor shall submit, before the first progress payment, a copy of University of Missouri Roof System Manufacturer's Certification, which shall be manually signed by an authorized representative of Manufacturer of each proposed roofing system. Certification shall have original signature.

c. Following final inspection and acceptance of the roofing system(s) by the Owner and the roofing system manufacturer(s), the Contractor shall submit a fully executed, manually signed University of Missouri Roofing System Manufacturer's No Dollar Limit (NDL) Guarantee executed by the roofing system manufacturer for each building and roofing system provided. Standard Guarantee(s) shall be of the duration specified in Division 7.

d. The University of Missouri three (3) year Contractor's Roofing/Flashing/Sheetmetal Guarantee shall be signed by the roofing contractor after final inspection and acceptance of each roofing system by Manufacturer and by Owner.

e. Owner has existing roof warranties on roofs C, V, and W as designated on the project drawings. These roof areas are to be protected during construction. Although no work is specified for these roof areas, any work, modification, or alteration to these roof systems must be performed in conformance with existing roof warranties. The Contractor shall use a licensed applicator of existing roofing system to make any modification/repair to these roof areas in order for the Owner's existing warranty to remain in full force and effect.
16. MODIFICATION TO INFORMATION FOR BIDDERS

   a. Information to Bidders:

      (1) Referenced Information to Bidders, Page IFB/6.
          Add new Article 15.9.2 as follows:

          15.9.2.1 Within 48 hours of the receipt of bids, the apparent low bidder shall submit to the Director of Facilities Planning and Development an “Affidavit of Supplier Diversity Participation” for every diverse subcontractor or supplier the bidder intends to award work to on the contract. The affidavit will be signed by both the bidder and the diverse firm.

17. MODIFICATIONS TO GENERAL CONDITIONS

   a. General Conditions:

      (1) The Commercial General Liability policy or policies specified in Article 11 shall provide coverage for special hazards, where they exist, such as, but not limited to, the operation of material hoist, blasting or other use of explosives, and damage to underground property.

18. PROJECT SCHEDULING

   a. The project scheduling specification for the project are included immediately after the Special Conditions. For this project the Contractor shall meet the following scheduling requirements.

      (1) Option #1 - Contractor Schedule (Small Projects only): Contractor is responsible for the schedule and must comply with the Owner’s requirements. See Contractor Schedule Specification included in these documents.

19 PROJECT MANAGEMENT/COMMUNICATION REQUIREMENTS

   a. The Contractor shall be represented at the site by both a competent full-time project manager and a full-time, competent superintendent with no other assigned duties or responsibilities from the beginning of the work until its final acceptance, unless otherwise permitted by the Owner’s Representative. The superintendent for the Contractor for the general building work shall exercise general supervision over all subcontractors of any tier engaged on the work with decision-making authority of the Contractor.
20. GENDER NEUTRAL SIGNAGE

   a. All contractor installed signs including signs referenced in General
      Conditions articles 3.5.3 and 10.2.3 shall be gender neutral in wording.

21. CONSTRUCTION WASTE MANAGEMENT

   The goal of Construction Waste Management is to divert construction waste from
   the sanitary landfill. This shall be accomplished through reuse, recycling and/or
   salvage of non-hazardous construction and demolition debris to the greatest
   extent practical. Track and report all efforts related to reuse, recycling and/or
   salvage of materials from the project (including clean fill material). Report all
   material types and weights, where material was diverted, type of diversion,
   documentation (e.g., waste tickets) of this diversion, and applicable dates. In order
   to calculate the diversion percentage, total weights of all landfill material (non-
   hazardous) must be reported.

   This information shall be updated monthly utilizing the Owner's information
   sharing website (Projex - Waste Management Log). Copies of all applicable
   receipts, tickets and tracking logs shall be uploaded to the website or reported as
   required by the project manager. This information shall be in tabular form utilizing
   the form linked below. http://www.cf.missouri.edu/cf/pdc/contractor_information. (This
   information shall be updated monthly with final submission prior to substantial
   completion).

   END OF SECTION
# Section 1.E.1

## Healthcare Construction Guideline

SEPT 2017 Edition

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Section 1 Training Requirements
The purpose of the training requirements for contractors is to ensure that construction project work in and around the healthcare environment is managed in such a way to minimize health and safety risks associated with construction activities and that contractors know and understand their responsibilities.

Required Training
1. Contractor project managers, superintendents and subcontractor foremen will be required to attend the following training:
   - Minimum of One (1) hour training related to “Infection Control & Dust Barriers” and “Healthcare Construction Training for Contractors”.
2. Contractor project managers, superintendents and subcontractor foremen have the responsibility for ensuring that contractor employees are knowledgeable of the training requirements and direct their employees and project work accordingly.
3. Contractors will be required to utilize the MU Hospital online eMeditrack system for initiating work requests of various types, examples may include infection control barriers, utility outage, various permits required.
4. Contractors are required to report in and sign in and out at the designated location per building location each work day upon arrival and exit of the work location.

Training Agenda
At a minimum the topics to be covered in the training include the following:
2. Contractor Training Requirements.

Documentation
1. All employees who receive training will be required to sign their name on a training acknowledgement form stating that they have been oriented to the training requirements.
2. Healthcare Safety and Infection Control Requirements will be in the project contract documents for further review as required.
3. COMPLIANCE VIOLATIONS: Contractors/Vendors who violate the requirements of this Guideline are subject to disciplinary action and removal from the project.

Section 2 Emergency Phone Numbers & Contact Information
Telephone contacts should be used by the contractor for emergency situations which may arise during the construction project. Contact Plan will be identified and coordinated at the project Pre-Construction Meeting by the owner’s representative.

Section 3 Contractor Identification Badge
Contractors working in and around the MUHC facilities will be required to display and wear the “Contractor Identification Badge” and in accordance with the information displayed below. It is the responsibility of the contractor to provide the computer and color printer for reproduction of badges required. Consult the Owner’s Representative for the electronic file.

Contractor ID Badge
1. Contractor is to issue badges to employees as required. (Contractor to validate employee with proof of ID).
2. Contractor to edit the information, print in color, cut out the badges, fold in the center and insert. Contractor will provide badge holders.
3. Contractor shall keep a roster/log of badge required by trade/subcontractor at the project jobsite for reference by the Owners Representative.
4. All badges to be collected and returned to PD&C at the end of the project.
5. Any orientation required will be discussed at the pre-construction meeting with the Owner’s Representative.
6. Contractor employees are to wear the badge on the upper chest facing forward unless approved otherwise for safety reasons.
7. All contractor superintendent and foreman shall attend “Healthcare Construction Training” and affix issued “T” sticker in the circle area on badge as shown. This will show evidence that the employee has completed training.
8. The Badge document will be provided to the Contractor to make copies and distribute as required. See Page HCG 12.

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Section 4 General Safety Requirements for Health Care Projects

The General Contractor and its Subcontractors are responsible for understanding, planning and implementing the following requirements in the management of the project.

1. Make sure shoes/boots and clothing are free of excessive dirt/debris before entering and leaving the construction area.
2. If you leave any dust/dirt or tracks in the occupied area of the healthcare facility, you must stop and clean them up immediately by using a HEPA filtered vacuum and/or a clean dampened floor mop with a UMTH hospital approved furnished cleaning solution.
3. Assure that all construction material, supplies and tools are cleaned and covered with a clean covering material while transporting through the healthcare facility.
4. Ensure that the carts and wheels on tool and supply carts as well as trash/demolition waste carts are properly wiped clean before leaving the construction area. Cleaning/wiping solutions are provided by the hospital and must be approved per direction of the Owner's Representative.
5. Staff and patients ALWAYS have priority and the “Right of Way” in the elevators and corridors.
6. Never use aerosol sprays or cleaning solvents that could dispense fumes, odors or cause potentially allergenic reactions or medical problems to susceptible patients, staff or visitors.

Section 5 Construction-Renovation-Maintenance Risk Assessment (CRMRA)

The “Construction-Renovation-Maintenance Risk Assessment” (CRMRA) planning process establishes criteria to be used and measures to be taken for the protection of patients, healthcare workers, visitors and contractors, from construction/renovation activities which could lead to infections or compromise existing life safety systems in the healthcare facility.

Once the Contractor is selected, they will be required, and the Subcontractors as applicable to participate in the “CRMRA” planning process for orientation of project requirements and help in identifying any additional project needs or risks prior to any contract construction work commencing.

The owner’s representative will work with the contractor to coordinate and facilitate these CRMRA planning activities with MUHC engineering services, infection control department and others as required during the duration of the project.

Section 6 Construction – Renovation – Maintenance Infection Control Risk Mitigation Criteria

The “Construction–Renovation–Maintenance Infection Control Risk Mitigation Criteria” (CRMICRMC) is a process to evaluate construction projects for required interventions during construction in order to minimize Hospital Acquired Infections (HAI’s), and controlling dispersal of air and/or water-borne infectious agents concealed within the building components.

All construction activities shall be defined and managed in such a way that occupant’s exposure to dust, moisture and their accompanying hazards is limited.

1. Construction–Renovation–Maintenance Infection Control Risk Mitigation Criteria and the Construction–Renovation–Maintenance Infection Control Risk Mitigation Permit which will be used for all MUHC construction and renovation projects.
2. Any work required outside the main project limits will require a NEW Infection Control Risk Assessment.
3. The owner’s representatives and Contractor will work together to coordinate the assessment and determine the requirements and permit.
4. The owner’s representative will ensure that all required infection control interventions and needed life safety measures required for the project are in place by the contractor prior to starting work. (i.e. barrier walls, tacky mats, required exits, etc.)
5. The contractor shall follow all requirements to support the “Construction – Renovation- Maintenance Infection Control Risk Mitigation Criteria”.
6. The contract documents and CRM IC Permit will provide requirements specific to the project.
7. Work outside of construction limits. Prior to contractor performing any work outside of construction limits, the owner’s representative must be notified.
8. Contractors that violate the requirements of the “Construction – Renovation- Maintenance Infection Control Risk Mitigation Criteria/Permit” will be removed from the project.

Section 7 Construction of Dust Barrier Walls
Infection control is the number one health concern in a construction project. Infection can occur when workers are not cautious about keeping dust, bacteria, mold, etc. from becoming airborne during the construction process. For these reasons, barrier walls are built to isolate dust and fumes in the construction site to separate the patient care and public areas of the healthcare facility.

Dust Barriers Walls and Contamination Reduction
1. A signed copy of the “CRM Infection Control Construction Permit” shall be kept at the job site at all times. Large AND small projects may have several “CRM Infection Control Construction Permits” issued as project phases, needs and assessments evolve.
2. Barriers are required to contain the ceiling envelope, chases, interstitial spaces, etc.
3. When access and exiting to the construction site can only be accomplished through a public area, the interior space of the construction site must be cleaned once every 8 – hour shift to control excessive dust and ventilation filtering issues. Debris shall be removed daily.
4. A temporary fire resistant 6 mil., polyethylene dust barrier is required to control dust while the rigid barrier is being constructed as well as at the end of the job during removal of the rigid barrier.
5. Contractors are responsible to ensure that barrier systems and walls are properly constructed, penetrations sealed and maintained for effectiveness for the duration of the project. Anytime polyethylene is used in a control barrier, it must be fire resistant, 6 mil. See “Approved Equipment and Product Information”.
6. Once barrier walls are built they are required to be cleaned or wiped down prior to the start of work.
7. Barrier doors and exits from the construction site must be installed with a closer and kept in good working order with positive latching.
8. Keep doors closed except when in use in order to minimize migration of dust and to maintain negative air pressure relationships.
9. Doors must have a seal/door sweep installed at the undercut and weather stripping around the metal frame to control the migration of dust from the construction site.
10. Doors in barrier walls which are not in use by the contractor to the public spaces must be sealed off and taped around the door, frame and threshold undercut, in order to minimize migration of dust and to maintain negative air pressure requirements.
11. If an elevator, dumb waiter, pneumatic tube system, stairway, linen chute, or any other chased or open type building system is located within the construction site, a barrier wall system will be required to be built around the open building system from deck to deck and properly sealed at top, bottom and sidewalls.
12. Upon completion of barriers and prior to beginning work, the contractor shall notify the owner’s representative and healthcare construction compliance manager to coordinate an inspection and verify that the barrier wall meets requirements and that acceptable negative air pressure is being achieved.

Special Notes:
1. See “Barrier Wall Design Details” for additional requirements.
2. See section in this manual on “Ventilation and Negative Air Pressure Requirements” for additional requirements when building dust barrier systems and walls.
3. See section in this manual on “Approved Equipment and Product Information”.

Section 8 Ventilation and Negative Air Pressure Requirements
The first step is building of dust barrier walls to isolate the construction site from patient care and public areas of the healthcare facility to protect patients and the public from construction related dust, fumes and other activities. The effectiveness of barrier walls is minimal unless the construction site is also under negative air pressure. (i.e. air must flow from clean or public spaces into the dirty or construction site).

The following are the “Ventilation and Negative Air Pressure Requirements” which contractors shall strictly follow in the management and construction of their projects.

Negative Air Pressure Requirements
1. The contractor shall provide all necessary “Negative Air HEPA Filtered Ventilation Units” required for the negative air requirements of the construction area.
2. See section in this manual on “Approved Equipment and Product Information” for more information.
3. The contractor will work with the owner’s representative to determine best methods and equipment set up requirements for the project.
4. The contractor shall run the “Negative Air HEPA Filtered Ventilation Unit” in the work zone location prior to starting any barrier wall construction or work.
5. “Negative Air HEPA Filtered Ventilation Units”, may be connected to normal or emergency power and shall run continuously, 24/7. Critical areas of the healthcare facility may require the HEPA filtered ventilation units to be connected to emergency power only.
6. A secondary method to maintain negative air pressure is by using the hospitals exhaust system attached to the “Negative Air HEPA Filtered Ventilation Units”. This process and installation must be approved by the owner’s representative.
7. **Pre-Filters shall be changed at least twice weekly during demolition and drywall sanding and a minimum of once a week during other times.** This frequency requirement may be relaxed for lower risk projects and on prior approval from the owner’s representative.
8. The contractor shall furnish and install the negative air-monitoring device to monitor daily negative air pressure -0.01 inches of water column. See section in this manual on “Approved Equipment and product Information”.
9. The contractor shall record daily on the “Negative Air Pressure and Filter Change Log” the air pressure reading in the construction area to insure that appropriate negative air pressure is being maintained.
10. See “Negative Air Pressure and Filter Change Log” form at the end of this section.

**Barrier Walls and Negative Air Ventilation**

**Special Infection Control Requirements and Interventions for Contractors When Working In (Surgical OR’s, Sterile Processing, Bone Marrow Transplant)**

Construction activities can lead to increased Aspergillus counts in the air and increased risk for Aspergillus infections in high risk patients. In an effort to minimize and contain dust, and lessen the possibility of microbial contamination during renovation work in high risk special care units, interventions are typically initiated and maintained until the completion of the project. The owner’s representative, MUHC infection control and engineering services departments will be involved in contractor orientation for project work procedures in high risk special care units.

Special work scheduling in these special care units may be a requirement of the project and contractor.

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**Negative Air Pressure and Filter Change Log**

Project Name: __________________________________________
Location: ______________________________________________

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Contractor to complete the **Negative Air Pressure and Filter Change Log** daily at the start of each work shift and maintain completed forms in the project safety file for future review. Post this log inside construction site entrance for use and review.

### Pressure Relationship Illustration

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<thead>
<tr>
<th>Pressure Reading</th>
<th>Negative</th>
<th>Better</th>
<th>Minimum</th>
<th>Even</th>
<th>Positive Pressure</th>
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<tr>
<td>.0</td>
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**Section 9  Interim Life Safety Measures Assessment (ILSM)**
Interim Life Safety Measures (ILSM) are a series of administrative actions that must be taken to compensate temporarily for the hazards posed by existing NFPA Life Safety Code 101, 2014 edition deficiencies, other building code issues or construction activities. Examples of when construction activities require ILSM’s to be implemented are as follows:
1. Fire alarm system, detection, and/or sprinkler system are impaired or disabled.
2. Normal exits or exit routes and/or exit lighting have been compromised.
3. Re-routing of traffic due to construction activities.
4. Temporary narrowing of the corridor.
5. Deficiencies in fire and/or smoke separations and systems caused by construction activities. (Changes to wall, door, dampers, penetrations, etc.)
8. Hot work.

Whenever an “Interim Life Safety Measure” is identified for implementation during the construction project, there will typically be measures or actions required by both the MUHC engineering services department as well as the contractor. The contractor has the responsibility prior to the beginning of work and throughout the project to become familiar with the ILSM in order to plan and identify what construction related activities will require an evaluation of ILSM’s as noted in the ILSM. The “Interim Life Safety Measures Evaluation” is a required team effort.

Section 10 Noise and Vibration Control Management
Construction related noise and vibration control and mitigation measures are to be implemented when the contractor is working in and around healthcare facilities. The contractor shall work with the owner’s representative to develop means and methods for controlling excessive noise and vibration during construction.

Section 11 Above Ceiling Work Permit
All contractors who need access above ceilings in the public areas of the healthcare facility and outside the approved construction site shall be required to obtain an “Above Ceiling Work Permit” from the owner’s representative prior to disrupting or lifting out ceiling tiles. The contractor shall notify the owner’s representative fourteen (14) days prior to the need for ceiling access in order to process and evaluate any special requirements of the permit.

General Requirements for Working above Ceilings (“Above Ceiling Permit Required”)
1. The Construction-Renovation-Maintenance Infection Control Risk Mitigation Permit issued for the work activity will note specific requirements for Barrier Types.
2. Any cable and wiring pulls through the healthcare facility which will require a ceiling disturbance must be approved in advance by obtaining an “Above Ceiling Work Permit”.
3. Ceiling tiles must not be left displaced by the contractor if he walks away from the area unless the area has been contained by an approved “Dust Barrier”.
4. If a ceiling tile is damaged by the contractor he should notify the owner’s representative to acquire a new tile for replacement.
5. All debris shall be cleaned up by the contractor daily when working in cabling and electrical closets.
6. Pulling of communication cables in a patient care or other critical care areas will require special scheduling. Consult with the owner’s representative for coordination.
7. When cables must be pulled in an active patient care unit, a dust partition must be used at the site of entry and exit of the cable.
8. The dust partition may be attached to the false ceiling because taking it to deck may interfere with the work.
9. The site of entry and exit of the cable or other above ceiling work must be HEPA vacuumed (ceiling tiles and pipes) before the work begins.

Section 12 Lock Out/Tag out Permit
The contractor shall give a minimum fourteen (14) working days notice to the owner’s representative for shutdown work on electrical systems or other critical utility systems which could significantly impact the healthcare facilities operations, the contractor will be required to plan these “Lock Out/Tag Out” activities ten (14) days in advance. Major
utility shutdowns may require weeks of notice and planning. The contractor shall work with the owner’s representative to identify these time planning requirements.

Section 13 Utility Systems Shutdown & Service Permit
The “Utility Systems Shutdown & Service Permit” is to be used when work on an existing utility system may cause a disruption within the MUHC facility.

“Utility Systems” shall be defined as any system that would hinder the delivery of patient care and hospital operations should the system be interrupted for any reason. Planning for this work usually requires a contingency plan by the healthcare facility management department to address any failure of the utility system.

Utility Shutdown
Any and all utility or system connections, shut-off, or interruptions must be scheduled with the owner’s representative prior to commencement of the work. This work shall be defined as a “Utility Shutdown” and notice shall be made to the owner’s representative to coordinate the request and facilitation.

Utility Service - (System must be worked live or energized)
In addition to utility system connection, shut-off, or interruption, the contractor must also schedule any work on existing utility systems that either do not require interruption or cannot be interrupted to accomplish the work. This type of work shall be defined as “Utility Service” and notice shall be made to the owner’s representative.

The contractor shall give up to 14 working days’ notice to the owner’s representative in order to properly plan and coordinate required activities.

All permits are to be posted at the job site location for the duration of the permit. When complete the contractor shall file the permits in the contractor job safety file for future review as may be required.

Section 14 Hot Work & Permit
Hot work shall be defined as welding, brazing, cutting soldering, grinding, or other activities which produce sparks or use flame which are capable of initiating fires or explosions.

All contractors performing construction, renovation and installation work for MUHC facilities are required to follow the requirements and provisions of NFPA 51B and the owner’s representative procedures related to “Hot Work” and obtaining a “Hot Work Permit”.

The following are the requirements for a contractor to obtain a “Hot Work Permit”.

1. Contractors shall contact the owner’s representative two (2) days, forty eight (48) hours in advance to request a hot work permit. A request for complex projects which requires extensive planning on behalf of the owner’s representative may require a longer notice period.
2. All hot work sites are inspected by the owner’s representative using the requirements printed on the “Hot Work Permit”.
3. The owner’s representative will issue a “Hot Work Permit” tag to be attached in the vicinity of the actual hot work being performed. Upon completion, the hot work tag shall be returned to the owner’s representative.
4. “Hot Work Permits” will be issued for only one shift unless other arrangements have been made with owner’s representative. All permits expire 30 minutes prior to the end of the shift.
5. If hot work cannot be completed within one work shift, the contractor is responsible for obtaining approval for a revised permit extension from the owner’s representative. The contractor is responsible for meeting all the safety requirements required by the permit for any and all extensions granted.
6. The contractor shall be responsible for supplying a trained worker for the requirement of a fire watch during the actual hot work. The fire watch’s only responsibility will be as a fire watch.
7. A fire watch shall be provided for 30 minutes following the completion of work, including during lunch and breaks by the contractor.
8. The contractor shall provide at a minimum a ten pound (10) ABC fire extinguisher that has a current, valid inspection tag.
9. A copy of the “Hot Work Permit” shall be kept in the general contractors project file for future review as may be required.

10. The contractor shall upload completed Hot Work Permits to the owner’s electronic construction document program (Projex 4) in the Hot Work Permit folder for the project not less than on a weekly basis or as instructed by the owner’s representative.

**Section 15  Exterior Construction Site Helicopter Landings**

Any contractor doing construction work or activities on the hospital grounds, property or on the roof of the buildings is required to follow the guidelines regarding construction activities during helicopter landings on the helipad. The contractor shall coordinate with the owner’s representative roof access, roof protection, keying, roof and safety precautions to be taken when working close to the roof edge regarding helicopter landings and contractor responsibilities during this time. In addition, the placement of vertical installations such as tall lighting poles and the use of project cranes or hoisting on the hospital property might affect the “Final Approach and Take Off” of medical center ambulance helicopters. It is essential that the contractor plans these types of activities with the owner’s representative prior to the beginning of work.
Section 16 Required Forms, Permits, Postings and Documentation

Note: Refer to the sections in the “Healthcare Construction Requirements” manual for detailed information on each form and permit approval procedure.

<table>
<thead>
<tr>
<th>Category</th>
<th>Required Notice</th>
<th>Form Permit Approval</th>
<th>Job Site Posting</th>
<th>Contractor Safety File</th>
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<tbody>
<tr>
<td>CRM Infection Control Construction Permit</td>
<td>Before Starting</td>
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<tr>
<td>Above Ceiling Permit</td>
<td>14 Days</td>
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<tr>
<td>Utility Systems Shutdown &amp; Service Permit</td>
<td>14 Days</td>
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<td>Fire Protection System Impairment Permit</td>
<td>14 Days</td>
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<td>√</td>
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<tr>
<td>Hot Work Permit</td>
<td>2 Days</td>
<td>√</td>
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</tr>
<tr>
<td>Lock Out/Tag Out Permit</td>
<td>14 Days</td>
<td>√</td>
<td>√</td>
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<tr>
<td>CRM Interim Life Safety Measures Assessment</td>
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<td>Negative Air Pressure Log</td>
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<td>CRM Risk Assessment</td>
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<td>Construction Safety Deficiency Notice</td>
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<tr>
<td>Violations and “Notice To Contractor”</td>
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<td>Hazardous Material Abatement Signage</td>
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<tr>
<td>Required Construction Jobsite Signage</td>
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<tr>
<td>Interim Life Safety Signage</td>
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<tr>
<td>Contractor &amp; Employee Training Acknowledgment</td>
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<tr>
<td>Contractor Safety Meeting Minutes</td>
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</tbody>
</table>

The contractor will be required to furnish and install a “Project Safety Information” bulletin board on their project site for posting of required safety information. Small, short duration projects may have this requirement waived by the owner’s representative.

LEGEND CRM = Construction-Renovation-Maintenance

Section 17 Project Cleaning and Barrier Removal Process

The following is the typical sequence prior to the removal of barrier walls.

With the barrier in place and with the “Negative Air HEPA Filtered Ventilation Unit” running, the contractor will HEPA vacuum all horizontal and vertical surfaces.

1. Clean the covers that are isolating the HVAC ducts.
2. Clean the outside of the negative air HEPA machine and its exhaust duct.
3. The contractor shall notify the owner’s representative to schedule a walk-through of the clean space for inspection and approval prior to removal of the barrier wall.
4. Following all job site cleaning and flushing of plumbing, the contractor can begin the barrier cleaning process.
5. During construction or removal of barrier walls, fire resistant polyethylene barriers must be put into place to help control any construction or demolition dust of the barrier wall system.

6. MUHC must approve removal of any Infection Control or other barriers. Prior to removal of the temporary fire resistant polyethylene barrier, it shall be vacuumed with a HEPA vacuum to eliminate any dust attached to the plastic. The polyethylene barrier is then wiped down with the use of damp cleaning cloths and using a hospital furnished approved infection control cleaning solution. The contractor shall roll or fold the polyethylene in on itself creating as little dust as possible prior to transporting out of the building in a covered cart.

7. Remove the covers or caps from any and all HVAC system supply, return and exhaust ducts and restore the HVAC system.

8. The “Negative Air HEPA Filtered Ventilation Unit” is removed from the project site once the HVAC system is verified is operating properly.

If Air Sampling Is Required
When construction/renovation is done and completed in or near a high risk assessment critical care unit (i.e. Burn Unit, Operating Rooms, Intensive Care, etc.) there may be a requirement to do air sampling after the negative air system has been removed and the building HVAC system has been restored. This will be a requirement only if the infection control department determines the need at the end of the project and prior to occupancy.

Section 18 Approved Equipment and Product Information

“NEGATIVE AIR HEPA FILTERED VENTILATION UNIT”, HEPA filter equipped negative air machines that provide rough in filters, primary filters and a HEPA final filter. Rating of 300 to 2000 cubic feet per minute, (CFM). HEPA filters must be a minimum 99.97% efficient @ 0.3 microns. Differential pressure alarm required if not installed in another fashion to monitor construction site negative air of – 0.01 water column. Or approved equal.

- MICRO Trap Corporation, Models MT 1000 or Model MT 2000. 1300 W. Steel Road, No. 2 Morrisville, PA 19067 (215) 295-8208 or (877) 646-8208.
- ABATEMENT Technologies, Inc. Model HEPA-AIRE PAS2400HC Portable Air Scrubber or Model PAS1200HC 605 Satellite Blvd. Suite 300 Suwanee, GA 30024 (800) 634-9091

“HEPA VACUUM”, A shop style vacuum with a HEPA filter cartridge at 99.97% filtration @ 0.3 microns. Or approved equal.

- ABATEMENT Technologies Inc. Model V1300H Hip Mounted HEPA Vacuum, designed for use on scaffolding and mobile conditions such as ceiling tile type cleaning. Lightweight at 6.4 lbs. 605 Satellite Blvd. Suite 300 Suwanee, GA 30024 (800) 634-9091.

“ADHESIVE WALK OFF MATS”, 24” x 36” Tacky Mat. Peel up dirty layer and dispose to reveal a new, fresh clean tacky mat.

- Tacky walk off mat No. 5838 24” x 36”, 60 tacky mats to a unit. Four units per case. 3M Company, St. Paul, MN 55144 (888) 364-3577. Or approved equal.

“NEGATIVE AIR PRESSURE INDICATOR”, Manometer.

- Model “Mark II Model No. 25 inclined-vertical Manometer. Dwyer Instruments Inc. PO Box 373, Michigan City, IN 46361 (219) 879-2000.
- MICRO Trap Corporation, Model Tri/Mon, digital recording manometer for tracking differential pressure. 1300 W. Steel Road, No. 2 Morrisville, PA 19067 (215) 295-8208 or (877) 646-8208.
“PORTABLE WORK ENCLOSURE”, For temporary fire resistant polyethylene dust barrier. System components supplier of zip poles, door opening access zippers, dust sealing system parts, etc.

- Zip Wall, LLC. 37 Broadway, Arlington, MA 02474 (800) 718-2255. Or approved equal.


Example of Badge for Contractor use -

![Example of Badge](image)

---

**Protocol for Hospital Contractor Badges:**

Contractor to issue badges to employees as necessary. (Need to show proof of ID)

Contractor to edit the information, print in color, cut out the badges, fold in the center and insert in badge holders.

Contractor shall keep a log of badged employees on site for reference by MU as necessary.

All permits to be collected and returned to MU at the end of the project.

Any orientation required will be discussed at the preconstruction meeting with the Owner’s Representative.
SECTION 19  Health Care Construction Cleaning Definitions

Construction Clean
1. Remove tools & equipment from the work area.
2. Remove all bulk trash from the work area.
3. Thoroughly sweep all floor surfaces in the work area utilizing a dust compound (floor sweep) material.
4. Dry wipe all horizontal & vertical surfaces in the work area. Surfaces to include but not limited to walls, window sills, doors & door frames, base trim, casework (inside & out), fixtures, and wall-mounted equipment.
5. Sweep all floor surfaces utilizing a dust mop.
6. Wet mop all floor surfaces.

Thorough Clean
1. To be implemented only after Construction Clean procedures have been completed.
2. Wet wipe all horizontal and vertical surfaces utilizing a MUHC – Infection Control Department approved germicidal disinfectant. Surfaces to include but not limited to walls, window sills, doors & door frames, base trim, casework (inside & out), all fixtures, and wall-mounted equipment.
3. Wet mop all floor surfaces utilizing a MUHC Infection Control Department approved germicidal disinfectant.

Terminal Clean
1. To be implemented only after Through Clean procedures have been completed.
2. Cleaning procedures shall be conducted by MUHC trained Environmental Services, Sterile Processing or Surgical Services staff only.
3. Thoroughly clean and disinfect surfaces on the ceiling such as diffusers, light fixtures, and ceiling mounted devices & equipment.
4. Thoroughly clean and disinfect all equipment in the work area.
5. Thoroughly clean and disinfect all flooring including moving equipment & furnishings to allow access to all floor surfaces.
6. Move all portable equipment and furnishings away from the walls. Wet wipe and disinfect all wall surfaces and wall mounted equipment.
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Option #1

1. GENERAL

a) Time is of the essence for this contract. The time frames spelled out in this contract are essential to the success of this project. The University understands that effective schedule management, in accordance with the General Conditions and these Special Conditions is necessary to ensure that the critical milestone and end dates spelled out in the contract are achieved.

b) Related Documents
   Drawings and general provisions of the Contract, including General Conditions’ Article 3.17 shall apply to this Section.

c) Stakeholders
   A Stakeholder is anyone with a stake in the outcome of the Project, including the University, the University Department utilizing the facility, the Design Professionals, the Contractor and subcontractors.

d) Weather
   (1) Contractor acknowledges that there will be days in which work cannot be completed due to the weather, and that a certain number of these lost days are to be expected under normal weather conditions in Missouri.
   (2) Rather than speculate as to what comprises “normal” weather at the location of the project, Contractor agrees that it will assume a total of 44 lost days due to weather over the course of a calendar year, and include same in its as planned schedule. For projects of less than a calendar year, lost weather days should be prorated for the months of construction in accordance with the following schedule.
   (3) Anticipated weather days for allocation/proration only. For projects lasting 12 months or longer, the 44 days per year plus whatever additional months are included will constitute normal weather.

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<thead>
<tr>
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<th>Feb</th>
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<td>4</td>
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<td>5</td>
</tr>
</tbody>
</table>

2. SCHEDULING PROCESS

a) The intent of this section is to insure that a well-conceived plan, that addresses the milestone and completion dates spelled out in these documents, is developed with input from all stakeholders in the project. Input is limited to all reasonable requests that are consistent with the requirements of the contract documents, and do not prejudice the Contractor’s ability to perform its work consistent with the contract documents. Further, the plan must be documented in an understandable format that allows for each stakeholder in the project to understand the plan for the construction and/or renovation contained in the Project.

b) Contractor Requirements
   (1) Schedule Development
   Contractor shall prepare the Project Schedule using Primavera SureTrack or P3,
Microsoft Project, Oracle P6, or other standard industry scheduling software, approved by the Owner’s Representative.

(2) Schedule Development  
Within 2 weeks of the NTP, contractor shall prepare a schedule, preferably in CPM format, but in detailed bar chart format at a minimum, that reflects the contractor’s and each subcontractors plan for performing the contract work.

Contractor shall review each major subcontractor’s schedule with the sub and obtain the subcontractor’s concurrence with the schedule, prior to submitting to the University.

(3) Schedule Updates.  
(a) Schedule Updates will be conducted once a month, at a minimum. Actual Start and Finish dates should be recorded regularly during the month. Percent Complete, or Remaining Duration shall be updated as of the data date, just prior to Contractor's submittal of the update data.  
(b) Contractor will copy the previous months schedule and will input update information into the new monthly update version.  
(c) Contractor will meet with the Owner’s Representative to review the draft of the updated schedule. At this meeting, Owner’s Representative and Contractor will:  
(i) Review out of sequence progress, making adjustments as necessary,  
(ii) Add any fragments necessary to describe changes or other impacts to the project schedule and  
(iii) Review the resultant critical and near critical paths to determine any impact of the occurrences encountered over the last month.

(4) Schedule Narrative  
After finalization of the update, the Contractor will prepare a Narrative that describes progress for the month, impacts to the schedule and an assessment as to the Contractor’s entitlement to a time extension for occurrences beyond its control during the month and submit in accordance with this Section.

(5) Progress Meetings  
(a) Review the updated schedule at each monthly progress meeting. Payments to the Contractor may be suspended if the progress schedule is not adequately updated to reflect actual conditions.  
(b) Submit progress schedules to subcontractors to permit coordinating their progress schedules to the general construction work. Include 4 week look ahead schedules to allow subs to focus on critical upcoming work.

3. CRITICAL PATH METHOD (CPM)  
a) This Section includes administrative and procedural requirements for the critical path method (CPM) of scheduling and reporting progress of the Work.  
b) Refer to the General and Special Conditions and the Agreement for definitions and specific dates of Contract Time.  
c) Critical Path Method (CPM): A method of planning and scheduling a construction project where activities are arranged based on activity relationships and network calculations determine when activities can be performed and the critical path of the Project.  
d) Critical Path: The longest continuous chain of activities through the network schedule that establishes the minimum overall project duration.
e) Network Diagram: A graphic diagram of a network schedule, showing the activities and activity relationships.

f) Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling, the construction project. Activities included in a construction schedule consume time and resources.

g) Critical activities are activities on the critical path.

h) Predecessor activity is an activity that must be completed before a given activity can be started.

i) Milestone: A key or critical point in time for reference or measurement.

j) Float or Slack Time: The measure of leeway in activity performance. Accumulative float time is not for the exclusive use or benefit of the Owner or Contractor, but is a project resource available to both parties as needed to meet contract milestones and the completion date.

k) Total float is herein defined as the measure of leeway in starting or completing an activity without adversely affecting the planned project completion date.

l) Weather: Adverse weather that is normal for the area must be taken into account in the Contractor's Project Schedule. See 1.d.3, above.

m) Force Majeure Event: Any event that delays the project but is beyond the control and/or contractual responsibility of either party.

n) Schedule shall including the following, in addition to Contractor’s work.
   (1) Phasing: Provide notations on the schedule to show how the sequence of the Work is affected by the following:
      (a) Requirements for phased completion and milestone dates.
      (b) Work by separate contractors.
      (c) Work by the Owner.
      (d) Coordination with existing construction.
      (e) Limitations of continued occupancies.
      (f) Uninterruptible services.
      (g) Partial occupancy prior to Substantial Completion.

o) Area Separations: Use Activity Codes to identify each major area of construction for each major portion of the Work. For the purposes of this Article, a "major area" is a story of construction, a separate building, or a similar significant construction element.

4. TIME EXTENSION REQUEST
   a) Refer to General Conditions of the Contract for Construction, Article 4.7 Claims for Additional Time.

   b) Changes or Other Impacts to the Contractor’s Work Plan
      The Owner will consider and evaluate requests for time extensions due to changes or other events beyond the control of the Contractor on a monthly basis only, with the submission of the Contractor’s updated schedule, in conjunction with the monthly application for payment. The Update must include:
      (1) An activity depicting the event(s) impacting the Contractors work plan shall be added to the CPM schedule, using the actual start date of the impact, along with actually required predecessors and successors.
      (2) After the addition of the impact activity(ies), the Contractor will identify subsequent activities on the critical path, with finish to start relationships that can be realistically adjusted to overlap using good, standard construction practice.
         (a) If the adjustments above result in the completion date being brought back within the contract time period, no adjustment will be made in the contract time.
         (b) If the adjustments above still result in a completion date beyond the contract completion date, the delay shall be deemed excusable and the contract
completion date shall be extended by the number of days indicated by the analysis.

(c) Contractor agrees to continue to utilize its best efforts to make up the time caused by the delays. However the Contractor is not expected to expend costs not contemplated in its contract, in making those efforts.

c) Questions of compensability of any delays shall be held until the actual completion of the project. If the actual substantial completion date of the project based on excusable delays, excluding weather delays, exceeds the original contract completion date, AND there are no delays that are the responsibility of the contractor to consider, the delays days shall be considered compensable. The actual costs, if any, of the Contractor’s time sensitive jobsite supervision and general conditions costs, shall be quantified and a change order issued for these costs.
ROOFING SYSTEM MANUFACTURER’S NO DOLLAR LIMIT (NDL) GUARANTEE

(Manufacturer to complete applicable sections. Submit separate Guarantee form for each building and roofing system prior to issuance of the Notice to Proceed.

Roof System Manufacturer (RSM): ____________________________________________

Address: __________________________________________________________________

City, State, Zip: __________________________________________________________________

Guarantee Administrator Telephone: __________________________________________________________________

Guarantee Administrator Email: __________________________________________________________________

Owner (Campus): __________________________________________________________________

Building Name: __________________________________________________________________

Address: __________________________________________________________________

City, State, Zip: __________________________________________________________________

Owner’s Project No. and Name: __________________________________________________________________

Roof Type: __________________________________________________________________

Description of roof area(s): _______________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

Description of roof system components: ____________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

Guarantee Number: __________________________
Effective Date: The guarantee period commences on the date of the Roofing Manufacturer's and the Owner's final inspection and acceptance of the roof installation as provided in the contract documents. RSM to re-submit guarantee following final acceptance of the roof by Owner and RSM with the Effective and Expiration Dates entered.

Guarantee Duration: ____________________________

Guarantee Expiration Date: _______________________

Roofing Contractor (Approved Installer):

Address: __________________________________________

City, State, Zip: _______________________________________

Telephone: __________________________________________

Email: ______________________________________________

Guarantee:

In the event of a leak in the covered roof system prior to the guarantee expiration date, ____________________________ (RSM) guarantees to the University of Missouri that ____________________________ (RSM) will complete the necessary repairs and pay for all materials, labor and related expenses required to restore the roof to a watertight condition, provided such leaks are the result of defects in material, defects in workmanship in installing the roofing system or ordinary wear and tear. RSM further guarantees that permanent repairs shall be completed promptly or, if permanent repairs cannot be completed in a timeframe acceptable to the Owner, then RSM shall make temporary repairs. The University of Missouri will not be responsible for any expenses other than the Owner’s incidental coordination resulting from covered repairs. There is no dollar limit on the covered repairs. Leaks caused by materials or components that are not part of the roofing manufacturers system are not covered under this guarantee.

The RSM shall notify the Owner 60 calendar days prior to the expiration of the guarantee period to ensure the Owner is aware of the expiration date.

Owner’s Responsibilities:

The Owner shall maintain the roof in a reasonable condition and shall trim vegetative material such that it does not encroach on the roofing system. The Owner shall notify the RSM, or cause the RSM to be notified, in the event of any modification to the roofing system related to building work, structural changes, installation of roof mounted equipment or similar revisions. In the event of a failure to notify the RSM of such modifications, this guarantee shall remain in full force and effect provided RSM required repairs are completed to the affected area. In the event of a leak in the covered roofing system and prior to undertaking any repairs, the Owner shall promptly notify the RSM directly by email. RSM will respond within three working days with a proposed schedule for inspecting and
repairing the roof or providing temporary repairs. If an emergency condition exists as determined by the Owner which requires immediate repair to protect the building, occupants, or contents, Owner is authorized to complete such temporary repairs. The RSM shall reimburse the Owner for the reasonable cost of such repairs only to the extent those repairs are required to protect the building, occupants or contents.

**Exclusions:**
This guarantee does not cover leaks which occur as a result of the following:

1. Natural disasters including winds in excess of 90 MPH, hail, floods, earthquake, lightning or other extraordinary natural events.
2. Damage by fire.
3. Impacts by foreign objects.
4. Movement, cracking or settlement of the building.
5. Excessive foot traffic on the roofing system.
6. Chemical or solvent damage.
7. Failure by the Owner to maintain the roof in a reasonable manner.
8. Modifications to the roofing system discussed above.

This guarantee shall run concurrently with the Roofing Installer’s Three-Year Roofing, Flashing, Sheet Metal Guarantee. The Owner shall have no duty to inspect the roof or commit to RSM inspections as a condition of this Guarantee. No modifications shall be made to this guarantee.

**Guarantee Acceptance:**

Owner: ______________________________________________________________

RSM: ______________________________________________________________

Name and title of signer: ______________________________________________

Name and title of signer: ______________________________________________

Signature on behalf of the Curators of the University of Missouri: ____________

Authorized signer: _____________________________________________________

Date: ______________________
SECTION 1.E.4

CONTRACTOR's ROOFING/FLASHING/SHEET METAL GUARANTEE
(Revised 12/94)

WHEREAS

herein referred to as Roofing Contractor, certify that they have furnished and installed all roofing, flashing, sheet metal and related components in accordance with the Contract Documents and as required by the Roofing System Manufacturer’s installation instructions on the facility described below:

Facility: ____________________________________________________________

Owner: Curators of the University of Missouri
c/o Associate Vice Chancellor – Facilities
Room L100, General Services Building
University of Missouri
Columbia, Missouri 65211

Date of Full Completion: ____________________________________________

Approximate Area of Roof: __________________________________________

Type of Roofing Material: ____________________________________________

Manufacturer’s Specification Number: ________________________________

Thickness and Type of Roof Insulation: ________________________________

NOW, THEREFORE, Roofing Contractor guaranties to the Owner, subject only to the exclusions stated hereinafter, that all roofing, flashing and sheetmetal work is fully and integrally watertight and is free from faults and defects in material or workmanship, and is guaranteed for a period of three (3) years from date of full completion of work.

EXCLUSIONS: This guarantee does not cover, and Roofing Contractor shall not be liable for the following:

1. Damage to the roofing system caused by fire, lightning, tornado, hurricane or hailstorm.

2. Damage to roofing system caused by significant settlement, distortion or failure of roof deck, walls, or foundations of building, excepting normal building expansion and contraction is not a part of this exclusion.

3. Abuse by the Owner and/or third parties.

REPAIRS: Owner shall promptly notify Roofing Contractor, in writing, of the need for repair of roofing, flashing, or sheet metal:

1. Roofing Contractor, within eight (8) hours after receipt of such notice, shall make emergency repairs at its expense, as required to render the facility watertight.

2. Within five (5) days after receipt of such notice, Roofing Contractor shall at its expense correct any faults or defects in material or workmanship.

3. Should needed repairs not be covered by this guarantee, Roofing Contractor, after having obtained Owner’s written consent, shall make such repairs at Owner’s expense. Following said repairs, this guarantee shall thereafter remain in effect for the unexpired portion of the original term. If Owner does not so consent or repairs are made by others than the Roofing Contractor, this guarantee shall terminate for those parts of the roof affected by the repair.
4. In the event that Owner has notified the Roofing Contractor of the need for repairs and (i) Roofing Contractor does not immediately make repairs, or (ii) Roofing Contractor disclaims responsibility for the repairs and Owner disagrees, or (iii) Owner considers Roofing Contractor=’s quoted cost for repairs not covered by this guarantee to be unreasonable and, an emergency condition exists which requires prompt repair to avoid substantial damage or loss to Owner, then, Owner may make such temporary repairs as he finds necessary and such action shall not be a breach of the provisions of this guarantee.

ANNUAL INSPECTIONS: Roofing Contractor shall inspect roof installation prior to each of the three anniversary dates from date of full completion of the work.

1. Inspection team to include Roofing Contractor, Roof Manufacturer, and Owner=’s Representative.
2. Inspection of total roof system will be included in the annual inspections.
3. All defects in total roof system will be corrected by the Roofing Contractor within 30 days of inspection.
4. Roof manufacturer will certify by a written report that roof inspection has been completed, defects are acknowledged, and will warrant any repairs.
5. All corrective work completed by Roofing Contractor shall be warranted as approved by the Roofing Manufacturer.

ROOF MODIFICATION: Should Owner require work to be done on roof of said facility including modifications, alternations, extensions or additions to roof and including installation of vents, platforms, equipment, bracings or fastenings, Owner shall notify Roofing Contractor and give Roofing Contractor an opportunity to make recommendations as to methods necessary to safeguard against damage to roofing covered by this guarantee. Failure of Owner to give Roofing Contractor such opportunity or failure to follow methods recommended by Roofing Contractor shall render this guarantee null and void to the extent such failure should result in damage to roofing covered by this guarantee.

NOTICES: Notification of Roofing Contractor by Owner, shall be fulfilled by sending notice to Roofing Contractor.

IN WITNESS WHEREOF, we set our hands this _____ day of ___________, 20___.

By:__________________________________________
Title:________________________________________
For Roofing Contractor
Name:________________________________________
Address:______________________________________
Phone:____________
# SECTION 1.E.5

## SHOP DRAWING AND SUBMITTAL LOG

**Project:** University of Missouri Teaching Hospital – Roof Replacement  
**Project Number:** CP200011  
**Contractor:**

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
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| 02 8233 | Asbestos-Containing Materials Removal & Disposal - MSDS  
Notifications to Regulatory Agencies  
Detailed procedures plan  
Emergency Protection Plan  
Certificates of Training / List of Qualifications  
Negative Initial Exposure Assessment |
| 05 1200 | Structural Steel Framing – Product Data  
Shop Drawings |
| 05 4000 | Cold-Formed Metal Framing – Product Data |
| 06100 | Carpentry Work (For Roofing) – Product List  
Shop Drawings  
Manufacturer’s Certifications |
| 07227 | Fall Protection Devices – Product Data |

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<th>Date to Consultant</th>
<th>Date Returned</th>
<th>Comments</th>
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**Section Description**

- Asbestos-Containing Materials Removal & Disposal - MSDS
- Notifications to Regulatory Agencies
- Detailed procedures plan
- Emergency Protection Plan
- Certificates of Training / List of Qualifications
- Negative Initial Exposure Assessment
- Structural Steel Framing – Product Data
- Cold-Formed Metal Framing – Product Data
- Carpentry Work (For Roofing) – Product List
- Fall Protection Devices – Product Data
## SECTION 1.E.5

### SHOP DRAWING AND SUBMITTAL LOG

**Project:** University of Missouri Teaching Hospital – Roof Replacement  
**Project Number:** CP200011  
**Contractor:**

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<td>Typical Flashings &amp; Terminations</td>
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**Contractor Responsible**  
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**Date to Consultant**  
**Date Returned**  
**Comments**  
**Uploaded to Projex4**
# SECTION 1.E.5

**SHOP DRAWING AND SUBMITTAL LOG**

**Project:** University of Missouri Teaching Hospital – Roof Replacement  
**Project Number:** CP200011  
**Contractor:**

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# SECTION 1.E.5

## SHOP DRAWING AND SUBMITTAL LOG

**Project:** University of Missouri Teaching Hospital – Roof Replacement  
**Project Number:** CP200011  
**Contractor:**

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### SECTION 1.E.6

**OPERATING INSTRUCTIONS AND SERVICE MANUAL LOG**

**Project:** University of Missouri Teaching Hospital – Roof Replacement  
**Project Number:** CP200011  
**Contractor:**

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<th>Service &amp; Maintenance Instructions</th>
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**MU Project #CP200011**  
**OMNL - 1**
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**SECTION 1.E.7**

**CLOSEOUT LOG**

Project: University of Missouri Teaching Hospital – Roof Replacement  
Project Number: CP200011  
Contractor:

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SECTION 1.F

INDEX OF DRAWINGS

Drawings referred to in and accompanying Project Manual consists of following sheets dated March 6, 2020.

Drawing Sheet G001 – Cover Sheet
Drawing Sheet A101 – Demolition Roof Plan
Drawing Sheet A102 – Renovation Roof Plan
Drawing Sheet A103 – Details
Drawing Sheet A104 – Details
Drawing Sheet A105 – Details
Drawing Sheet A106 – Details
Drawing Sheet A107 – Details
Drawing Sheet S100 – Cooling Tower Roof Plan

END OF SECTION
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SECTION 1.G

PREVAILING WAGE RATES

1. The prevailing wage rates for Boone County as issued by the Missouri Division of Labor on the following pages.
Missouri
Division of Labor Standards
WAGE AND HOUR SECTION

MICHAEL L. PARSON, Governor

Annual Wage Order No. 26

Section 010
BOONE COUNTY

In accordance with Section 290.262 RSMo 2000, within thirty (30) days after a certified copy of this Annual Wage Order has been filed with the Secretary of State as indicated below, any person who may be affected by this Annual Wage Order may object by filing an objection in triplicate with the Labor and Industrial Relations Commission, P.O. Box 599, Jefferson City, MO 65102-0599. Such objections must set forth in writing the specific grounds of objection. Each objection shall certify that a copy has been furnished to the Division of Labor Standards, P.O. Box 449, Jefferson City, MO 65102-0449 pursuant to 8 CSR 20-5.010(1). A certified copy of the Annual Wage Order has been filed with the Secretary of State of Missouri.

Original Signed by
Taylor Burks, Director
Division of Labor Standards

Filed With Secretary of State: ___________________________ March 8, 2019

Last Date Objections May Be Filed: April 8, 2019

Prepared by Missouri Department of Labor and Industrial Relations
### OCCUPATIONAL TITLE

<table>
<thead>
<tr>
<th>OCCUPATIONAL TITLE</th>
<th>** Date of Increase</th>
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<td>Boilermaker</td>
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<tr>
<td>Groundman</td>
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<td>Groundman - Tree Trimmer</td>
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<td>Second Semi-Skilled</td>
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*The Division of Labor Standards received less than 1,000 reportable hours as required by RSMo 290.257.4(b). Public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center, in accordance with RSMo 290.257.2.*
**Heavy Construction Rates for BOONE County**

<table>
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<th>OCCUPATIONAL TITLE</th>
<th>** Date of Increase</th>
<th>Basic Hourly Rates</th>
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<td>$49.38</td>
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<td>Pile Driver</td>
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<tr>
<td>Electrician (Outside Lineman)</td>
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<td>$69.22</td>
</tr>
<tr>
<td>Lineman Operator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lineman - Tree Trimmer</td>
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<td></td>
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<tr>
<td>Groundman</td>
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<tr>
<td>Groundman - Tree Trimmer</td>
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<tr>
<td>Laborer</td>
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<td>$43.25</td>
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<td>Group IV</td>
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</table>

Use Heavy Construction Rates on Highway and Heavy construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(3).

Use Building Construction Rates on Building construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(2).

If a worker is performing work on a heavy construction project within an occupational title that is not listed on the Heavy Construction Rate Sheet, use the rate for that occupational title as shown on the Building Construction Rate Sheet.

*The Division of Labor Standards received less than 1,000 reportable hours as required by RSMo 290.257.4(b). Public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center, in accordance with RSMo 290.257.2.*
TECHNICAL SPECIFICATIONS - ASBESTOS-CONTAINING MATERIALS REMOVAL AND DISPOSAL

For

UNIVERSITY OF MISSOURI
UNIVERSITY TEACHING HOSPITAL- ROOFS
CP200011

Prepared for

UNIVERSITY OF MISSOURI
Campus Facilities
Columbia, Missouri 65211

Prepared by

UNIVERSITY OF MISSOURI
ENVIRONMENTAL HEALTH AND SAFETY
PART 1 - GENERAL

Provisions of the General Conditions and Special Conditions are part of this Division.

1.1 SCOPE OF WORK

1. General: The work specified herein shall be the abatement of asbestos containing materials by certified and registered persons who are knowledgeable, qualified and trained in the abatement, handling, and disposal of asbestos containing material, and subsequent cleaning of the affected environment.

2. The Contractor shall furnish all labor, material, equipment, testing, services, permits, insurance, notifications, necessary or required to perform the work in accordance with applicable local, state, and federal regulations for the abatement of asbestos containing materials and for other work as specified in this section or as indicated in associated drawings, sketches, or reports of the work.

All fees required for notification requirements, renotations, and/or inspections by the regulatory agencies shall be paid by the Contractor. Bulk sample analysis information required by the Department of Natural Resources, U.S. Environmental Protection Agency or local authority having jurisdiction in conjunction with the notification shall also be provided by the Contractor unless provided within this section.

3. The work shall include the removal and legal disposal of friable asbestos containing materials including:

   Non-friable asbestos:
   Perimeter flashing roofing material- Roofs H, M, N- Two hundred eighty eight (288) square feet
   Tar vapor barrier- Roofs M and N- Five hundred seventy six (576) square feet
   Silver and black patch NE corner of Roof D- Thirty (30) square feet
   Three (3) transite exhaust ducts- Roofs R and B

1.2 DEFINITIONS

1. Abatement - Procedures to decrease or eliminate the source of fiber release from asbestos containing building materials. Includes encapsulation, enclosure, and removal.

2. Adequately Wet - To sufficiently mix or penetrate with liquid to prevent the release of particulate.

3. Aggressive Air Sampling - Sweeping of floors, ceilings and walls and other surfaces with the exhaust of a minimum of one (1) horsepower leaf blower or equivalent immediately prior to air monitoring.

4. Approved Waste Disposal Site - A solid waste disposal area that is authorized by the Department of Natural Resources to receive asbestos containing solid wastes.

5. Asbestos - The asbestiform varieties of serpentine (chrysotile, antigorite), riebeckite
(crocidolite), cummingtonite-grunerite (amosite), anthophyllite, and actinolite-tremolite.

6. Asbestos Abatement Supervisor - An individual who directs, controls, or supervises others in asbestos abatement projects.

7. Asbestos Containing Building Material (ACBM) - Surfacing ACM, thermal system insulation ACM, or miscellaneous ACM that is found in or on interior structural members or other parts of a building.

8. Asbestos Containing Material (ACM) - Any material containing more than 1 percent asbestos by weight.

9. Barrier - Any surface that seals off the work area to inhibit the movement of fibers.

10. Category I Nonfriable ACM - Asbestos-containing packings, gaskets, resilient floor covering and asphalt roofing products containing more than one percent (1%) asbestos as determined using the method specified in 40 CFR part 763, subpart F, Appendix A, section 1, Polarized Light Microscopy.

11. Category II Nonfriable ACM - Any material, excluding category I nonfriable ACM, containing more than one percent (1%) asbestos as determined using the methods specified in 40 CFR part 763, subpart F, Appendix A, section 1, Polarized Light Microscopy that, when dry, cannot be crumbled, pulverized or reduced to powder by hand pressure.
12. Containment - Area where asbestos abatement project is conducted. Area must be enclosed either by a glove bag or plastic sheeting barrier.

13. Contractor's Competent Person (Qualified Person) - One who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, who has the authority to take prompt corrective measures to eliminate them, as specified in 29 CFR 1926.32 (f); in addition, for Class I, II, III, and IV work, who is specially trained in training courses which meet the criteria of EPA's Model Accreditation Plan (40 CFR Part 763) for project designer or supervisor, or its equivalent.

14. Decontamination Area - Enclosed area adjacent and connected to the regulated area which is used for decontamination of workers, materials, and equipment that are contaminated with asbestos.

15. Demolition - the wrecking or taking out of any load bearing structural member of a facility together with any related handling operations.

16. Disposal Bag - A properly labeled 6 mil. thick leak-tight plastic bag used for transporting asbestos waste from work area to disposal site.

17. Encapsulant (Sealant) - A liquid material which can be applied to asbestos-containing material and which prevents the release of asbestos fibers from the material either by creating a membrane over the surface or by penetrating into the material and binding its components together.


19. Enclosure - The construction of an airtight, impermeable, permanent barrier around asbestos containing material to control the release of asbestos fibers into the air.

20. Friable Asbestos Material - Any material containing more than one percent asbestos as determined using the method specified in appendix A, subpart F, 40 CFR part 763 section 1, Polarized Light Microscopy, that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure.

21. Glove Bag - A manufactured or fabricated device, typically constructed of six (6) mil transparent polyethylene or polyvinyl chloride plastic. This device consist of two (2) inward projecting long sleeves, an internal tool pouch and an attached, labeled receptacle for asbestos waste.

22. Homogeneous Work Site - Continuous areas with the same type of ACM and in which one type of abatement process is performed.

23. Negative Initial Exposure Assessment - An assessment by a "Competent Person" in which it is concluded that employee exposures during the job are likely to be consistently below the Permissible Exposure Levels.

24. Outside Air - Air outside of the containment.
25. Owner’s Air Monitoring Firm - Air Monitoring conducted by a person who is not under the direct control of the person carrying out the asbestos abatement project and who has been selected by the Owner.

26. Owner’s Air Sampling Professional - An individual who holds a valid certification from the State of Missouri. The individual shall conduct, oversee, or be responsible for air monitoring of asbestos abatement projects before, during, and after the project has been completed. The air sampling professional must hold a 40 hour AHERA Asbestos Contractor/Supervisor Certificate, and supervised by the Owner’s Certified Industrial Hygienist (C.I.H.).

27. Owner’s Air Sampling Technician - An individual who has been trained by and is under the supervision of an air sampling professional to do air monitoring before, during, and after the asbestos abatement project. The air sampling technician must hold a 40 hour AHERA Asbestos Contractor/Supervisor Certificate, and be supervised by the Owner’s Certified Industrial Hygienist (C.I.H.).

28. Owner’s Certified Industrial Hygienist (C.I.H.) - an Industrial Hygienist, Certified in Comprehensive Practice by the American Board of Industrial Hygiene. The Owner’s C.I.H. must also be certified by the Missouri Department of Natural Resources as an air sampling professional and hold a 40 hour AHERA Asbestos Contractor/Supervisor Certificate. The Owner will identify C.I.H. before application for permit.

29. Personal Monitoring - Sampling of the asbestos fiber concentrations within the breathing zone.

30. Regulated Asbestos Containing Material (RACM) - Friable asbestos material; Category I nonfriable ACM that has become friable; Category I nonfriable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading; Category II nonfriable ACM that has a high probability of becoming or has become crumbled, pulverized or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

31. Remove - To take out RACM or facility components that contain or are covered with RACM from any facility.

32. Renovation - Altering a facility or one or more facility components in any way, including the stripping or removal of RACM from a facility component.

33. Repair - The restoration of asbestos material that has been damaged. Repair consists of the application of rewetable glass cloth, canvas, cement or other suitable material. It may also involve filling damaged areas with non-asbestos substitutes and re-encapsulating or painting previously encapsulated materials.

34. Strip - To take off RACM from any part of a facility or facility components.

35. Waste Shipment Record - The shipping document, required to be originated and signed by the waste generator, used to track and substantiate the disposition of asbestos containing waste material.
36. Work Area - A specific isolated area, other than the space enclosed within a glove bag, in which friable asbestos-containing materials is required to be handled. The area is designated as a work area from the time that the area is secured and access restrictions are in place. The area remains designated as a work area until the time that it has been cleaned in accordance with any requirements applicable to the operations conducted.

1.3 CODES AND REGULATIONS

1. General Applicability Of Codes, Regulations and Standards - All applicable codes, regulations, standards, statutes, laws, and rules have the same force and effect (and are made a part of the contract documents by reference) as if copied directly into the contract documents, or as if published copies are bound herewith. Where conflicts arise, the most stringent specification shall apply.

2. Contractor Responsibility - The Contractor shall assume full responsibility and liability for the compliance with all applicable federal, state, and local regulations pertaining to work practices, hauling, disposal and protection of workers, visitors to the site, and persons occupying areas adjacent to the site. The Contractor is responsible for providing medical examinations and maintaining medical records of personnel as required by the applicable federal, state, and local regulations. The Contractor shall hold the owner harmless for failure to comply with any applicable work, hauling, disposal, safety, health, or other regulations on the part of the contractor, contractor's employees, or contractor's subcontractors.

3. Federal and State requirements which govern asbestos abatement work or hauling and disposal of asbestos waste materials include but are not limited to the following:

1. U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) including but not limited to:


2. U.S. Environmental Protection Agency (EPA) including but not limited to:
1. National Emission Standards for Hazardous Air Pollutants (NESHAPS) 

3. U.S. Department of Transportation (DOT) including but not limited to:

4. State of Missouri including but not limited to:
   1. H.B. 77, 85th General Assembly.
   2. Missouri Air Conservation Law Chapter 643.
   3. Missouri Department of Natural Resources, Division 10, Chapter 6 of the Code of State Regulations as follows:
      (1) 10 CSR 10-6.020, Definitions
      (2) 10 CSR 10-6.080, Emission Standards for Hazardous Air Pollutants
      (3) 10 CSR 10-6.230, Administrative Penalties
      (4) Volume 18, Missouri Register, Page 44
      (5) 10 CSR 10-6.250, Asbestos Abatement Projects - Certification, Accreditation, and Business Exemption Requirements

1.4 NOTIFICATIONS

1. Notifications meeting the requirements of Volume 18, Missouri Register, page 44, shall be completed and sent by the Contractor not less than ten (10) days before the intended starting date of the project. Send notification to the following:

   1. Department of Natural Resources 
      Air Pollution Control Program (Asbestos) 
      P.O. Box 176 
      Jefferson City, Missouri 65102

   2. U.S. Environmental Protection Agency 
      Region VII 
      Air & Toxic Division, Air Branch 
      ATTN: Air Compliance 
      726 Minnesota Avenue 
      Kansas City, Kansas 66101

   3. Provide a copy to the Owner’s Representative. Five (5) day notification to the Owner’s Representative is required on jobs less than the reportable quantity.
4. If the project is under the jurisdiction of the Kansas City Air Quality Section, St. Louis County Air Pollution Control Branch, or the Springfield-Green County Air Pollution Control Authority, send notification directly to the appropriate agency.

1.5 SUBMITTALS

1. The following will be submitted by contractor prior to commencement of work for approval by the Owner’s Certified Industrial Hygienist (one copy for the Owner’s Representative). Owner’s C.I.H. will return reviewed copies to contractor and Owner’s Representative.

   1. One copy of material safety data sheets (MSDS) for products to be used by the Contractor in the performance of his work. Contractor will also maintain copies of MSDS on site per OSHA.

   2. One copy of the notifications to, or any correspondence with, the regulatory agencies. Submit a listing of all prior regulatory violations.

2. Friable Abatement:

   1. Current Certificates of training and statement of qualifications for the project asbestos abatement supervisor and the Missouri Asbestos Occupational Certificates for all project personnel. List a summary of project personnel and contact phone numbers.

   2. Name, address, and contact person’s name of testing laboratory or laboratories to be utilized analyzing samples for bulk analysis or air samples.

   3. Submit a detailed plan of the procedures proposed for use in complying with requirements of this specification and Volume 18, Missouri Register, page 44, and 29 CFR 1926.1101. Include in the plan the layout and location of barriers, decontamination units, route of ingress and egress for work area, methods used to assure safety of building occupants and visitors, methods used to isolate or closing out of HVAC system, personal air monitoring strategy, method of removal of material, and engineering controls utilized to prevent emissions from the work area.

   4. Provide a disposal plan to detail type of disposal container, method of transportation to disposal site, waste hauler, and disposal site.

   5. Copy of notifications required as part of the emergency notification plan.

3. Non-Friable Abatement:

   1. Submit a detailed plan of the procedures proposed to minimize emissions and to prevent the material from becoming friable during removal.

   2. Copy of emergency protection plan to be used if the nonfriable material should become friable during removal.
3. Current Certificates of training and statement of qualifications for the "Competent Person".

4. One copy of the Negative Initial Exposure Assessment.

4. Upon completion of the abatement work, the following information shall be submitted to the Owner's Representative.

   1. Waste disposal receipts and waste shipment record on all asbestos waste removed from the project.

5. Upon completion of the abatement work, the following information shall be submitted by the Owner's C.I.H. to the Contractor.

   1. Air sampling test results for personal (non-OSHA) and final clearance air samples taken under the supervision of Owner's Certified Industrial Hygienist. Results must be in writing in final report form.

   2. Written certification from the Owner's Certified Industrial Hygienist.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.1 SUPERVISION OF ABATEMENT

1. The Contractor shall designate a competent supervisor subject to the approval of the Owner's C.I.H. and the Owner's Representative. The supervisor shall be the Contractor's representative on the project and shall meet the requirements of all applicable regulations and perform the following minimum requirements.

   1. Be Certified by the State of Missouri as an Asbestos Abatement Supervisor, a minimum of one year prior full time experience in asbestos abatement work and a minimum of two years experience as a supervisor, and be qualified as a Competent Person in accordance with OSHA regulation 1926.1101.

   2. Be on site and supervise all abatement work in accordance with OSHA and Volume 18, Missouri Register, page 44.

   3. Conduct all OSHA required air monitoring.

   4. Maintain a daily log on the project documenting events, visitations, problems, equipment failures, accidents, and inspections.

   5. Be responsible for implementation of first aid, safety training, respiratory protection, and ensuring all workers are trained in emergency procedures.
6. Be responsible for conducting a visual inspection of the work area prior to a visual inspection by the Owner's Certified Industrial Hygienist. Inspection shall be documented.

3.2 NEGATIVE INITIAL EXPOSURE ASSESSMENT

1. The Contractor must conduct a Negative Initial Exposure Assessment (non-friable asbestos) prior to removal of the asbestos material. The Negative Initial Exposure Assessment shall be performed by a "Competent Person" to determine whether the material may be removed and maintained in a nonfriable condition. If the material cannot be removed without becoming friable then the contractor shall comply to the requirements in this specification at no additional cost to the Owner.

2. The method of removal is the Contractor's option. However, in the event of any of the following:

   1. Visible emissions are observed
   2. Sanding, grinding, cutting, or abrading of the material
   3. Air samples exceed 0.1 f/cc

The contractor shall immediately stop work, implement corrective work practices, make any necessary notifications to all regulatory agencies of the changes in work practices and material conditions, and comply with the requirements as set forth in this specification.

3.3 WORKER PROTECTION & TRAINING

1. The Contractor shall be responsible for providing his employees with proper respiratory protection, respiratory training, written respirator program, medical examinations, maintaining medical records, and protective clothing and equipment to comply with OSHA requirements.

2. The Contractor shall be responsible for all testing and costs incurred for complying with requirements of OSHA regulations for Personal Air Sampling.

3. All workers shall be trained in the dangers inherent in handling asbestos and breathing asbestos dust and in proper work procedures and personal and protective measures.

4. All workers shall hold valid diplomas as accredited Asbestos Abatement Workers as required by 10 CSR 10-6.250.
3.4 INDEPENDENT TESTING LABORATORY

1. Testing Laboratories utilized by the Contractor for sample analysis during the project shall meet the following minimum requirements and be approved by the Owner's C.I.H. This information shall be submitted to the Owner's Representative for review.

   1. All air monitoring samples shall be analyzed by a testing laboratory accredited by the American Industrial Hygiene Association (AIHA) or by an individual who is currently on the Asbestos Analyst Registry.

   2. All bulk samples shall be analyzed by a testing laboratory accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).

3.5 OWNER'S AIR SAMPLING PROFESSIONAL & CERTIFIED INDUSTRIAL HYGIENIST

1. It will be the Owner's responsibility to hire an Air Sampling Professional & Certified Industrial Hygienist. The Air Sampling Professional & Industrial Hygienist will also be required to perform the following duties as a minimum:

   1. Approval of the Contractor's work plan and methods of abatement to meet regulatory requirements and ensure the health and safety of University faculty, staff, and students.

   2. Verify that the contractor is satisfactorily performing personal air monitoring as directed by OSHA regulations.

   3. Visual inspection of the work area and final clearance air monitoring.

   4. Certify in writing that the Contractor's procedures, methods and practices were, to the best of my knowledge and belief, in compliance with current EPA, OSHA, State and/or applicable local regulations and that the work areas meet the requirements for final clearance testing and account of any known deviations.

   5. Issue final air clearance.

3.6 EMERGENCY PROTECTION PLAN

1. The contractor shall be responsible for developing a written Emergency Protection Plan and shall maintain this plan on site. The plan shall include considerations of asbestos leakage from the site, fire, explosion, toxic atmospheres, electrical hazards, slips, falls, and heat related injury. All employees shall be instructed and trained in the procedures.

2. Emergency protection plan shall also include written notification of police, fire and medical personnel of the planned abatement activities, work schedule, and layout of work area, particularly barriers that may affect response capabilities.
3.7 LOCAL AREA PROTECTION & SITE SECURITY

1. The contractor shall be responsible for all areas of the building used by him and/or subcontractors in the performance of the work. Contractor shall exert full control over the actions of all employees and other persons with respect to the use and preservation of the existing building, except such controls as may be specifically reserved to the owner.

2. Contractor has the right to exclude from the work area all persons who have no purpose related to the work or its inspection, and shall require all persons in the work area to observe the same regulations required of Contractor's employees.

3. The contractor shall have control of site security during abatement operations in order to protect work environment and equipment. Contractor shall have the owners assistance in notifying building occupants of impending activity and enforcement of restricted access by owners employees.

4. The contractor shall keep a minimum of two 10 lbs. type ABC fire extinguishers on site. One shall be maintained outside the work area and one inside the work area. The employees shall be trained in the operation of extinguishers.

5. Where areas cannot be isolated by existing walls and doors from employees, clients, or the public, barriers must be constructed of 1/2" plywood and 2"x4" framing 16" o.c. to isolate the area. The barriers must be installed in such a manner to prevent damage to existing walls, floors, or ceilings. Barrier may have a lockable door.

6. The contractor shall maintain the work area free from rubbish, debris, and dirt and keep a clean, safe working area.

7. The Contractor shall provide warning signage around the regulated area as required by OSHA.

8. The Contractor shall isolate any and all air supply and returns to the abatement space as required by OSHA. Contractor shall coordinate with the Owner's Representative.

9. The Contractor shall keep all areas where adhesive stripper is in use (such as mastic removal) under negative pressure and exhausted to the outside ambient air.

3.8 FINAL CLEARANCE REQUIREMENTS (FRIABLE ASBESTOS)

1. Upon completion of the abatement work, the supervisor shall perform a visual inspection of the work area. If satisfactory, the supervisor shall then request the Owner's C.I.H. or the C.I.H.'s air sampling technician to perform a visual inspection. When the Owner's C.I.H. feels the area is ready based on the results of their visual inspection, the Contractor shall apply a lockdown encapsulant. Following application of lockdown encapsulant, the Owner's C.I.H. shall perform the final clearance sampling for airborne fiber concentrations.

2. The Owner's C.I.H. or designee will perform final clearance testing per the following requirements:
1. Aggressive sampling shall be required for all areas where removal has taken place with the exception of glove bag projects where nonaggressive sampling is permitted.

2. P.C.M. samples analyzed on site shall be counted by an accredited registered microscopist.

3. For areas specifically specified for clearance by Transmission Electron Microscopy, the method shall be NIOSH 7402.

3. Any work areas failing to meet the clearance requirements of this section shall be recleaned and retested at the contractor's expense until satisfactory levels are obtained.

4. The Owner's C.I.H. shall provide a written report of the air monitoring activities to the contractor within 7 days after the final clearance testing.

3.9 REESTABLISHMENT OF THE WORK AREA AND SYSTEMS

1. Reestablishment of the work area shall only occur after the contractor has received final clearance in writing from the Owner's C.I.H.

2. All damage to finishes, equipment, and/or the area affected by the abatement shall be repaired by the contractor to equal or better condition as it was prior to the work, at no cost to the owner.

3.10 WASTE DISPOSAL

1. All asbestos containing waste and/or asbestos contaminated debris shall as a minimum be double bagged in approved 6 mil. disposal bags. Each bag shall be tagged to meet requirements of NESHAPS with an asbestos caution label and a source identification label.

2. Transportation shall meet the requirements of all regulatory agencies for asbestos containing materials and shall be transported in an enclosed truck.

3. The waste disposal site shall be approved by the Missouri Department of Natural Resources for asbestos disposal. A chain of custody letter/waste shipment record and disposal receipts shall be provided to the owner for all materials disposed of.

3.11 DRAWINGS

1. Drawings, when provided, are not intended to be used for anything but a "reference" to the work area. Information is not specific to quantities or to exact location of ACM unless explicitly noted. Contractor will be required to field verify the conditions and quantities.
3.12 REPORTS

1. Reports, when provided, are intended to be used as a basis for the type and composition of the asbestos present for both bidding purposes and for the information required for the notifications to the governing agencies.
HAZARDOUS BUILDING MATERIALS SURVEY
PROJECT CP200011
UNIVERSITY OF MISSOURI TEACHING HOSPITAL
ROOF REPLACEMENT
09/30/2019

TO: Mark Hoerstkamp
Planning, Design, and Construction

FROM: Pete Kohler
Environmental Health and Safety

MU EHS has completed an asbestos survey of various roofs on the University of Missouri Teaching Hospital (Bldg. H42-083). The roofs that will be replaced are specified in the survey request of 8/12/19.

The inspection was conducted to satisfy the requirements of 40CFR 61, subpart M, which stipulates that all buildings be “thoroughly inspected” for asbestos-containing materials (ACM) before the commencement of renovation or demolition activities. The asbestos inspection was conducted by Pete Kohler (Missouri Asbestos Inspector #10883, expires 11/16/2019), who prepared the report. The survey was conducted in September, 2019 and the report was completed September 30, 2019.

Samples of representative material were collected and analyzed. Analysis was by polarized light micrography (PLM) with an additional step in the preparation of difficult-to-analyze samples with tar or asphalt (PLM NOB).

A number of the roofs that will be replaced have the same construction materials and methods. Several samples of the typical construction were collected. Additionally, any roof that is different from the typical construction was sampled. Samples were collected in the middle and at the edge of the various roof types. Each roofing sample had each of its components analyzed separately.
The edges of Roof H contain asbestos.
The edges of Roofs M and N contain asbestos.
Three transite ducts that penetrate Roof R, north of Mechanical Room 8W-02
And Roof B, north of Mechanical Room 801 contain asbestos.
Silver and black coating on the built-up roof of Roof D contains asbestos.
The vapor barrier of Roof M and Roof N contain asbestos.

PLEASE NOTE:
Contact EHS for radiation evaluation of a vent duct labelled “Serves Nuclear Medicine” on Roof R before removing the roof in this area.

FIELD OBSERVATIONS

Most of the roofs that will be replaced are composed of a rock ballast on top of EPDM, over another built-up pitch roof on a lightweight concrete deck. In some locations there is EPS foam between the EPDM and the built-up roof. In some other spots, there is ISO foam. But basically, there is EPDM over a pitch built-up roof on a great majority of the area that will impacted by the project. The materials of the common, typical roof construction do not contain asbestos, either at the middle of each space, or at the edge of the space, where the roofing material joins the parapet.

On the roofs over the two tall south mechanical rooms (Roof M and Roof N), there is EPDM with backing paper over a pitch built-up roof, with black foam glass on a tar/paper vapor barrier on a metal deck. At the edge of these roofs, the flashing also contains a component of fiberglass in a membrane, which is attached with an asphalt or tar sealant. The material at the edges of these roofs contains asbestos. The tar or asphalt vapor barrier on these roofs was analyzed as <1% chrysotile asbestos. Although the standard to classify material is >1% asbestos, it would be prudent to consider this positive material, and to treat it as asbestos containing. There is a possibility that the area immediately adjacent to where the sample was collected has a higher concentration of asbestos. Roof M and Roof N are presumed to be have ACM vapor barrier.

On Roof B and Roof D, the ballast is smaller pea gravel than the rest of the construction area, on a built-up pitch roof. There is no EPDM present here. These
two roofs are separated by a mechanical room (N801) that spans the full width of the building. The roof of the mechanical room is not slated to be replaced.

The pitch roofs on B and D do not contain asbestos. The edges of these roofs have the same construction. However, there are at least four layers of built-up felts in the flashing. Each was analyzed separately. The built-up material does not contain asbestos.

On the exterior back wall of the mechanical room, pointing north, the louvers are covered with corrugated metal, with a tar or asphalt coating. **The coating on the corrugated panels contains asbestos.** It is unlikely that this surface will be disturbed by the roofing project, but it is worth noting that the positive material is here.

On Roof H, which is the high point of the hospital roof, there is EPDM with an asphalt layer on top of a wood chip board, on a built-up pitch roof. At the edge of this roof, there is a fiberglass membrane, attached with tar or asphalt, in addition to the built-up pitch material. **The material around the edges of this roof contains asbestos.** The main center part of Roof H does not contain asbestos.

Roofs T and S have EPDM on top of foam on top of a gypsum board on a metal deck. These two roofs are completely different from the rest of the roofing. They do not contain asbestos.

North of Mechanical Room 8W-02 is a transite duct which is ACM. It is labelled, "serves 2W-29 fume hoods."

North of Mechanical Room N801, there are two transite ducts: one "serves fume hood in N616." The other is abandoned in place, and is capped about a foot above the roof.

In the northeast corner of Roof D, just south of Mechanical Room N801, there is silver and black patching material which contains asbestos. Analysis quantifies the asbestos at .48% chrysotile. This is less than the 1% which is the standard for asbestos-containing material. It would be prudent to consider this material ACM. There is very little of it here, but it may be found in other locations, and it should be presumed to be positive material.

There are three samples of the lightweight concrete deck that are analyzed as <1% asbestos. The deck will not be removed or replaced. But it is important to note that the material is present.
**PLEASE NOTE:** On the east side of the main roof (Roof R), there is a fan which “serves nuclear medicine.” It has a sign advising of a “potential internal contaminator.” MU EHS Radiation will survey this area, and their finding will be included in the finished report.

<table>
<thead>
<tr>
<th>SAMPLE ID</th>
<th>LOCATION/DESCRIPTION</th>
<th>ANALYSIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>190909-01</td>
<td>University of Missouri Teaching Hospital, Roof R core, west side, EPDM</td>
<td>100% non-fibrous</td>
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<tr>
<td>190909-01A</td>
<td>Pitch built-up felts under EPDM</td>
<td>100% matrix material</td>
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<tr>
<td>190909-01B</td>
<td>Lightweight concrete deck material</td>
<td>&lt;1% actinolite, 99%+ non-fibrous</td>
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<tr>
<td>190909-01C</td>
<td>EPS foam</td>
<td>100% non-fibrous</td>
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<td>190909-02</td>
<td>Roof R edge, at west parapet, asphalt on concrete</td>
<td>100% matrix material</td>
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<tr>
<td>190909-03</td>
<td>Roof M core, ISO foam w/asphalt</td>
<td>100% non-fibrous</td>
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<tr>
<td>190909-03A</td>
<td>Backing paper from foam</td>
<td>98% cellulose, 2% non-fibrous</td>
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<tr>
<td>190909-03B</td>
<td>Built-up roof felt w/pitch</td>
<td>3% glass, 97% matrix material</td>
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<td>190909-03C</td>
<td>Tar/paper vapor barrier</td>
<td>.28% chrysotile, 99.7% non-fibrous</td>
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<td>190909-04</td>
<td>Roof M edge core, fiberglass membrane w/asphalt or pitch</td>
<td><strong>5.3% CHRYSOTILE, 94.7% other</strong></td>
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<td>190909-04A</td>
<td>Tar/paper vapor barrier</td>
<td><strong>13.7% CHRYSOTILE, 4.5% glass, 81.7% other</strong></td>
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<td>190909-05</td>
<td>Roof E, caulk under parapet capping stone</td>
<td>100% non-fibrous</td>
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<tr>
<td>Date</td>
<td>Sample Description</td>
<td>Asbestos Content</td>
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<tr>
<td>------------</td>
<td>-------------------------------------------------------------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>190909-06</td>
<td>Roof D, silver/black patch in NE corner of main roof</td>
<td>.48% chrysotile, 99.5% other</td>
</tr>
<tr>
<td>190909-07 (roofing)</td>
<td>Roof D core, built-up felts w/pitch</td>
<td>100% matrix material</td>
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<tr>
<td>190909-07 (felts)</td>
<td>Same sample location as above</td>
<td>100% matrix material</td>
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<tr>
<td>190909-07A</td>
<td>Lightweight concrete deck</td>
<td>&lt;1% actinolite, 99%+ non-fibrous</td>
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<tr>
<td>190909-08</td>
<td>Roof D edge core, built-up roof felt w/pitch</td>
<td>100% matrix material</td>
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<tr>
<td>190909-08A</td>
<td>built-up roof felt w/pitch</td>
<td>100% matrix material</td>
</tr>
<tr>
<td>190909-08B</td>
<td>built-up roof felt w/pitch</td>
<td>100% matrix material</td>
</tr>
<tr>
<td>190909-08C</td>
<td>built-up roof felt w/pitch</td>
<td>100% matrix material</td>
</tr>
<tr>
<td>190909-09</td>
<td>Roof H core, EPDM w/asphalt adhered</td>
<td>3.2% glass, 96.8% matrix material</td>
</tr>
<tr>
<td>190909-09A</td>
<td>Chip board</td>
<td>98% cellulose, 2% non-fibrous</td>
</tr>
<tr>
<td>190909-09B</td>
<td>Built-up roof felt w/pitch</td>
<td>100% matrix material</td>
</tr>
<tr>
<td>190909-09C</td>
<td>Lightweight concrete core</td>
<td>&lt;1% actinolite, 99%+ non-fibrous</td>
</tr>
<tr>
<td>190909-10</td>
<td>NOT USED</td>
<td></td>
</tr>
<tr>
<td>190909-11</td>
<td>Roof H edge core, EPDM w/ asphalt</td>
<td>100% matrix material</td>
</tr>
<tr>
<td>190909-11A</td>
<td>Built-up roof felts w/pitch and tar</td>
<td><strong>2.9% CHrysotile, 97.1% other</strong></td>
</tr>
<tr>
<td>190909-12</td>
<td>Roof T, gypsum board</td>
<td>80% gypsum, 5% glass, 15% non-fibrous</td>
</tr>
<tr>
<td>190926-01</td>
<td>Mech. Room N801, north exterior wall, corrugated panels-coating</td>
<td><strong>20% CHrysotile, 80% non-fibrous</strong></td>
</tr>
</tbody>
</table>

**ASBESTOS SUMMARY:** The flashing area of Roof M and Roof N, where the flat roof meets the vertical parapet wall, on University of Missouri Teaching Hospital contain asbestos.

The flashing area on Roof H contains asbestos.
Transite ducts that penetrate the roof contain asbestos. There are three transite ducts, identified on the attached plan.

A small patch of silver and black coating in the northeast corner of Roof D contains a small amount of asbestos. It does not qualify as ACM, but it would be prudent to treat it as ACM.

The tar vapor barrier of Roof M contains a small amount of asbestos. It analyzed as <1%, but it would be prudent to presume it positive for asbestos, and treat it as ACM. Roof N is the same construction and Roof M and should be presumed to contain the same material.
ACM EDGES-POSITIVE
FLASHING AT PERIMETERS OF ROOF

ACM TRANSITE DUCTS

ACM SILVER/BLACK COATING

<1% ASBESTOS VAPOR BARRIER
ON ROOF M, N

EXHAUST DUCT “SERVES NUCLEAR
MEDICINE”
STILL NEEDS SURVEY
ADDRESSING RADIATION CONCERN

ASBESTOS LOCATIONS
UNIVERSITY OF MISSOURI
TEACHING HOSPITAL ROOFS
SECTION 05 1200
STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 SUMMARY
A. Section includes structural steel and grout.
B. Related Sections:
   1. Drawings and general provisions of the Contract including General and Supplementary Conditions and Division 1 Specification Sections apply to this Section.

1.2 DEFINITIONS
A. Structural Steel: Elements of structural-steel frame, as classified by AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

1.3 ACTION SUBMITTALS
A. Product Data: For each type of product indicated.
B. Shop Drawings: Show fabrication of structural-steel components.

1.4 INFORMATIONAL SUBMITTALS
A. Welding certificates.

1.5 QUALITY ASSURANCE
A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
B. Comply with applicable provisions of the following specifications and documents:
   1. AISC 303.
   2. AISC 360.
   3. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

PART 2 - PRODUCTS

2.1 STRUCTURAL-STEEL MATERIALS
A. W-Shapes: ASTM A 572/A 572M, Grade 50 (345).
B. Channels, Angles, M, S-Shapes: ASTM A 36/A 36M.
C. Plate and Bar: ASTM A 36/A 36M.
D. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade B, structural tubing.
E. Steel Pipe: ASTM A 53/A 53M, Type E or S, Grade B.
F. Welding Electrodes: Comply with AWS requirements.

2.2 BOLTS, CONNECTORS, AND ANCHORS
A. High-Strength Bolts, Nuts, and Washers: ASTM A 325 (ASTM A 325M), Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade C, (ASTM A 563M, Class 8S) heavy-hex carbon-steel nuts; and ASTM F 436 (ASTM F 436M), Type 1, hardened carbon-steel washers; all with plain finish.
   1. Direct-Tension Indicators: ASTM F 959, Type 325 (ASTM F 959M, Type 8.8), compressible-washer type with plain finish.
B. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F 1852, Type 1, heavy-hex head assemblies consisting of steel structural bolts with splined ends, heavy-hex carbon-steel nuts, and hardened carbon-steel washers.
   1. Finish: Plain.
C. Shear Connectors: ASTM A 108, Grades 1015 through 1020, headed-stud type, cold-finished carbon steel; AWS D1.1/D1.1M, Type B.
D. Unheaded Anchor Rods: ASTM F 1554, Grade 36.
   2. Finish: Plain.

E. Headed Anchor Rods: ASTM F 1554, Grade 36, straight.
   1. Finish: Plain.

F. Threaded Rods: ASTM A 36/A 36M.
   1. Finish: Plain.

2.3 PRIMER
A. Primer: Fabricator's standard lead- and chromate-free, nonasphaltic, rust-inhibiting primer complying with MPI#79 and compatible with topcoat.

2.4 FABRICATION
A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC 360.

B. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1/D1.1M and manufacturer's written instructions.

2.5 SHOP CONNECTIONS
A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
   1. Joint Type: Snug tightened.

B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

2.6 SHOP PRIMING
A. Shop prime steel surfaces except the following:
   1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches (50 mm).
   2. Surfaces to be field welded.
   3. Surfaces to be high-strength bolted with slip-critical connections.
   4. Surfaces to receive sprayed fire-resistive materials (applied fireproofing).
   5. Galvanized surfaces.

B. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:
   1. SSPC-SP 2, "Hand Tool Cleaning."
   2. SSPC-SP 3, "Power Tool Cleaning."

C. Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness of 1.5 mils (0.038 mm). Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

2.7 SOURCE QUALITY CONTROL
A. Testing Agency: Owner will engage an independent testing and inspecting agency to perform shop tests and inspections and prepare test reports.
   1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.
B. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

C. Bolted Connections: Shop-bolted connections will be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

D. Welded Connections: In addition to visual inspection, shop-welded connections will be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:
   1. Liquid Penetrant Inspection: ASTM E 165.
   2. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
   4. Radiographic Inspection: ASTM E 94.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify, with steel Erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 ERECTION

A. Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.

   1. Set plates for structural members on wedges, shims, or setting nuts as required.
   2. Weld plate washers to top of baseplate.
   3. Snug-tighten Pretension anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
   4. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.

C. Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges."

3.3 FIELD CONNECTIONS

A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
   1. Joint Type: Snug tightened.

B. Weld Connections: Comply with AWS D1.1/D1.1M and AWS D1.8/D1.8M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
   1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.

3.4 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to inspect field welds and high-strength bolted connections.
B. Bolted Connections: Bolted connections will be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
C. Welded Connections: Field welds will be visually inspected according to AWS D1.1/D1.1M.
D. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.
SECTION 05 4000
COLD-FORMED METAL FRAMING

PART 1 - GENERAL
1.1 SUMMARY
A. This Section includes the following:
  1. Joist framing.

1.2 RELATED DOCUMENTS
A. Drawings and general provisions of the Contract including General and Supplementary Conditions and Division 1 Specification Sections apply to this Section.

1.3 ACTION SUBMITTALS
A. Product Data: For each type of product and accessory indicated.

1.4 QUALITY ASSURANCE
A. AISI Specifications and Standards: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" and its "Standard for Cold-Formed Steel Framing - General Provisions."
  1. Comply with AISI's "Standard for Cold-Formed Steel Framing - Truss Design."
  2. Comply with AISI's "Standard for Cold-Formed Steel Framing - Header Design."

PART 2 - PRODUCTS
2.1 JOIST FRAMING
A. Steel Joists: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:
  1. Minimum Base-Metal Thickness: As indicated on drawings.
B. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with straight flanges, and same minimum base-metal thickness as steel studs.
C. Steel Box or Back-to-Back Headers: Manufacturer's standard C-shapes used to form header beams, of web depths indicated, punched, with stiffened flanges, and as indicated on the drawings.

2.2 FRAMING ACCESSORIES
A. Fabricate steel-framing accessories from steel sheet, ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of same grade and coating weight used for framing members, unless otherwise indicated.
B. Steel Shapes and Clips: ASTM A 36/A 36M, zinc coated by hot-dip process according to ASTM A 123/A 123M.
C. Anchor Bolts: ASTM F 1554, Grade 36, threaded carbon-steel hex-headed bolts and carbon-steel nuts; and flat, hardened-steel washers; zinc coated by hot-dip process according to ASTM A 153/A 153M, Class C.
D. Expansion Anchors: Fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 5 times design load, as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.
E. Power-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 10 times design load, as determined by testing per ASTM E 1190 conducted by a qualified independent testing agency.
F. Mechanical Fasteners: ASTM C 1513, corrosion-resistant-coated, self-drilling, self-tapping steel drill screws.
   1. Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.

2.3 MISCELLANEOUS MATERIALS
   A. Galvanizing Repair Paint: ASTM A 780.
   B. Cement Grout: Portland cement, ASTM C 150, Type I; and clean, natural sand, ASTM C 404. Mix at ratio of 1 part cement to 2-1/2 parts sand, by volume, with minimum water required for placement and hydration.
   C. Shims: Load bearing, high-density multimonomer plastic, nonleaching.
   D. Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch (6.4 mm) thick, selected from manufacturer's standard widths to match width of bottom track or rim track members.

PART 3 - EXECUTION

3.1 PREPARATION
   A. Install load bearing shims or grout between the underside of wall bottom track or rim track and the top of foundation wall or slab at stud or joist locations to ensure a uniform bearing surface on supporting concrete or masonry construction.
   B. Install sealer gaskets to isolate the underside of wall bottom track or rim track and the top of foundation wall or slab at stud or joist locations.

3.2 INSTALLATION, GENERAL
   A. Install cold-formed metal framing according to AISI's "Standard for Cold-Formed Steel Framing - General Provisions" and to manufacturer's written instructions unless more stringent requirements are indicated.
   B. Install cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened.
   C. Install framing members in one-piece lengths.
   D. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.
   E. Do not bridge building expansion and control joints with cold-formed metal framing. Independently frame both sides of joints.
   F. Install insulation, specified in Division 07 Section "Thermal Insulation," in built-up exterior framing members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.
   G. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's standard punched openings.
   H. Erection Tolerances: Install cold-formed metal framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet (1:960) and as follows:
      1. Space individual framing members no more than plus or minus 1/8 inch (3 mm) from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.3 FIELD QUALITY CONTROL
   A. Testing: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
   B. Field and shop welds will be subject to testing and inspecting.
   C. Testing agency will report test results promptly and in writing to Contractor and Architect.
D. Remove and replace work where test results indicate that it does not comply with specified requirements.

E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.4 REPAIRS AND PROTECTION

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed metal framing with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that cold-formed metal framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION 05 4000
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PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Roof curbs and cants; concealed wood blocking, with hardware and attachment accessories.

B. Preservative Treated Wood (PTW).

C. Refer to schedule at end of Section.

1.02 REFERENCES


B. American Wood Preservers Association (AWPA): AWPA Book of Standards.

C. Product Standard of NBS (PS):
   1. PS 1 - Construction and Industrial Plywood
   2. PS 20 - American Softwood Lumber Standard

1.03 QUALITY ASSURANCE

A. Rough Carpentry Lumber: Visible grade stamp of agency certified by National Forest Products Association (NFPA).

B. Preservative Treatment: Confirm to applicable requirements of AWPA.

1.04 SUBMITTALS

A. Product List: Submit list of proposed Products and manufactures, including all items specified in Part 2 -- Products or otherwise required by the Work.

B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, finish, accessories, and locations to a minimum scale of 1-1/2 inch to one foot.

C. Manufacturer's Certifications: Submit certification that preservative wood treatment is in accordance with applicable requirements and that preservative formulation/treater warrants PTW material for intended use.

PART 2 - PRODUCTS

2.01 ROUGH CARPENTRY MATERIALS

A. Timber, General: Hand select material at factory from lumber of species and grade indicated below for compliance with "Appearance" grade requirements of ALSC National Grading Rule; provide certificate of inspection from an accredited Agency for selected material.
   1. Provide seasoned lumber with 19 percent moisture content at time of dressing and shipment, for sizes 2-inches or less in thickness.
   2. Provide lumber with 15 percent moisture content at time of dressing and shipment for, sizes 2-inches or more in thickness.

B. Dimensioned Lumber: Graded in accordance with established grading rules; grade and species as follows:
   1. Concealed Boards: WWPA standard grade, any species, or SPIB No. 3 grade Southern Pine.
2. Lumber for Miscellaneous Uses: Standard grade unless otherwise indicated.
3. Plywood: PS 1; select sheathing grade or APA rated 5/8-inch minimum thickness, CD-X, or better in sheathing.

C. Nails, Spikes, and Staples: Galvanized; size and type to suit application.
D. Bolts, Nuts, Washers, Lags, Pins, and Screws: Medium carbon steel, hot dipped galvanized; sized to suit application.
E. Anchors: Toggle bolt type for anchorage to hollow masonry. Expansion shield and lag bolt type for anchorage to solid masonry or concrete. Bolts or power activated type for anchorage to steel.

2.02 PRESERVATIVE TREATED WOOD (PTW)
A. Shop Preservative (Pressure Treatment Type): AWPA C2 and C9.
B. Wood for Above-Ground Contact Use: AWPB LP-2.
C. Shop pressure treat and provide identification on preservative treated materials, including all wood blocking, cants, and plywood.
D. Dry all PTW after treatment to the following maximum moisture content:
   1. Plywood: 15 percent.
   2. Lumber: 19 percent.

2.03 SOURCE QUALITY CONTROL
A. Factory marked each piece of lumber with type, grade, mill, and grading agency.
B. Nominal sizes are indicated. Provide actual sizes as required by PS 20.
C. Provide dressed lumber, sized four sides.

PART 3 - EXECUTION

3.01 EXAMINATION AND PREPARATION
A. Verify that surfaces are ready to receive work and field measurements are as shown on shop drawings.
B. Verify mechanical, electrical, and building items affecting work of this Section are placed and ready to receive this Work.
C. Before installation, prime paint surfaces of items or assemblies to be in contact with cementitious materials.

3.02 INSTALLATION
A. Discard units or material with defects that might impair quality of work and units that are too small to use in fabricating work with minimum joints.
B. Set carpentry work accurately to required levels and lines, with members plumb and true and accurately cut and fitted.
C. Securely attach carpentry work to substrate to anchoring and fastening as shown and as required by recognized standards. Use common wire nails, except as otherwise indicated. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners with splitting wood; pre-drill as required.
D. Install components with fasteners suited to materials.
   1. Nailable Surfaces: Galvanized compatible nails, sized as follows:
      a. ¾ and 1-inch materials: 8d nails.
      b. 1-1/2 or 2 inch materials: 16d nails.
   4. Steel Members: Bolts or Power actuated Hilti pins.
   5. Maximum Spacing: 12-inches on center, unless noted otherwise.

E. Remove all bent or deformed nails from finished work and dispose of.

3.03 CLEANING

A. Pick up spilled carpentry products, unused nails, and fasteners daily.

3.04 PROTECTION

A. Protective Walkways - Traffic Area Protection: Install full sheets of ¾-inch exterior grade plywood and minimum ½-inch wood fiber insulation to those areas of new roof surface to be trafficked by personal and wheeled vehicles.

3.05 SITE TREATMENT OF CARPENTRY

A. Treat site-saw cut ends. Allow preservative to cure prior to erecting materials.

3.06 SCHEDULE

A. Rough Carpentry Work:
   1. Miscellaneous blocking and canting for single-ply roofing systems and related flashings and sheet metal.
   2. Blocking and canting for roof mounted mechanical items.

END OF SECTION 06100
SECTION 07227 - FALL PROTECTION DEVICES

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes: 40 Roof tie-down system of fall restraint and fall arrest for worker safety.

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM)

B. American National Standard Institute (ANSI)
   1. ANSI Z359.1-2007 – Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components
   2. ANSI Z359.6-2009 – Specifications and Design Requirements for Active Fall Protection Systems

C. Occupational Health And Safety Administration (OSHA)
   1. OSHA 1926.502 – Fall Prevention Systems Criteria and Practices

1.03 SYSTEM DESCRIPTION

A. General: Provide structural fall restraint and fall arrest system capable of withstanding loads and stresses within limits and under conditions specified in OSHA and other applicable safety codes. Provide fall protection anchors permanently attached to roof structure.

B. Design Requirements: Anchors and accessories comprising system of following types:
   1. Guardian CB Anchors, spaced as indicated by manufacturer, for safety snap connection by individual workers capable of withstanding a 5,000 pound load or safety factor of 2 meeting the requirements of OSHA 1926.502(d)(8).

C. Performance Requirements: System and components tested for the resistance of the following loads:
   1. Fall Restraint: 1 User
   2. Fall Arrest: 1 User
   3. Design fall protection anchors to resist a 5,000 pound load applied in any direction at maximum anchor height or provide engineered system designed meeting the requirements of OSHA 1926.502(d)(8).

1.04 SUBMITTALS

A. Product Data: For each type of device specified, including manufacturer’s standard fabrication details and installation instructions.

B. Shop Drawings: Show layout, profiles, and anchorage details. Shop drawings & calculations to be stamped by a Professional Engineer registered in the State in which the project is located.

C. Maintenance Data: Written instructions for maintenance of fall prevention safety devices to be included in the operation and maintenance manual.

D. In-house Test Reports: Indicate anchor fabrication compliance with performance requirements.

E. Signage: Provide laminated sign showing system layout and usage notes, to be installed at roof access locations.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Firm having at least 10 years continuous experience in manufacturing fall safety equipment similar to systems specified and exhibiting records of successful in-service acceptability and performance. Firm must employ personnel dedicated to provide regularly scheduled Authorized and Competent Person Training courses as mandated by OSHA 1926 and 1910 for owner’s authorized safety personnel.
B. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in the jurisdiction where the Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of roof anchors that are similar to those indicated for this Project in material, design and extent.

C. OSHA Standards: Comply with Occupational Safety and Health Administration Standards for the Construction Industry 29 CFR § 1926.500 Subpart M (Fall Protection), and with applicable State Administrative Code safety standards for Fall Restraint and Fall Arrest.

D. Source Limitations: Obtain all roof anchors through one source from a single manufacturer.

E. Testing: Perform quality control tests for each system per manufacturer’s requirements.

1.06 COORDINATION

A. Contractor to coordinate installation of structural deck to meet requirements of roof anchor manufacturer.
1. Concrete Deck: Minimum concrete strength, Fc = 2,000 psi. Minimum 6” thickness for adhesive anchor connection; minimum 4” thickness for mechanical anchor connection.
2. Metal Deck: Minimum 18 gauge thickness, or provided with additional deck reinforcing per manufacturer's instructions.
3. Structural beam for weld-on or backer plate connection: structure must be capable of supporting a 5,000 pound ultimate load.
4. Concrete or composite metal deck for backer plate or toggle anchor connection: Deck must be capable of supporting a 5,000 pound ultimate load.
5. Other structural decks not listed above shall be approved by a Qualified Person.

B. Contractor to coordinate installation of structural deck reinforcements and anchorages to receive fall protection anchors.

C. Contractor to coordinate placement of roofing system, insulation and flashing to ensure water-tight integrity to roof.

1.07 WARRANTY

A. Provide manufacturer’s standard warranty to guarantee products will be free from defects for a period of 12 months. Warranty period shall become effective on date of substantial completion.

PART 2 – PRODUCTS

2.01 MANUFACTURER

A. Guardian CB-12

B. FLS Works

C. HySafe

D. Probel

2.02 MATERIALS

A. CB Anchor post: 2-1/2” schedule 80 pipe, galvanized steel (size as necessary for height).

B. CB Anchor U-bar: 5/8” diameter U-bar, galvanized steel.
C. CB Anchor base plate: galvanized steel.

2.03 MANUFACTURED ASSEMBLIES

A. Guardian CB-12 or CB-18 Galvanized Roof Anchors.

2.04 FABRICATION

A. Fabricate work true to dimension, square, plumb, level, and free from distortions or defects detrimental to appearance and performance.

B. Prepare, treat and coat galvanized metal to comply with manufacturer's written instructions. Prepare galvanized metal by removing grease, dirt, oil, flux, and other foreign matter.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Examine framing and substrate and verify conditions comply with structural requirements for proper system performance.

B. Proceed with installation of roof anchors only after verifying conditions are satisfactory.

3.02 INSTALLATION

A. General: Installation of Anchor Posts to be performed by contractor according to manufacturer’s instructions and recommendations.

3.03 FIELD QUALITY CONTROL

A. Testing: Test on site 100% of anchors relying upon chemical adhesive fasteners using load cell test apparatus in accordance with manufacturer's written recommendations.

3.04 ADJUSTMENT AND INSPECTION

A. Ensure all manufactured anchors have been installed in accordance with fall protection manufacturer’s engineering documentation and specifications.

B. Provide plan drawings with any deviations in anchor locations as installed.

END OF SECTION 07227
SECTION 07552 - SBS-MODIFIED BITUMINOUS MEMBRANE ROOFING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions in Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes the following:
   1. SBS Modified roofing
   2. Polyisocyanurate Insulation
   3. Cover board
   4. Walkway pads
   5. Sheet Metal Flashing and Trim

B. Remove existing roof down (including lightweight) to concrete decks on Sections A, B, D, H, E, F, G, H, I, J, K, L, O, P, Q, R, Y & Z. Install one ply of 154 mil smooth SBS base sheet to the concrete deck as a temporary roof in an application of cold adhesive with heat welded laps. On roof sections S, T, M & N, remove the existing roof system down to the metal deck. Install one layer of 5/8” gypsum board over the metal deck by mechanically attaching with 1-90 fastening pattern. Installation of a 120 mil self-adhered base sheet over cleaned, primed gypsum board substrate.

C. Furnish and install a ¼” per foot tapered polyisocyanurate insulation adhered with low rise foam over a base layer of 2” polyisocyanurate insulation fully adhered to SBS base sheet or Vapor barrier using FM 1-90 ribbon method. Furnish and install one layer of ½” Gypsum Cover board fully adhered to the polyisocyanurate board with low rise foam adhesive. Install one (1)ply 154 mil SBS base roofing membrane fully adhered to the 1/2” Gypsum cover board insulation with cold applied membrane adhesive and heat welded laps. Install a one (1)ply 157 mil SBS cap membrane system installed with cold applied membrane adhesive and heat welded laps. Membrane flashing replacement; metal counterflashing replacement; Only 220 volt welders will be utilized for the heat welding process (no torches or 110 volt welders). Removal of all pre-determined abandoned curbs and the installation of 18 gage thick plate steel mechanically attached to the concrete deck over all openings less than 12” in diameter. Installation of liquid flashing for all pipes, penetrations, cooling lines and the top of the concrete and or copper curbs. Three course all vertical corners and vertical seams of the cap flashing membrane with liquid flashing with 6” fabric. Apply liquid flashing on top of all concrete curbs, copper caps and structural supports that cannot have a metal cap installed over the curb. All pitch pans will be stainless steel. Replace all wood blocking on any and all conduit and gas lines with synthetic Rooftop Supports. New Kynar coated 24-gauge metal coping with 22 gauge continuous cleat on outside perimeters. Install 5 new Standard Black Iron/Cast bowl. Installation of new fabricated through wall scuppers to match existing, Installation of new steel exhaust vent and hot stacks. Install at the base of each ladder, cross over ladders, and at the base of each door threshold entrance a “smooth plywood landing,” measuring 4 feet x 8 feet. Paint all gas lines yellow. Install 40 new fall protection roof anchors with a 310 lb weight capacity, 16” length by 16” base. Installation of new fixed ladder system on roof areas K, L, N, O & AA. Responsibility of contractor to snake all drains at the end of the roofing project.

D. On Roof Section AA, Furnish and install a 1/8” per foot tapered polyisocyanurate insulation adhered with low rise foam over a base layer of 2.5” polyisocyanurate insulation mechanically attached to the new metal deck panels in accordance with FM 1-90 wind uplift requirements. Furnish and install one layer of ½” Gypsum Cover board fully adhered to the polyisocyanurate board with low rise foam adhesive. Install one (1)ply 154 mil SBS base roofing membrane fully adhered to the 1/2” Gypsum cover board insulation with cold applied membrane adhesive and heat welded laps. Install a one (1)ply 157 mil SBS cap membrane system installed with cold applied membrane adhesive and heat welded laps. Install two new 4” roof drains and drain leaders attached to the side walls for drainage to the roof below.

E. The completed SBS Modified Roof System and roofing system manufacturer’s supplied accessories shall be installed in such a manner so that the roofing system manufacturer’s Thirty (30) year Full Systems (NDL). Contractors will not attempt any work without a representative of RMT Roofing and Waterproofing being onsite. All workers within fifteen (15) feet of roof perimeter must have a full fall protection system.
1.03 DEFINITIONS

1. ASTM D 1079-Definitions of Term Relating to Roofing and Waterproofing.
3. (SBS) Styrene-Butadiene-Styrene
4. (SBS) Styrene-Butadiene-Styrene Retain two definitions below if design uplift pressure subparagraphs based on SPRI's "Wind Load Design Guide for Fully Adhered and Mechanically Fastened Roofing Systems" are retained in "Performance Requirements" Article. The membrane roofing system must resist, at a minimum, design uplift pressure. Design uplift pressure, multiplied by a safety factor, produces the factored design uplift pressure.

1.04 REFERENCES

2. AMERICAN STANDARD OF TESTING METHODS (ASTM):
   b. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants
   c. ASTM D 41 - Standard Specification for Asphalt Primer Used in Roofing, Damp proofing, and Waterproofing.
   g. ASTM D 2178 - Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing.
   m. ASTM D 5849 - Standard Test Method for Evaluating Resistance of Modified Bituminous Roofing Membrane to Cyclic Fatigue (Joint Displacement)
3. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI):
   c. ANSI/SPRI IA-1, Standard Field Test Procedure for Determining the Mechanical Uplift Resistance of Insulation Adhesives over Various Substrates.
4. COOL ROOF RATING COUNCIL (CRRC)
   a. EPA ENERGY STAR

5. FACTORY MUTUAL (FM):
   a. FM 4450 - Approval Standard - Class I Insulated Steel Roof Decks.
   b. FM 4470 - Approval Standard - Class I Roof Covers.

6. NATIONAL ROOFING CONTRACTORS ASSOCIATION (NRCA).
   b. UL 1256 – Fire Test of Roof Deck Constructions.

### 1.05 PERFORMANCE REQUIREMENTS

A. General Performance: Installed membrane roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roofing substrate and base flashings shall remain watertight.

B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing system manufacturer based on testing and field experience.

#### C. SBS MODIFIED BITUMEN CAP SHEET & FLASHING MEMBRANE

<table>
<thead>
<tr>
<th>Property</th>
<th>Typical Value</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thickness @ lap edge</td>
<td>157 mils</td>
<td>ASTM D 6164</td>
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<tr>
<td>Max. Load @ 73°F</td>
<td>160 lb/in. MD</td>
<td>ASTM D 6164</td>
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<tr>
<td></td>
<td>110 lb/in. XMD</td>
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<tr>
<td>Elongation-Ultimate @ 73°F</td>
<td>30% MD</td>
<td>ASTM D 6164</td>
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<td></td>
<td>35% XD</td>
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<tr>
<td>Tensile-Tear Strength</td>
<td>165 lb MD</td>
<td>ASTM D 6164</td>
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<tr>
<td></td>
<td>120 lb XMD</td>
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</tr>
<tr>
<td>Low Temp. Flexibility @-15°F</td>
<td>PASS</td>
<td>ASTM D 6164</td>
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<tr>
<td>Breaking Load @73°F</td>
<td>80 lb./in.</td>
<td>ASTM D 6164</td>
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<tr>
<td>Compound Stability</td>
<td>248°F</td>
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</tbody>
</table>

#### D. MODIFIED BITUMEN BASE PLY MEMBRANE

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<tr>
<th>Property</th>
<th>Typical Value</th>
<th>Test Method</th>
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<tbody>
<tr>
<td>Thickness @ lap edge</td>
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<tr>
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<td>ASTM D 6164</td>
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<tr>
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<td>30% MD</td>
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<td>35% XD</td>
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<td>PASS</td>
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<td>Breaking Load @73°F</td>
<td>80 lb./in.</td>
<td>ASTM D 6164</td>
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<tr>
<td>Compound Stability</td>
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#### E. FIBRATED ASPHALT MASTIC

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<thead>
<tr>
<th>Property</th>
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<th>Test Method</th>
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<tr>
<td>Asbestos content</td>
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<td>ASTM D 276-87</td>
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<tr>
<td>Viscosity @ 77°F</td>
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<tr>
<td>Density @ 77°F</td>
<td>9.3 lb/gal</td>
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<tr>
<td>Solids by weight min</td>
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<td>ASTM D 4586-86</td>
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Resistance to sag max
Moisture vapor transmission rate

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<tr>
<th>Property</th>
<th>Typical Value</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asbestos content</td>
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<td>ASTM D 276-87</td>
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<tr>
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<td>ASTM D 1200-82</td>
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<td>ASTM D 1644-75</td>
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<tr>
<td>Flash point</td>
<td>&gt;100°F</td>
<td>ASTM D 3278-82</td>
</tr>
</tbody>
</table>

G. COLD PLY ADHESIVE-SOLVENT FREE LOW VOC
<250 g/l
ASTM D 3019
COVERAGE- 1.5-2 GALLON PER SQ
INSTALLATION-BRUSH, ROLLER OR SQUEEGE APPLIED

1.06 ACTION SUBMITTALS

1. Product Data Sheets: Submit manufacturer’s product data sheets, installation instructions and/or general requirements for each component.
2. Safety Data Sheets: Submit manufacturer’s Safety Data Sheets (SDS) for each component.
3. Sample warranty from the manufacturer and contractor.
4. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work.
5. Typical flashings and terminations.
6. Tapered insulation, including slopes.
7. Roof plan showing orientation of steel roof deck and orientation of membrane roofing.
8. Insulation fastening/ribbon patterns for corner, perimeter, and field-of-roof locations.
9. Samples for Verification: For the following products:
10. SBS modified roofing, of color specified.
11. Roof insulation.
12. Cover board.
13. Metal termination bars.
14. Six insulation fasteners of each type, length, and finish.
15. Six membrane fasteners of each type, length, and finish.
16. Six batten fasteners of each type, length, and finish.
17. Low rise foam.
19. Low VOC adhesive (1 liter sample of adhesive for each manufacturer submitted) smell test.
20. SBS Walkway pads or rolls.
21. Anchor fall protection
22. Rough Carpentry
23. All other materials provided by roofing system manufacturer or installed by roofing contractor to make systems complete.

1.07 INFORMATIONAL SUBMITTALS

1. Warranty:
   a. Provide sample copy of Thirty (30) year (NDL) Full System roofing system manufacturer's warranty stating obligations, remedies, limitations, and exclusions of warranty.
b. Provide sample of copy 3-year Installer’s workmanship warranty stating obligations, remedies, limitations, and exclusions of warranty.

3. Inspection Report: Copy of roofing system roofing system manufacturer's final inspection report of completed roofing installation.

4. CLOSEOUT SUBMITTALS:
   a. Warranty: Provide manufacturer’s and contractor’s warranties upon project completion.
   b. Maintenance Data: For roofing system to include in maintenance manuals.

1.08 QUALITY ASSURANCE

A. Roofing System Manufacturer Qualifications: A qualified roofing system manufacturer that is UL listed for roofing system identical to that used for this Project.

B. Installer Qualifications:
   1. A qualified firm that is approved, authorized, or licensed by membrane roofing system roofing system manufacturer to install roofing system manufacturer’s product and that is eligible to receive roofing system manufacturer’s special warranty.
   2. Prior to submitting a roofing proposal, Installer must be approved by Owner’s representative.

C. Source Limitations: Obtain components including roof insulation, fasteners, and accessories for roofing system from same roofing system manufacturer.

D. Exterior Fire-Test Exposure: ASTM E 108, Class A; for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.

E. Pre-installation Conference: Before installing roofing system, conduct conference at Project site. Notify participants at least 10 working days before conference.
   1. Meet with Owner’s Representative/General Contractor, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system roofing system manufacturer’s representative, deck Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
   2. Review methods and procedures related to roofing installation, including roofing system manufacturer’s written instructions.
   3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
   4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
   5. Review structural loading limitations of roof deck during and after roofing.
   6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
   7. Review governing regulations and requirements for insurance and certificates if applicable.
   8. Review temporary protection requirements for roofing system during and after installation.
   9. Review roof observation and repair procedures after roofing installation.

F. At no cost to Owner, roofing system manufacturer’s technical representative shall perform:
   1. Manufacturer’s Quality Control Inspection: The Manufacturer’s Technical Representative shall review the ongoing work on the first day of the roofing production and a minimum of one (1) in-progress inspection every 10 working days. The Roof system manufacturer Technical Representative shall:
      a. Communicate with the Owner’s project manager each inspection, i.e. meet with the Owner’s designated project manager before entering work area.
      b. Conduct pull test as needed for metal deck assembly and wind uplift needed for vapor barrier on concrete. Ensure vapor barrier is sufficient to negate the potential for “Building Related Moisture” ass stated in warranty conditions.
      c. Note all defects noted non-compliance with the specifications or the recommendations of the roof system manufacturer should be itemized in a punch list. These items must be corrected immediately by the contractor to the satisfaction of the Owner’s representative and Roof system manufacturer.
d. Ensure the roofing contractor has received a copy of each In-Progress Inspection Report within two days of the inspection. The roofing contractor is to forward the Owner’s On-site Representative a copy of the In-Progress Inspection Report.

2. Final Roof Inspection: Contractor is to arrange for roofing system manufacturer’s technical personnel to inspect roofing installation on completion of the roofing project.
   a. All defects noted non-compliance with the specifications or the recommendations of the roof system manufacturer should be itemized in a punch list. These items must be corrected immediately by the contractor to the satisfaction of the Owner and Roof system manufacturer.
   b. The roofing contractor is to forward a copy of Final Inspection Report to the Owner’s On-site Representative within two days after date inspection(s) is performed.

G. Installer's Responsibility: Any failure by the Owner Representative or roofing system manufacturer’s Representative to detect, pinpoint, or object to any defect or noncompliance of these specifications of work in progress or completed work shall not relieve the Installer, or reduce, or in any way limit, his responsibility of full performance of work required of the Installer under these specifications.

1.09 TRANSPORTATION AND PRODUCT DELIVERY REQUIREMENTS

A. Transport and handle Products in accordance with manufacturer's instructions, using means and methods that will prevent damage, deterioration, and loss, including theft.

B. Schedule Product delivery to minimize long-term storage at Project site and prevent overcrowding of construction spaces.

C. Coordinate Product delivery with installation schedule to assure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.

D. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with roofing system manufacturer’s name, product brand name, and type, date of manufacturer, and directions for handling, storing, unpacking, protecting, installing and mixing with other components. Deliver materials in sufficient quantity to allow work to proceed without interruption.

E. Promptly inspect shipments to ensure that Products comply with project requirements, quantities are correct, Products are undamaged, and properly protected.
   1. For exterior storage of Products, place Product on sloped supports, above ground.

F. Provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement, or damage.

1.10 PRODUCT STORAGE AND HANDLING REQUIREMENTS

A. Limited roofing materials may be stored on the roof as coordinated and approved by the owner’s representative. Roof overloading shall be avoided by limiting the quantity of materials placed on a roof for work to be performed on a daily basis. The contractor shall not stage roofing materials on the south side roof areas. During roofing work, materials and equipment must not be stored within 6 feet of a roof edge.

1.11 PROJECT CONDITIONS

A. Weather Limitations: Proceed with roofing work only when existing and forecasted weather conditions permit roofing to be installed according to roofing system manufacturer’s written instructions and warranty requirements.

B. All Warning lights and related beacons must remain operational at all times.

C. The SBS Modified roofing system shall not be installed under the following conditions without consulting manufacturer for precautionary steps:
   1. Any exterior wall has 10% or more of the surface area comprised of opening doors or windows.
   2. The wall/deck intersection permits air entry into the wall flashing area.
D. Protective wear shall be worn when using solvents or adhesives or as required by job conditions.

E. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to roofing system manufacturer’s written instructions and warranty requirements.

F. Emergency Equipment and Materials: Maintain onsite equipment and materials necessary to apply emergency temporary edge seal in event of sudden storms or inclement weather. If inclement weather occurs while a temporary water stop is in place, the Installer shall provide the labor necessary to monitor the situation to maintain a watertight condition.

G. Protection:
1. Arrange work sequence to avoid use of newly-constructed roofing for storage, walking surface, and equipment movement. Where such access is absolutely required, the Installer shall provide all necessary protection and barriers to segregate the work area and to prevent damage to adjacent Roofing areas.
2. The Installer shall provide a suitable temporary protective surface for all roofing areas which will receive construction traffic or construction of equipment during all phases of the roofing project.
3. During the course of installation of the membrane roofing systems, should there be any damage created by other construction trades to the new or to existing roofing membrane and/or roofing system, the Installer is to immediately notify the Owner’s Representative and membrane roofing system manufacturer. All damages are to be repaired according to the membrane roofing system manufacturer’s or Owner’s representative’s recommendations. The “party” responsible for the roofing damages shall bear the total cost for the repairs or for the replacement of existing or new roofing system.

H. Restrictions:
1. Comply with Owner’s General and Safety Requirements on use of site.
2. Smoking and Tobacco products are prohibited on all roof areas and on the campus grounds.
3. Provide and maintain sanitary facilities for employees.
4. Maintain facility and all utility services in a functional condition.

1.12 WARRANTY

A. In the event of a leak in the covered roof system prior to the guarantee expiration date, (RSM) guarantees to the University of Missouri that (RSM) will complete the necessary repairs and pay for all materials, labor and related expenses required to restore the roof to a watertight condition, provided such leaks are the result of defects in material, defects in workmanship in installing the roofing system or ordinary wear and tear. RSM further guarantees that permanent repairs shall be completed promptly or, if permanent repairs cannot be completed in a timeframe acceptable to the Owner, then RSM shall make temporary repairs. The University of Missouri will not be responsible for any expenses other than the Owner’s incidental coordination resulting from covered repairs. There is no dollar limit on the covered repairs. Leaks caused by materials or components that are not part of the roofing manufacturers system are not covered under this guarantee.

B. The RSM shall notify the Owner 60 calendar days prior to the expiration of the guarantee period to ensure the Owner is aware of the expiration date.

PART 2 - PRODUCTS

2.01 ROOFING SYSTEM MANUFACTURER

A. The Warranty shall be a full Roofing System repair and replacement thirty (30) year warranty covering all materials and labor. The Warranty shall be a no dollar limit type and provide for completion of repairs or total replacement of the “Roofing System” at the then current material and labor prices during the life of the Warranty. This Manufacturer’s warranty will run concurrently with Roofing Contractor/Installer thirty-six (36) month warranty. This warranty shall cover labor materials for the complete Roofing System and the watertight integrity and performance of the Roofing System installed which includes all components identified under Roofing Contractor/Installer thirty-six (36) month warranty. The Manufacturer shall be liable for full replacement cost of the roof system. The Roofing Contractor and roofing Manufacturer accompanied by a designated Owner’s representative shall perform, at no additional cost to the
Owner, an annual inspection of the complete Roofing System installation through the (36 month) contractor's warranty period. This inspection shall include a written detailed evaluation of the Roofing System including system failures and maintenance recommendations. All Roofing System failures and defects shall be repaired/corrected by the contractor at no additional cost to the Owner within thirty (30) days from date of annual inspection. These repairs/corrections shall include replacing any and all wet insulation. All repairs shall be approved by and made to the satisfaction of the Owner’s representative. The Owner will promptly notify the Roofing Contractor and Manufacturer, in writing, of the defects in the Roofing System. Within eight (8) hours after receipt of written notice from the Owner, Roofing Contractor shall make emergency repairs, at its expense, as required to render the facility watertight. Within five (5) days after receipt of such notice, Roofing Contractor shall, at its expense, correct any faults or defects in material or workmanship. Should the Roofing Contractor or roof Manufacturer fail or refuse to make the necessary repairs or replacements, when requested by the Owner, the Owner may perform, or cause the necessary work to be performed at the Roofing Contractor and Manufacturer’s expense.

B. The Roofing System in this specification shall be defined as those items listed below and in the Roofing System Manufacturer’s Warranty. The Roofing System as defined shall meet or exceed every standard or requirement as listed in the Roofing System Manufacturer’s latest printed descriptive product literature.

C. The Roofing System shall consist of:
   1. Roofing membrane
   2. Insulation
   3. Vapor barrier
   4. Adhesives and sealants
   5. Fasteners
   6. Insulation plates
   7. Recovery board
   8. Flashing
   9. All other materials provided by Roofing System Manufacturer or installed by Roofing Contractor required to make system watertight and complete.

D. Code Approval
   1. The Roofing System specified must be fully tested assembly that meets the following:
      a. UL Class A
      b. FM IA-90

E. Contractor must provide documented testing results from the Manufacturer of the specified system stating the approvals have been obtained for the complete cold-applied system. This shall include FM IA-90 wind rating with the specified urethane insulation adhesive and membrane mastic.

F. Roofing system manufacturers: The components of the roofing system are to be products of a single roofing system manufacturer as required to provide the specified system warranty. Subject to compliance with requirements, provide roofing products from:
   1. Soprema
   2. Siplast
   4. Firestone

2.02 SBS Modified Roof System

A. SBS modified bitumen base sheet:
   1. Fiberglass scrim/polyester mat composite impregnated and coated with high quality SBS modified bitumen.
   2. Thickness: 154 mils.
   3. ASTM D 6164.

B. SBS modified bitumen roof membrane:
   1. Fiberglass scrim/polyester mat composite impregnated and coated with high quality SBS modified bitumen.
   2. Thickness: 157 mils.
   3. ASTM D 6164.
C. SBS Modified bitumen membrane cap sheet and flashing membrane:
   1. SBS Modified Bitumen
      a. 157 mil FR GR Premium (Fire Rated with polyester and glass mat reinforcing)
      b. Granule surfaced
      c. ASTM D 6164 or equal.

D. Roof system:
   1. Modified bitumen multi-ply roof system.
      a. 1 Ply SBS smooth surface inter-ply membrane low voc cold process adhered with heat weld laps to 1/2” Gypsum coverboard.
      b. 1 Ply SBS cap ply membrane (Fire Rated with composite matt reinforcing) low voc cold process adhered with heat weld laps to smooth surface inter-ply membrane.

2.03 AUXILIARY MATERIALS

A. General: Auxiliary materials recommended by Roofing System Manufacturer for intended use and compatible with roofing system.

B. Liquid-type auxiliary materials shall comply with low VOC limit as required by Owner.

C. Liquid-type auxiliary materials shall be tested per EPA Method 24. Test results shall be submitted for review and approval prior to bidding.

D. Asphalt Primer: ASTM D 41.

E. Cold-Applied Adhesive: Roofing System Manufacturer’s standard asphalt-based, one-part, asbestos free, Low Voc cold-applied adhesive specially formulated for compatibility and use with roofing membrane and base flashings.

F. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required by Roofing System Manufacturer for application.

G. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provision in FM Approvals 4470, designed for fastening roofing membrane components to substrate; tested by Manufacturer for required pullout strength, and acceptable to Roofing System Manufacturer.

H. Metal Termination Bar: a heavy-duty, extruded aluminum flashing termination reglet used at walls and large curbs. Reglet is produced from 6063-T5, 0.10 inch to 0.12 inch (2.5 mm to 3.0 mm) thick extruded aluminum. “reglet” has a 2-1/4 inch (57 mm) deep profile and is provided in 10 foot (3 m) lengths.

I. Safety Warning Membrane: A highly visible product to draw attention to an unprotected roof perimeters and potential hazardous area. The safety warning membrane material shall be a yellow in color, 4 inches wide. (Painted if necessary)

J. Lead Flashing Sheet (drains): 30” x 30” square, 4 pound per square foot.

K. Roofing Granules: Ceramic-coated roofing granules, No. 11 screen size with 100 percent passing No. 8 sieve and 98 percent of mass retained on No. 40 Sieve, color to match roofing membrane.

L. Mineral Wool-Fiber Fire-Resistant Insulation: Semi-rigid mineral-wool-fiber batt insulation; Type IVA per ASTM C 612; not less than 144 psf (6.9 kPa) compressive strength per ASTM C 165; less than 0.05 percent moisture absorption per ASTM C 1104; complying with ASTM E 136; and with the following surface-burning characteristics per ASTM E 84:
   1. Flame Spread: 0.
   2. Smoke Developed: 0
   3. Manufacturers: Subject to compliance with requirements, available products include the following:
      a. Basis of Design: Roxul Safe; Roxul Inc.
M. Other miscellaneous materials shall be of the “best grade” available and to be approved in writing by the roofing system manufacturer for the specific application.

N. Miscellaneous Accessories: Provide those recommended by Roofing System Manufacturer.

2.04 INSULATION

A. General: Provide preformed roof insulation boards that comply with requirements, selected from roofing system manufacturer’s standard sizes and of thickness indicated.

B. Polyisocyanurate board insulation: Closed cell polyisocyanurate foam with black glass reinforced mat laminated to faces, complying with ASTM 1289-03, Type 2, Class 1, Grade 2

C. Continuous Insulation R-value to be a minimum of 30.

D. Insulation Requirements:
   1. Roof Sections – M, N, S & T: Installation of 5/8” Gypsum cover board mechanically fastened to the steel deck with FM 1-90 fastening requirements followed by priming the coverboard as required to install a SA vapor barrier. Installation of 2” base layer of insulation with low rise foam to the VB with FM 1-90 ribbon method followed by a ¼” per foot tapered insulation system with FM requirements. The Gypsum cover board will be applied with low rise foam with FM 1-90 requirements.
   2. Roof Sections A, B, D, H, E, F, G, H, I, J, K, L, O, P, Q, R, Y & Z: Install manufacturer’s 154 Mil SBS to primed and prepared concrete roof deck in cold applied adhesive with heat welded seams. Installation of one layer 2.0” inch polyisocyanurate board with low rise foam to temporary roofing system. Installation of ¼” per foot tapered insulation system with FM 1-90 requirements to base layer of insulation followed by one layer 1/2” Gypsum Cover board in low rise foam with FM 1-90 ribbon method.
   3. On Roof Section AA, Furnish and install a ¼” per foot tapered polyisocyanurate insulation adhered with low rise foam over a base layer of 2.5” polyisocyanurate insulation mechanically attached to the new metal deck panels in accordance with FM 1-90 wind uplift requirements. Furnish and install one layer of ¼” Gypsum Cover board fully adhered to the polyisocyanurate board with low rise foam adhesive. Install one (1) ply 154 mil SBS base roofing membrane fully adhered to the 1/2” Gypsum cover board insulation with cold applied membrane adhesive and heat welded laps. Install two new 4” roof drains and drain leaders attached to the side walls for drainage to the roof below.

E. Tapered Polyisocyanurate Insulation Shapes: Preformed insulated shapes for saddles, crickets, tapered edge strips, sumps, and other insulation shapes where indicated or where required for sloping to drain. Fabricate to slopes indicated.

F. Saddles, Crickets, Edge Strips, and Other Shapes:
   1. Tapered insulation boards fabricated to slope of 1/2-inch per 12 inches (1:48) unless otherwise indicated.
   2. Crickets between Roof Drains: Tapered insulation boards fabricated to slope of 1/2-inch per 12 inches (1:24) unless otherwise indicated.
   3. Sumps for Roof Drains, measuring 4 feet x 4 feet; size to be modified when drains are located next to parapet wall:
      4. Tapered insulation boards fabricated to slope of 1/2-inch per 12 inches (1:48). Provide a minimum insulation thickness at the roof drain or roof scupper of 2.0 inches.
   4. Saddle Behind (Upslope) from Curbs Measuring 18 inches and greater: Tapered insulation boards fabricated to slope of 1/2-inch per 12 inches (1:24).
   5. Saddle Behind (Upslope) from Round Penetrations Measuring 18 inches in diameter and greater: Tapered insulation boards fabricated to slope of 1/2-inch per 12 inches (1:24).

2.05 COVER BOARD

A. Substrate Board: ASTM C 1177/ C 1278M, glass mat gypsum roof board, water-resistant gypsum substrate, 5/8 inch thick.
   1. Products: Subject to compliance with requirements, provide the following or equal:
      a. Georgia Pacific; DensDeck prime.
      b. Securerock Prime.
2.06 INSULATION AND COVER BOARD ACCESSORIES

A. General: Furnish roof insulation accessories recommended by insulation roofing system manufacturer for intended use and compatible.

2.07 DUAL COMPONENT POLYURETHANE ADHESIVE

A. General: Provide a dual component polyurethane adhesive that is intended for the attachment of polyisocyanurate insulation to various substrates. The dual component polyurethane adhesive has to have approvals from the insulation and roofing system manufacturer for adhering the polyisocyanurate insulation to approved substrates, multiple layers of polyisocyanurate insulation, and cover boards. Consult adhesive roofing system manufacturer on current acceptable substrates to apply dual component polyurethane adhesive to various substrates.

B. Dual component polyurethane adhesive: The low-slope dual component polyurethane adhesive shall have the following minimum properties:

2. Compressive Strength ASTM D-1621: Parallel, 38 psi @ 6% deflection.
3. Tensile Strength ASTM D-1623: 35 psi
4. Water Absorption ASTM D-2843: 5.1%
5. Closed Cell Content ASTM D-6226: 90% min.
6. R-Value ASTM C-518 3.8/inch (new)
7. VOC Content ASTM D-2369 <5 g/l (1&2 combined)

C. Approved Roofing system manufacturer and Product:

1. OMG Roofing Products, “OlyBond 500® SpotShot.”
2. Roof system manufacturer, “OM Board Adhesive.”

2.08 VAPOR RETARDER ON CONCRETE DECKS

A. Roofing Membrane Sheet: ASTM D 6164, 154 mil SBS-modified asphalt base sheet (reinforced with a polyester fiber mat); surfaced; suitable for application method specified. Set in cold adhesive and heat weld side and end laps.

2.09 VAPOR RETARDER ON STEEL DECKS

A. Roofing Membrane Sheet: Over installed primed 5/8” gypsum board-ASTM D 6164, Grade P, 120 mil (or highest Mil thickness available by manufacturer) SA SBS-modified asphalt base sheet (reinforced with a polyester fiber mat); surfaced; suitable for application method specified.

2.10 RELATED MATERIALS

A. Timber, General: Hand select material at factory from lumber of species and grade indicated below for compliance with "Appearance" grade requirements of ALSC National Grading Rule; provide certificate of inspection from an accredited Agency for selected material.

1. Provide seasoned lumber with 19 percent moisture content at time of dressing and shipment, for sizes 2-inches or less in thickness.
2. Provide lumber with 15 percent moisture content at time of dressing and shipment for, sizes 2-inches or more in thickness.

B. Dimensioned Lumber: Graded in accordance with established grading rules; grade and species as follows:

1. Concealed Boards: WWPA standard grade, any species, or SPIB No. 3 grade Southern Pine.
2. Lumber for Miscellaneous Uses: Standard grade unless otherwise indicated.
3. Plywood: PS 1; select sheathing grade or APA rated 5/8-inch minimum thickness, CD-X, or better in sheathing.
2.11 MISCELLANEOUS FASTENERS AND ANCHORS

A. General: All fasteners, anchors, nails, straps, bars, etc. shall be post-galvanized steel, aluminum, or stainless steel. Mixing metal types and methods of contact shall be assembled in such a manner as to avoid galvanic corrosion. Fasteners for attachment of metal to masonry shall be expansion type fasteners with stainless steel pins. All concrete fasteners and anchors shall have a minimum embedment of 1¼ inch (32 mm) and shall be approve for such use by the fastener roofing system manufacturer. All miscellaneous wood fasteners and anchors used for flashings shall have a minimum embedment of 1 inch (25 mm), stainless steel, and to be approved for such use by the fastener roofing system manufacturer.  

   Perform fastener-pullout tests according to roof system Manufacturer’s recommendations.

1. Submit test result within 24 hours of performing tests.
   a. Include Manufacturer’s requirements for any revision to previously submitted fastener patterns required to achieve specified wind uplift requirements.

B. General: Provide 40 structural fall restraint and fall arrest system capable of withstanding loads and stresses within limits and under conditions specified in OSHA and other applicable safety codes. Provide fall protection anchors permanently attached to roof structure.

C. Design Requirements: Anchors and accessories comprising system of following types:

1. Fall Arrest Anchors, spaced as indicated by manufacturer, for safety snap connection by individual workers capable of withstanding a 5,000 pound load or safety factor of 2 meeting the requirements of OSHA 1926.502(d)(8).

D. Performance Requirements: System and components tested for the resistance of the following loads:

1. Fall Restraint: 1 User
2. Fall Arrest: 1 User
3. Design fall protection anchors to resist a 5,000 pound load applied in any direction at maximum anchor height or provide engineered system designed meeting the requirements of OSHA 1926.502(d)(8).

E. Acceptable Roof Davit Anchor Manufacturers:

1. Guardian
2. FLS Works
3. HySafe
4. Probel

F. Series F Fixed steel ladders (Roof sections K, L, N, O & AA)

1. Side members are 1/4"x2"x2" steel angle. Climbing rungs are 3/4" corrugated steel round rungs space on 12" centers. Stand-off brackets are 7”.
   a. FS Industries
   b. Global
   c. Cotterman

G. Type S 36” x 30” Roof hatch

1. Bilco

2.12 PROTECTION PADS

A. Protection Pads: “- factory-formed, nonporous, heavy-duty, slip resisting, surface-textured protection pads, as supplied Roof system manufacturer. Color of protection pads shall be black. Protection pads to be used under all wood support blocking, equipment supports, pipe steel supports, and under downspout splash blocking.

2.13 ROOF WALKWAYS

A. Installer is to install walkway in the areas as indicated on roof plans. Installer is responsible for verification of the Total linear footage of the required walkway installation. The minimum length of the walkway shall be four (700’) feet.
B. Adhere minimum 157 Mil granulated sheet (in different color) to roofing system in a spot application of elastomeric mastic.

C. Provide walk paths and walkways around all HVAC units and equipment requiring scheduled Maintenance, ladder accesses and at scuttle access hatch.

2.14 DRAINS


2.15 SYSTEM PERFORMANCE REQUIREMENTS

A. SBS MODIFIED BITUMEN CAP SHEET & FLASHING MEMBRANE

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<thead>
<tr>
<th>Property</th>
<th>Typical Value</th>
<th>Test Method</th>
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<tr>
<td>Thickness @ lap edge</td>
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<tr>
<td>Max. Load @ 73°F</td>
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<td>Tensile-Tear Strength</td>
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<td>Low Temp. Flexibility @-15°F.</td>
<td>PASS</td>
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<tr>
<td>Breaking Load @73°F.</td>
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<td>ASTM D 5147</td>
</tr>
<tr>
<td>Compound Stability</td>
<td>248°F</td>
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</tbody>
</table>

B. MODIFIED BITUMEN BASE PLY MEMBRANE

<table>
<thead>
<tr>
<th>Property</th>
<th>Typical Value</th>
<th>Test Method</th>
</tr>
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<tr>
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<td>Compound Stability</td>
<td>248°F</td>
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</tr>
</tbody>
</table>

PART 3 - EXECUTION

3.01 INSPECTION

A. Inspect entire roof area to be roofed for acceptability. Examine substrates, areas, and conditions for compliance with the following requirements and other conditions affecting installation and performance of the roofing system:

2. Verify that roof openings and penetrations are in place, and curbs are set and braced, and that the roof drains and drain lines are properly clamped into position and are in a 100% functional condition.

3. Verify that primary drain bodies are at proper elevations for construction of sump at slopes indicated.

4. Verify that secondary overflow drain bodies are at proper elevations for construction, without sumps, at level of roof surface.
5. Verify all drains function properly at the end of the roofing project.

B. Verify that structural use panels, sheathing, and similar wood products are securely anchored to substrates, and that surfaces of panels and sheathing are without irregularities which could interfere with proper membrane and flashing installation.

C. Verify that surface plane flatness and fastening of steel roof deck complies with requirements in Division 05 Section "Steel Decking."

D. Verify that steel deck is securely fastened with no projecting fasteners and no adjacent units in exceed 1/16 inch (1.6 mm) or more out of plane measured to adjoining deck.

E. Verify that installed steel roof decking complies with required slopes indicated, that no holes, ridges, voids, uneven or misaligned surfaces or conditions, gaps, or other irregularities exist, and deck and substrates are smooth and free of sharp edges.

F. Visually inspect cast-in-place reinforced concrete roof deck for the following:
   1. Evidence of impaired deck structural capacity or integrity.
   2. Exposed concrete reinforcing.
   4. Spalling or loss of concrete cover.
   5. Presence of foreign materials.
   7. Ridges or uneven conditions in concrete deck.
   8. Holes, voids, or gaps in concrete deck.

G. Other conditions that would prevent proper application of roofing or that would prevent membrane roofing manufacturer’s approval of substrate, components, or system.

H. Verify that roofing systems can be installed with positive drainage of minimum slopes indicated at all areas of roof, without ponding after 24 hours.

I. Verify that roofing as completed will discharge to internal roof drains without ponding or inadvertent discharge through secondary roof drains.

J. Verify that final installed curb heights for flashing are a minimum of 8-inches (200 mm) measured above finished roof membrane.

K. Verify piping and conduit penetrations of roof are made individually, separated by a minimum of 12 inches (300 mm) from each other and from restraining surfaces or other obstructions.

L. Verify locations of interior electrical conduits, piping, ducts, and similar items in close proximity to underside of steel roof decking, to avoid striking with fasteners.

M. Verify that deck and other substrates are dry, free of debris, excess, and foreign materials.

N. Verify substrates and surfaces to receive flashings are dry, clean, and free of sharp or penetrating projections or other irregularities.

O. Proceeding: Proceed with installation only after unsatisfactory conditions have been corrected.

P. Do not commence work until decking and substrates are in full compliance with roof system manufacturer’s requirements, deck and substrate conditions are sound, and positive fall to drainage points are achieved.

Q. Commencement: Commencement of work indicates acceptance of conditions and responsibility for all corrections.
3.02 PREPARATION

A. Clean substrate of dust, debris, and other substances detrimental to roofing installation according to roofing system roofing system manufacturer’s written instructions. Remove all sharp projections.

B. The Installer will be entirely responsible for the complete removal of all dirt, debris, moisture from the roof’s substrate, i.e. steel decking, concrete decking, before the installation of the roofing system. The roof’s substrate must be 100% completely dry before applying the spray-in-foam insulation or before the installation of the specified roofing insulation.

C. Cleaning: Clean substrate including metal decking flutes of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer’s written instructions. Remove sharp projections.

D. Debris, water, moisture, or foreign materials found in flutes of steel roof decking is not permitted; remove and replace roofing installed above flutes found to contain foreign materials.

E. Cleaning, repair or replacement of damaged items, as a result of roofing related materials entering the facility, shall be solely at the roofing contractor's expense.

F. Broom clean cover board immediately prior to membrane roofing application.

G. Promptly remove debris each day; do not stockpile debris or allow waste to accumulate on steel deck, insulation, or roofing under construction.

H. Containment: Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction at the end of the workday or when rain is forecast. Remove roof-drain plugs when no work is taking place or when rain is forecast.

I. Mask off adjoining surfaces not receiving roofing membrane materials to prevent spillage or over spray affecting other construction.

J. Fill all gaps and voids between substrate components that are wider than 1/4 inch. Fill all gaps with same materials as the substrate.

K. Seal around along perimeters, along equipment curbs, around pipes, around conduits, and any other roof penetrations with vapor barrier.

L. Base Vertical Flashings: Coordinate roof insulation thickness with adjacent flashing height, to maintain not less than 8-inch flashing height. Adjust base vertical flashing height including substrates and changes in exterior wall materials to maintain minimum height.

M. Proceed with roofing work only when weather conditions permit work to proceed in accordance with manufacturer’s requirements and recommendations.

N. Prime surface of concrete deck with asphalt primer at a rate of 3/4 gal./100 sq. ft. (0.3 L/sq. m), and allow primer to dry.

O. Perform fastener-pullout tests according to roof system Manufacturer’s recommendations.

3.03 WOOD NAILER INSTALLATION

A. All Wood Nailers shall be anchored to resist a minimum force of 300 pounds per lineal foot (4,500 Newtons/lineal meter) in any direction. Individual nailer lengths shall not be less than 3 feet (0.9 meter) long. Nailer fastener spacing shall be at 12 inches (0.3 m) on center or 16 inches (0.4 m) on center if necessary to match the structural framing. Fasteners shall be staggered 1/3 the nailer width and installed within 6 inches (0.15 m) of each end. Two fasteners shall be installed at ends of nailer lengths. Wood nailer attachment shall meet the current Factory Mutual Loss Prevention Data Sheet 1-49. Refer to Division 06 10 00 for acceptable fasteners for wood product attachments.
B. Wood Nailer thickness shall be as required to match the insulation and cover board height (thickness) to allow a smooth transition.

C. Stainless steel, corrosion resistant, fasteners are required when mechanically attaching any roof system manufacturer product to wood nailers and wood products treated with ACQ (Alkaline copper Quaternary). When ACQ treated wood is used on steel roof decks or with metal edge detailing, a separation layer must be placed between the metal and ACQ treated wood.

D. New wood nailers and/or plywood sheeting shall meet the performance criteria in Division 06 10 00.

3.04 VAPOR-RETARDER / AIR BARRIER INSTALLATION

A. The removal of the existing lightweight roof systems down to concrete deck. Deck to be as clean as possible. Insure the concrete is in good condition. Repair where needed. If concrete deck is wet allow sufficient amount of time for the moisture to dry. No torches to be used to dry deck of moisture!

B. Allow SBS vapor retarder’s rolls and Self Adhered rolls to be unrolled and relaxed. Immediately roll the membrane into adhesive. After rolling the membrane into the adhesive, a weighted roller should be used over the entire surface of the membrane. This procedure is critical for positive adhesion of the membrane to the substrate.

3.05 INSULATION BOARD INSTALLATION

A. General Criteria:
1. Coordinate installing roofing system components, so insulation is not exposed to precipitation or left exposed at the end of the workday.
2. Wet, broken, warped, or bent insulation boards are not acceptable. Any damaged insulation boards are to be replaced with new insulation boards.
3. The substrate surface must be free of debris, dirt, grease, oil, ice, snow, frost, standing water, and must be 100% completely dry prior to the installation of the specified roofing insulation or during the time of applying the dual component polyurethane adhesive.
4. Construct sumps at primary roof drains using tapered insulation to slope indicated. Install nailers or blocking as required to secure drain body assembly to roof deck.
   a. Unless otherwise indicated, construct sumps to consistent and uniform slope of 1/4 per 12 inches to provide a smooth transition from the roof surface to the drain. Do not introduce steeper or shallower slopes within sump.
   b. Use tapered insulation to form a square sump. Unless indicated otherwise, construct sump measuring 4 foot by 4 foot at primary roof drains.
   c. Adjust primary roof drain assemblies to proper elevation for sump.
   d. Install tapered insulation so edges do not restrict flow of water.
   e. Do not create circular depressions around primary roof drain at bottoms of sumps.
   f. Responsibility of contractor to snake all drains at the end of the roofing project.
5. Do not install sumps at secondary overflow roof drains.
   a. Adjust secondary roof drain assemblies to proper elevation of final roofing membrane.
   b. Do not create circular depressions around secondary roof drains.
6. Where conditions require drain modifications to match specified insulation thickness, roofing contractor will be responsible for the cost of readjusting the primary roof drain bowl and associated plumbing to match the “finished” insulation thickness. Owner will not permit the circular depressions, nor the cutting or shaving the insulation in order to slope the insulation to the edge of the drain bowl.
7. Roofing system manufacturer’s technical representative shall be on the jobsite during the first initial day of installation of the roofing system.

B. Attachment of the Polyisocyanurate Insulation on the steel decking over roof sections S, T, M, N & Y:
1. Install SA vapor barrier to the top of the 5/8” dens deck attached with FM 1-90 fastening pattern. (16 fasteners per 4’x8’ board)
2. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2.6 inches or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 16 inches in each direction.
2. The first layer of the gypsum cover board edges shall be supported on the top rib of the steel deck. The insulation board shall be lay transverse to the direction of the steel decking ribs. Insulation boards edges shall be as close as practical to the center of the rib, with a minimum of 1 ½ (1.5) inches bearing on the rib. Stagger end joints of boards a minimum of 1/3 of overall length.

3. Over the top of the first layer of insulation, the second layer of insulation board shall be lay transverse to the direction of the first layer of insulation. Stagger end joints of boards a minimum of 1/3 of overall length.

4. The second layer of the specified polyisocyanurate insulation shall be fastened to the steel decking per an approved fastening pattern. The specified insulation board shall be low rise foamed to the 5/8” gypsum overboard with FM 1-90 ribbon method increasing the ribbons for the perimeter by 50% and increasing the number of fasteners and insulation plates by 100% in the corners of the roof.

5. For the Gypsum coverboard - The “metal fasteners” are to have a minimum 3/4-inch and a maximum 1- inch penetration through the steel decking. All fasteners should be fastened only through the top rib of the steel deck.

6. Install eight (4’ feet x eight (4’) feet tapered insulation at each primary roof drain or supper. The tapered insulation shall be mitered at the corners to provide a smooth and tapered transition into the roof drains and scuppers.

C. Installation of additional “flat stock” and tapered polyisocyanurate insulation:
1. The “flat stock” and/or tapered polyisocyanurate insulation panels shall be laid transverse to the proceeding layer of insulation, with joints staggered at least 1/3 of overall length from those of the proceeding layer of the “flat stock” insulation.
2. The “flat stock” and/or tapered polyisocyanurate insulation boards shall be adhered to top layer of “flat stock” insulation with the dual component polyurethane adhesive. The dual component polyurethane adhesive shall be dispensed ¾ inch wide and 12 inches on center bands in the field of the roof. In the corners and perimeters of the roof area where the tapered cricket or saddles are to be installed, the number of ribbons per unit width or area over the field rate by:
   a. 70% in the perimeter - resulting in a maximum on center spacing equal to 60% of the field spacing (field ribbons at 12" on center, the perimeter spacing shall be 7" on center).
   b. 160% in the corner - resulting in a maximum on center spacing equal to 40% of the field spacing (field ribbons at 12" on center, the corner spacing shall be 4.8" on center.).
3. After allowing dual component polyurethane adhesive to rise ¾ inch to 1 inch, lay insulation board in to position and walk into place. After walking into place, the insulation board shall be pressed firmly into the adhesive layer with using an approved weighted roller by frequent rolling in two or more directions. Contractor shall also “weight down” the insulation board to ensure proper adhesive to the top layer of insulation.
4. Owner will not accept any un-adhered or loose insulation boards. After installation of the insulation board, should the insulation board be not properly adhered to the proceeding layer, the Installer will be held responsible for replacing the unacceptable installed insulation board. All cost related, i.e. replacement of specified insulation, cover board, roofing materials, etc., to the replacement of the unacceptable installed insulation board will be at no cost to the Owner.

3.06 COVER BOARD INSTALLATION

A. General Criteria:
1. Fasten or adhere the specified cover board according to requirements of the roofing system manufacturer’s written instructions.
2. Wet, broken, warped, or bent insulation boards are not acceptable. Any damaged cover boards are to be replaced with new cover boards.
3. Consult roofing system manufacturer on current acceptable substrates and rates for applying the low-rise urethane adhesives. The surface of substrate shall be inspected prior to installation of the cover board.
4. The substrate surface must be free of debris, dirt, grease, oil, ice, snow, frost, standing water, and must be 100% completely dry prior to the installation of the specified cover board or during the time of applying the dual
component polyurethane adhesive and the spray-in-place foam.

5. Roofing system manufacturer’s technical representative must be on the jobsite during the first initial day of installation of the roofing system.

6. Install a single layer of cover board over the specified polyisocyanurate insulation.

7. The cover board sheeting shall be laid transverse to the top layer of the insulation board, with joints staggered at least 1/3 of overall length from those of the insulation layer.

8. The cover board shall be neatly cut to fit within 1/4 inch of nailers, penetrations, and projections.


10. Trim surface of cover board where necessary at roof drains so completed surface is flush and does not restrict flow of water.

11. Do not install more cover board than can be covered with the specified roofing system by the end of the day, or onset of inclement weather.

B. Attachment of Cover Board:

1. Apply the dual component polyurethane adhesive at the manufacturer’s written instructions for adhering the specified cover board to the specified polyisocyanurate insulation.

2. The dual component polyurethane adhesive shall be dispensed in 12 inches on center bands in the field of the roof. In the corners and perimeters of the roof area, the number of ribbons per unit width or area over the field rate by:

   a. 70% in the perimeter - resulting in a maximum on center spacing equal to 60% of the field spacing (field ribbons at 12" on center, the perimeter spacing shall be 7" on center).

   b. 160% in the corner - resulting in a maximum on center spacing equal to 40% of the field spacing (field ribbons at 12" on center, the corner spacing shall be 4.8" on center.).

3. After allowing low rise urethane foam to rise ¾ inch to 1 inch, lay cover board in to position and walk into place. After walking into place, the cover board shall be pressed firmly into the adhesive layer with using an approved weighted roller by frequent rolling in two or more directions. Contractor shall also use “weights” to ensure the cover board is completely adhered to the top layer of the polyisocyanurate insulation. There shall not be any elevation change or raise of the corners or sides of the cover board as compared to the sides of the adjacent cover board sides. The cover board shall lay flat or level as compared to the edges of the adjacent cover board.

4. After installation of the cover board, should the cover board have more than 1/8 inch deviation or rise to the adjacent cover board, the Installer will held responsible for replacing the unacceptable installed cover board. All cost related, i.e. replacement of specified insulation, cover board, membrane, etc., to the replacement of the unacceptable cover boards shall be completed prior to the installation of the membrane.

3.07 SBS ROOF SYSTEM INSTALLATION (USE CAUTION TO ENSURE ADHESIVE FUMES ARE NOT DRAWN INTO THE BUILDING.)

A. General: Install in strict accordance with roofing system manufacturer's latest published requirements, instructions, specifications, details, and approved shop drawings.

B. Install Roofing System according to Roofing System Manufacturer’s written instructions, FM Approvals' RoofNav listed roof assembly requirements, and FM Global Property Loss Prevention Data Sheet 1-29.

C. Install SBS roofing system per roofing system manufacturer’s requirements in order to obtain roofing system manufacturer Thirty (30)-year Full System (NDL) warranty.

D. Coordinate with Owner representative to shut down air-intake equipment in the vicinity of the Work. Roofing Contractor shall cover air-intake louvers before proceeding with reroofing work that could affect indoor air quality or activate smoke detectors located in the mechanical ductwork.

E. The SBS Modified roofing system is to be adhered with roofing system manufacturer’s approved cold adhesive. Membrane laps shall be shingled with the flow of water where possible.

F. Layout: Eliminate roofing system plies through primary roof drains or through secondary roof drain locations.

G. SBS base ply membranes shall be to relax for a minimum of 30 minutes prior to installation. Fully adhere to insulation substrate with an application of Cold Adhesive.
H. Install modified bituminous roofing cap sheet according to roofing Manufacturer’s written instructions, starting at low point of Roofing System adhered with 2 gallons per sq ft of adhesive.

I. Apply one (1) ply SBS modified bitumen base sheet membrane to insulation substrate and all wall, curb, and projection base, ensuring a minimum of 1/8”- ¼” bleed-out from the ply lap.

J. Overlap each ply four (4) inches with first ply. Place ply sheets to ensure water will flow over or parallel to, but never against, exposed edges.

K. Do not apply mastic more than 10’ ahead of each roll being embedded.

L. Broom or roll ply to set adhesive. Ensure complete and continuous seal and contact between bitumen and ply sheets including ends, edges, and laps without wrinkles, fish mouths, or blisters. Broom width to be thirty-four (34) inches at a minimum. Avoid walking on plies until adhesive has set.

M. Side and end laps shall be hot-air welded with 210 volt welders to provide immediate, positive sealing of the roof membrane.

N. Cut out fishmouths/side laps not completely sealed; patch. Replace all sheets not fully and continuously bonded.

O. Lap ply membrane ends six (6) inches. Stagger end laps three (3) feet minimum.

P. **Install one (1) ply modified bitumen cap roofing membrane over one ply base**, shingle fashion, off-set from base ply membrane ½ sheet and overlap each membrane three (3) inches at selvage. Place roofing membrane in manner to ensure water flows over or parallel to, but never against, exposed edges.

Q. The top layer of the roof membrane system must be off-set from the base layer of the roof membrane system 18".

R. The roof membrane must be solvent welded onto horizontal surfaces using a cold process mastic and hot air welder, at laps and footings, suitable for this Application. **(All granules must be embedded prior to welding)**

S. A 20 lb. minimum roller shall be used on all side and end laps following immediately behind the hot air welder. The edge of the seam shall be left un-tooled (not buttered). A continuous bead of molten asphalt should be visible at all laps/seams after Application. Do not overheat the membrane, causing damage to the membrane and/or reinforcements during Application.

T. Lap ply sheet ends six (6) inches. Stagger end laps eighteen (36) inches minimum.

U. Roll or broom cap ply to set adhesive. Ensure complete and continuous seal and contact between bitumen and ply sheets including ends, edges, and laps without wrinkles, fish mouths, or blisters. Broom width to be thirty-four (34) inches minimum. Avoid walking on plies until adhesive has set.

V. Place ply sheets to ensure water will flow over or parallel to, but never against, exposed edges.

W. Envelope plies at all walls, edges, and projections. Ensure all plies form a watertight barrier on a daily basis.

X. Fit plies into roof drain rims; install lead flashing and finishing plies; secure clamping collars; install domes.

Y. Extend all roofing membranes past the top edge of cant at wall and projection bases. Ensure all plies form a watertight barrier on a daily basis.

Z. Stagger end laps by a minimum of 36” throughout SBS cap installation.

AA. **Prepare all end laps by embedding or removing all granules roughly 6” throughout the entire end lap. This must be conducted with a 210-volt hand welder.**
BB. Completely weld laps all end laps and side laps, leaving no voids. (End laps must be welded without any granules present.)

CC. Roll side laps with a 20-75-pound roller.

DD. Cut out fishmouths/side laps not completely sealed; patch. Replace all sheets not fully and continuously bonded.

EE. Excessive Repairs: Excessive repairs to membrane, or to membrane seams are not permitted. Remove and replace membrane in entire area affected, and as directed by Owner’s representative.

3.08 DAILY WATERSTOP/TIE-INS

A. Use 154 mil SBS base ply, cold applied with hot air weld laps. Ensure all waterstops/tie-ins are made watertight on a daily basis.

B. Install "deadman" insulation filler at insulation staggers.

C. At beginning of next day's work, remove temporary connection by cutting plies evenly along edge of existing roof system. Remove "deadman" insulation fillers.

D. Loose lay alternating insulation boards in order to maintain stagger throughout the course of the project. This will be inspected on a daily basis and is susceptible to rejection if proper stagger is not achieved.

Note:
1. The Installer shall employ all means necessary to assure that the installation of all field and flashing membranes is free of loose (un-adhered) areas and wrinkles. The Owner's Representative(s) reserves the right to require that all preventable loose and /or wrinkled field membrane and membrane flashings to be repaired to the satisfaction of the Owner's Representative. In the event that the Installer determines that loose and /or wrinkled membrane or membrane flashing is unavoidable in a specific area(s), the onsite Owner’s Representative must be notified immediately for a determination of acceptability.

2. Contractor is to ensure during the time of installing the roofing materials and flashings, there is no entrapment of debris under any materials.

3.09 MEMBRANE FLASHING INSTALLATION

A. At Low Parapet Wall Flashings
1. Remove existing flashing materials to substrate leaving roughly 6” pf EPDM roofing material at the top of the parapet wall.
2. Install new wood blocking - as required.
3. Adhere cant strip to flashing base in a continuous application of flashing grade mastic.
4. Cut 154 mil SBS base flashing membrane in lengths not to exceed width of sheet or three (3) feet. Apply elastomeric mastic to flashing ply and to substrate in a continuous 1/16-inch-thick application. Roll the flashing membrane with a neoprene roller. Lap flashing membrane ends four (4) inches; extend membrane four (4) inches onto the field of the roof.
5. Extend flashing ply four (4) inches beyond toe of cant. Heat weld to roof substrate with a 210 welder.
6. Cut 157 mil SBS cap flashing membrane in lengths not to exceed width of sheet or three (3) feet. Apply elastomeric mastic to flashing ply and to substrate in a continuous 1/16-inch-thick application. Adhere cap sheet flashing to mastic with neoprene roller. Lap flashing membrane ends four (4) inches; extend membrane six (6) inches onto the field of the roof.
7. END LAPS AND SIDE LAPS MUST HAVE A FULL EMBEDMENT OF THE UNDERLYING GRANULES PRIOR TO WELDING.
8. Secure top edge of flashing membrane to top of substrate with termination bar secured twelve (12) inches OC.
9. Install new metal coping detail, fastened 12” OC. on inside face of coping metal. Attach to new continuous cleat.

B. Exhaust unit curb flashings:
1. Remove all membrane flashing. Dispose of properly.
2. Install new wood blocking, as required, to provide 8" minimum flashing height.
3. Install new fiber cant strip adhered to flashing base in a continuous application of flashing grade mastic.
4. Install new roofing to top edge of cant and onto curb substrate.
5. Adhere one (1) ply of SBS smooth surfaced flashing membrane to flashing substrate in a continuous cold adhered application. Remove wrinkles and voids. Overlap sections four inches. Hot air weld laps.
6. Cut mineral surfaced SBS modified bitumen flashing sheet in lengths to fit one (1) side of projection plus six (6) inches either end; precut ends to drape cant; do not exceed three (3) feet in total length.
7. Cold apply one (1) ply of mineral surfaced SBS modified flashing membrane. Lay flashing membrane ends four (4) inches; extend membrane six (6) inches beyond toe of cant; press sheet firmly in place. Ensure complete bond and continuity without wrinkles or voids. Hot air weld laps and footings. Roof slope determines work order; start at low side, sides, then high side. END LAPS MUST HAVE A FULL EMBEDMENT OF THE UNDERLYING GRANULES PRIOR TO WELDING.
8. Secure top edge of flashing to substrate with termination bar.

C. At plumbing vents: WIRE BRUSH SURFACE PRIOR TO APPLICATION!
   1. Use paint brush, or trowel.
   2. Prime all surfaces with a mist of Liquid Flashing Primer and allow to dry. Do not over-apply primer.
   3. Apply a coating of Liquid Flashing to the area to be flashed.
   4. Brush the first coating of Liquid Flashing until it is uniform.
   5. Set fabric into freshly applied Liquid Flashing.
   6. Apply 2nd coat of Liquid Flashing to scrim. The fabric should be completely coated to form a water-tight seal. After allowed to dry, apply 3rd coating of liquid flashing.
   7. Apply liquid flashing on stacks prior to the installation of the cap sheet. Cap sheet will overlay the application of the 8” base liquid flashing.

D. Pitch pans/flashing collars:
   1. Remove existing pitch pans.
   2. Where applicable: Fabricate pipe flashing with liquid flashing sealed to the base ply roof membrane.
   3. Fabricate pitch pans from stainless steel. Sides: Four (4) inches high, hemmed to outside at top edge. Flange: Four (4) inches wide, completely around periphery. Clearance between projection and pitch pan: Two (2) inches. Set primed flange in mastic.
   4. Apply a continuous application of flashing adhesive onto entire flashing flange and at least two (2) inches onto adjacent roofing.
   5. Embed target flashing ply into flashing adhesive. Extend flashing at least five (5) inches onto adjacent roofing. Remove wrinkles and voids. Hot air weld 3” of entire perimeter.(Embed all granules)
   6. Seal around all projections in pitch pans and then completely fill with two (2) part pourable urethane sealant. Fill penetration pocket so that water is shed from the penetration.
   7. Remove cement residue from projection and pitch pan before installing sealant.
   8. Fabricate and install stainless steel umbrella with draw band over pitch pan. Tighten draw band.

E. Roof Drains/Scuppers:
   1. On Section AA install two new 4” drain bowls and all applicable leaders to downspouts. Downspouts to be attached to interior walls of Section I and drain to roof surface.
   2. Install tapered edge strip around drain to create 48 x 48 inch sump. Miter corners. Seal toe of tapered edge to drain rim with reinforcing membrane embedded between alternate courses of asphalt mastic. Adjust edge strip thickness so that final tapered edge strip thickness at existing roofing is even with roofing surface.
   3. Install roofing system from sump rim to primed area. Extend new roofing at least twelve (12) inches onto existing roofing.
   4. Seal/plug drain to prevent water entry until service connection is completed.
   5. Apply 1 /16 inch uniformly thick layer of asphalt mastic to surface receiving lead flashing.
   6. Prime lead with asphalt primer (both sides)
   7. Set single piece primed lead flashing in mastic centered over drain; extend lead at least six (6) inches beyond drain rim. Neatly dress lead with wood block.
   8. Clamp flashing collar to drain in bed of mastic.
   9. Neatly cut lead/felts within drain at rim; remove.
10. Seal perimeter of primed lead and drain tie in with one (1) ply modified bitumen membrane, mastic or hot air welded Applied; leave no voids. Extend target or stripping plies three (3) and six (6) inches beyond edge of lead/tie in.

11. Embed granules around perimeter of drain sump roughly 4". Install liquid flashing to outside of 4" granule embedment.

12. Install Liquid flashing within the 4x4’ drain sump. Apply liquid flashing with brush application followed by the fabric material with a final application of liquid flashing.

13. Install new cast iron drain strainers for all drains.

14. Responsibility of contractor to snake all drains at the end of the roofing project.

15. Installation of new scupper inserts at all overflow scupper locations.

F. Liquid Flashing areas:
   1. Use paint brush, or trowel.
   2. Prime all surfaces with a mist of Liquid Flashing Primer and allow to dry. Do not over-apply primer.
   3. Apply a coating of Liquid Flashing to the area to be flashed.
   4. Brush the first coating of Liquid Flashing until it is uniform.
   5. Set fabric into freshly applied Liquid Flashing
   6. Apply 2nd coat of Liquid Flashing to scrim. The fabric should be completely coated to form a water-tight seal.

G. All flashings shall extend a minimum of 8 inches (0.2 m) above roofing level unless otherwise accepted in writing by the Owner’s Representative and roofing system manufacturer’s technical department.

H. Vertical Surfaces Taller than 24 Inches: Where vertical distance of flashing membrane exceeds 24 inches in height, flash wall roughly 24”,
   1. Installations of two ply flashing roughly 24” in height.
   2. Terminate both SBS flashing plies with a termination bar and install SBS flashing’s from the top of the wall over the termination bar 4”.
   3. Fully embed the granules and heat weld transition entirely. In the event the multi plies do not conform to the wall, liquid flash and fabric the termination condition.

I. Flashing Termination: Terminate all vertical flashing membrane surfaces horizontally and vertically with mechanically fastened termination bars and sheet metal flashings/counterflashings. Mechanically fasten flashing securely using mechanical fasteners specifically designed and sized for fastening specified membrane flashing and termination bars into substrate.
   1. Fasten termination bar with fasteners not greater than 6 inches on center for length of bar, with fasteners within 3” of ends, or closer as required by manufacturer. Fasten into nailer or other substantial backing located behind point of base or curb termination
   2. Uniformly fasten, seat, and compress termination bar into top of roofing plies.
   3. Install sealants continuously across surface of termination, including terminations covered with sheet metal flashing and counterflashing.
   4. Install termination bars using mechanical fasteners as roofing progresses. Do not proceed with roofing without full attachment of termination bars for area under construction.
   5. At termination of vertical and wall sheet flashings not under copings, install termination bar at vertical and wall membrane flashings with metal surface mounted one- or two- piece counterflashing assemblies, as is required for condition. Install as indicated in Drawings or if not shown in Drawings or otherwise indicated, as required to produce continuous closure of membrane with termination bar and metal flashing, regardless of abutting materials overlap.
   6. Refer to Division 07 Section "Sheet Metal Flashing and Trim" for requirements for counterflashings and other metal fabrications.

J. High- or Elevated- Temperature Vent Flashings:
   1. Install stainless steel metal base fabricated metal flashing sleeves prior to installing flashings.
   2. Install fire-resistant mineral-wool-fiber insulation between metal flashing sleeve and high- or elevated- temperature outside vent surfaces.
   3. Select proper diameter prefabricated flashing to properly fit penetration and roof conditions.
4. Secure deck membrane around metal base sleeve penetration to comply with manufacturer’s requirements. Secure close to penetration so prefabricated flashing will cover attachments. Secure top of membrane flashing to top of sleeve penetration.
5. Secure deck membrane around sleeve penetration to comply with manufacturer’s requirements. Secure close to penetration so prefabricated flashing will cover attachments.
6. Install flashings to produce a minimum of 8-inch (200 mm) flashing height.
7. Lap base of flashings atop roof membrane at least 4 inches. Hot air weld seams at roofing membrane with 210 volt welder.
8. Place prefabricated flashing in place tight to horizontal deck membrane; ensure flange lays flat to deck membrane.
10. Where required by manufacturer, heat upper part of prefabricated flashing to temperature required by manufacturer; avoid overheating.
11. Clamp top of flashing at vent with stainless steel clamping ring.
12. Install stainless steel metal umbrella cap flashing, holding close to membrane base flashing.

3.10 PERIMETER AND METAL BASE FLASHINGS

A. Remove existing edge flashing system to wood blocking.
B. Replace rotted blocking.
C. Install new wood blocking to provide adequate height termination for insulation system.
D. Envelope felts and seal perimeter as per enclosed detail.
E. Fabricate and install roof edge detail with formed drip edge incorporating 3/4 inch lock.
   1. Flange width: Four (4) inches. Prime flange (both sides) with asphalt primer, set in mastic.
   2. Fascia height: - sufficient to extend below wood nailer by 2-1/12" minimum.
   3. Rise: 3/4 inch x forty-five (45) degrees.
F. Secure fascia bottom with 3/4 inch lock to continuous cleat nailed sixteen (16) inches o.c.
   1. Lap fascia transverse joints three (3) inches, cleat joints one (1) inch. Provide clevis seam to rear vertical surface of transverse joints. Set flange in mastic. Apply asphalt mastic between overlapping flanges at joints.
   2. Gap fascia ends 1/2 inch; overlap cleat joints one (1) inch. Set flange in mastic. Cover fascia ends with cover plate profiled to fascia. Set cover in asphalt mastic; nail to wood blocking through gap between fascia joints.
G. Nail interior portion of flange to wood blocking three (3) inches o.c., staggered.
H. Apply a continuous application of flashing adhesive onto entire flashing flange and at least two (2) inches onto adjacent roofing. Embed modified bitumen flashing ply into flashing adhesive. Cover flange completely. Extend flashing at least two (2) inches onto adjacent roofing. Remove wrinkles and voids. Lap flashing ply ends four (4) inches.
I. Apply granular surfaced modified bitumen flashing membrane into a continuous application of flashing bitumen. Extend membrane three (3) inches beyond first ply. Lap ends four (4) inches. Ensure complete bond and continuity without wrinkles or voids.

3.11 PROTECTION PAD INSTALLATION

A. General: Install protection pad under exposed wood blocking and under equipment supports.
B. The installation of the protection pad:
   1. Clean all dirt and debris from the deck membrane in areas where the protection pad will be installed.
   2. Cut the protection pad 4 inches (4") wider than the dimensions of the wood blocking or equipment and piping support.
   3. Adhere the entire perimeters of the protection pad to the field membrane sheet.
   4. Center the wood blocking or equipment or pipe support over the protection pad.
3.12 HIGHLY VISBLE MEMBRANE INSTALLATION

A. General Requirements: Provide and install a highly visible product; designed to draw attention to an unprotected roof perimeters and potential hazardous area that do not comply with Owner’s safety guidelines.

B. Installation of yellow, 4 inch wide material:
   1. Installer and Owner’s representative shall verify unprotected roof perimeters and potential hazardous areas on the referenced project’s roof area(s).
   2. The yellow strip shall be installed not less than 6 feet 6 inches (2 meters) from unprotected roof perimeters and potential hazardous areas. 4” warning line must be applied in an acceptable fashion.
      -Must be acceptable by roofing system manufacturer.

3.13 TEMPORARY ROOFING TERMINATIONS AND PROTECTION

A. Prior to starting roofing project, the Installer shall inspect the facility existing roof area(s) associated with the contract roofing project for any defects which could cause water or moisture vapor entries into the building during the roofing application. Any defects or concerns shall be address in writing to the Owner’s representative prior to starting the roofing project. Proceeding with the roofing project indicates the Installer’s acceptance of the existing facility conditions.

B. For existing roof areas where access is absolutely required for the installation of the new roofing system on another roof area, the Installer shall provide all necessary protection and barriers to segregate the work area and to prevent damage to adjacent roof areas. A suitable temporary protective surface shall be provided for all roof areas which receive traffic during construction of the new roofing system. During the roofing project, any damage which occurs to the new or existing roofing membrane and/or system shall be removed and replaced at the Installer’s expense.

C. The Installer shall provide the labor and materials required to maintain a watertight and impermeable condition at all times on the roof areas as referenced in the project’s contract documents. All membrane and metal flashings shall be installed concurrently with the field membrane installation in order to maintain a 100% watertight and to prevent any air/water vapor infiltration into the completed roofing system each day.

D. When an interruption or a postponement in the roofing work occurs during the installation of the roofing system, the Installer shall install temporary watertight and hermetic terminations across the installed Roof system manufacturer roofing system. The Roof system manufacturer roofing system shall be 100% impermeable in order to prevent water and air/water vapor infiltration into or under the new roofing system. When work resumes, any contaminated roofing shall be removed from the work area and disposed off site. None of these materials shall be reused in the new work.

E. During inclement weather or during a postponement in the roofing work occurs while a temporary water stops or terminations are in place, the Installer shall provide the labor and materials to monitor and ensure the temporary water stops and terminations are 100% watertight and impermeable condition.

F. If any weather related moisture or the result of moisture caused by the condensation of water vapor are allowed to enter into the newly-completed Roof system manufacturer Roofing System, the affected roof area(s) shall be removed and replaced at the Installer’s expense.

3.14 FIELD QUALITY CONTROL

A. Roofing system manufacturer’s technical representative: Installer shall arrange to have the system manufacturer’s Technical representative on site of the first day of installation of the roofing system. The Technical Representative shall note:
   1. Conduct a site inspection on the first day of production.
   2. Communicate with the Owner’s project manager each inspection, i.e. meet with the Owner designated project manager before entering work area.
   3. Note all defects noted non-compliance with the specifications or the recommendations of the roof system manufacturer should be itemized in a punch list. These items must be corrected immediately by the contractor to the satisfaction of the Owner’s representative and Roof system manufacturer.
4. Ensure the roofing contractor has received a copy of each In-Progress Inspection Report within two days of the inspection. The roofing contractor is to forward the Owner’s On-site Representative a copy of the In-Progress Inspection Report.

B. Final Roof Inspection: Arrange for roofing system manufacturer’s technical representative to inspect roofing installation on completion of the roofing project.
   1. All defects noted non-compliance with the roofing specifications and details or the recommendations of roofing system manufacturer representative should be itemized in a punch list. These items must be corrected immediately by the Installer to the satisfaction of the Owner’s Representative and roofing system manufacturer technical representative.
   2. Ensure the roofing contractor has received a copy of Final Inspection Report within two days of the inspection. The roofing contractor is to forward the Owner’s On-site Representative a copy of the Final Inspection Report.

3.15 PROTECTING AND CLEANING

A. Protect sheet membrane roofing from, not limited to the following items; dirt, grease, rust stains, roofing asphalt, scuff marks, abrasions, adhesive spills, sealant spills, membrane cuts, and any physical damages to the installed roofing system during the construction period.

B. Cleaning During Construction:
   1. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly environment on a daily basis.
   2. Remove all debris from the decking prior to installation of the roofing system.
   3. Collect and remove waste materials, debris, and rubbish from Work site on a daily basis.

C. Final Cleaning:
   2. Complete following cleaning operations before requesting Owner's Representative's inspection for Substantial Completion.
      a. Clean Project Site, yard and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste materials, litter and foreign substances. Sweep paved areas broom clean. Remove pert-chemical spills, stains and other foreign deposits. Rake grounds that are neither planted nor paved, to a smooth even-textured surface.
      b. Remove tools, construction equipment, machinery and surplus material from Project Site.
      c. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films and similar foreign substances associated with the roofing project. Avoid disturbing natural weathering of exterior surfaces.
      d. Remove debris and surface dust from limited access spaces, including roofs, plenums, equipment vaults, attics, and similar spaces.
      e. Remove labels that are not permanent labels.
      f. Touch-up and otherwise repair and restore marred exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored, or that show evidence of repair or restoration. Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
      g. Wipe surfaces of mechanical and electrical equipment, and other similar equipment.
      h. At completion of the roofing system, the contractor shall wash the roof to remove all dirt and roofing containments from the membrane.
      i. Leave Project clean and ready for occupancy. (Mechanical units are not storage areas or work benches during the project. All equipment will be cleaned at end of job.)
   3. Remove temporary protection and facilities installed during construction to protect previously completed installations during remainder of construction.
   4. Comply with governing regulations and safety standards for cleaning operations. Remove waste materials from Project Site and dispose of in accordance with requirements of local authorities having jurisdiction.
3.16 ACCEPTANCE

A. Prior to demobilization from the site, the roofing system manufacturer’s project manager, Owner’s representative(s), roofing system manufacturer’s designated field technical representative and Installer’s project manager, production crew superintendent, and project’s roofing foreman shall review the completed work.

B. Installer and Owner’s representative shall inspect the completed roofing system for any uneven cover boards, loose or improperly attached insulation or cover boards, ponding of water, un-adhered materials and membrane flashing, membrane damage, dirt, rust stains, roofing asphalt, grease, scuff marks, cuts, abrasions, adhesive spills, and sealant spills.

C. All defects noted noncompliance with the project’s bid documents will be itemized in a punch list. Any noncompliance item shall be removed and/or repaired immediately by the Installer to the satisfaction of the Owner’s representative and to roofing system manufacturer.

D. The noted deficiencies shall be repaired or replaced to a condition free of damage and deterioration at the time of Substantial Completion Acceptance by Owner’s representative, and / or to accordance of the Owner project contract documents.

E. All warranties as required for the project of this specification shall be submitted for approval prior to final payment by Owner.

END OF SECTION 07552
SECTION 07600 - SHEET METAL FLASHING AND TRIM

PART 1  GENERAL

1.01  SUMMARY

A.  Section Includes:
   1.  Flashings and counterflashings, gutters and downspouts, metal coping, metal edge and fabricated sheet metal items.
   2.  Splash pads
   3.  Sheet metal accessories

B.  Related Documents: The Contract Documents apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other Documents.

1.02  RELATED SECTIONS

A.  Section 06100 - Carpentry (for Roofing): Wood blocking, nailers, and grounds.

B.  Section 15010 - Basic Mechanical Procedures: Requirements for modifying, repairing, or replacing roof mounted plumbing and mechanical equipment.

1.03  REFERENCES

A.  American Society for Testing and Materials (ASTM):
   2.  A653 - Steel Sheet, Zinc Coated, (galvanized) by the Hot-Dip process, Structural (Physical) Quality Property.
   3.  A924 - Steel Sheet, Zinc Coated, (galvanized) by the Hot-Dip process.

B.  Federal Specifications (FS):
   1.  FS TT-C-494 - Coating Compound, Bituminous, Solvent Type, Acid Resistant.
   2.  Q-F-506 - Flux, Soldering, Paste and liquid.
   3.  QQ0L-201F - Lead Sheet.
   4.  QQ-S-571 - Solder, Tin Alloy


1.04  SYSTEM DESCRIPTION

A.  Work of this Section is to physically protect membrane roofing, base flashings, and expansion joints from damage that would permit leakage to building interior.

1.05  SUBMITTALS

A.  See General Conditions and Special Conditions for Submittal Procedures: Procedures for submittals.
   1.  Product Data: Provide data on prefabricated components.
   2.  Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.
   3.  Samples: Provide full sized sample of metal flashing illustrating typical seam, external corner, internal corner, material, and finish.
   4.  Submit color chart or physical samples for selection of prefinished metal color by the Owner.
   5.  Assurance/Control Submittals:
      a.  Certificates: Manufacturer's certificate that Products meet or exceed specified requirements.
b. Qualification Documentation: Submit documentation of experience indicating compliance with specified qualification requirements.

1.06 QUALITY ASSURANCE

A. Standards: Comply with latest edition of standards specified in this section and as referenced below:
   1. ANSI/SPRI ES-1
   2. Architectural Sheet Metal Manual, Sheet Metal and Air Conditioning Contractors
   4. Published installation from manufacturer’s of selected products.

B. Qualifications:
   1. Fabricator: Company specializing in manufacturing Products specified with minimum 3 years documented experience.
   2. Installer: Company specializing in performing the Work of this Section with minimum 3 years documented experience. Use adequate number of skilled workers who are thoroughly trained and experienced in the necessary crafts, and who are completely familiar with the specified requirements and methods needed for proper performance of the work in this section.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

B. Prevent contact with materials during storage and installation that may cause discoloration, staining, or damage.

1.08 WARRANTY

A. All new materials and workmanship provided under this section of the specifications shall be guaranteed in writing by the Contractor to maintain all sheet metal flashing in a watertight condition without cost to the Owner for a period of three (3) years after date of substantial completion.

PART 2 PRODUCTS

2.01 MATERIALS

A. Aluminum Sheet: ASTM B209, 3004 alloy, 0.040 inch thick.

B. Galvanized Steel: ASTM A 653, Grade A, G90, 24-gage minimum core steel.

C. Lead: FS QQ-L-201F, 4-lb/sq ft and 2-1/2-lb/sq ft.

D. Pre-Finished Galvanized Steel: ASTM A 653, Grade A, G90, 24 gage minimum core steel, exposed face pre-finished with fluorocarbon type coating (Kynar 500), color as selected by Owner's Representative from manufacturer's standard sections; unexposed face finished with manufacturer's standard primer; manufactured by Centria; PAC-CLAD; or MBCI. Protect finish with factory applied plastic film.

E. Copper: ASTM B 370, cold rolled temper, commercially pure alloy 110; minimum 16 ounces per foot.

F. Stainless Steel: ASTM A 167, Type 302/304, soft temper, 24-gage minimum, No. 2B finish.

G. Where sheet metal is required and material or gage is indicated on the drawings, provide the highest quality and gage commensurate with the referenced standards.

H. Contractor shall use gages or thickness listed in the referenced standards for specific girths.
I. Continuous clip shall be fabricated with material one gage heavier than connecting.

2.02 COMPONENTS

A. Counter and Slip Flashings, Base and Cover Plates, End Caps, Joint Fasteners, and Gravel Stop: Profiled as indicated and to suit existing conditions.

B. Downspouts: Rectangular profile; fabricated from Pre-Finished Galvanized Steel.

C. Counter and Slip Flashings, Base and Cover Plates, End Caps, Joint Fasteners, and Gravel Stops, Scupper Sleeves and Boxes: Profiled as indicated and to suit existing conditions.

D. End Caps, Downspout Outlets, Gutter and Downspout Support Brackets and Straps, Joint Fasteners, Gutters, Downspout Strainers, Downspout Header, and Scupper Boxes: Profiled to suit gutters and downspouts.

2.03 FASTENERS

A. Manufacturers:
   1. Construction Fasteners, Inc.
   2. Hilti
   3. OMG
   4. Powers
   5. Simplex

B. Fasteners and Anchorage Devices: Comply with SMACNA requirements, unless otherwise indicated.
   1. Appropriate for purpose intended, approved by Factory Mutual where required.
   2. Rust-resistant and compatible with materials to be joined.
      a. Ferrous Metals: Stainless steel, finish of exposed fasteners same as flashing metal.
      b. Rivets: Stainless steel (rivet and mandrel), Series 44.
   3. Length: As required for thickness of material to penetrate substrate ½-inch minimum.
   4. Exposed Fasteners: Provide metal-jacketed neoprene washers, jacket color to match pre-finished sheet metal.

C. Mechanical Fasteners for Sheet Metal to Substrate Anchorage:
   1. Masonry: One-step, screw-type drive anchor (nailing); heat-treated, stress relieved, stainless steel pin; zinc jacketed; sized for intended application; minimum 1-1/4-inch length x ¼-inch diameter; Hammer-Screw® manufactured by Powers Fasteners, Inc.
   2. Wood Blocking: Hexagonal head screws, stainless steel, with neoprene rubber washers with jacket color to match pre-finished sheet metal.
   3. Concrete: Same as masonry or other power actuated fasteners, suitable for application.

D. Roofing Nails: Hot-dipped galvanized or non-ferrous type, with annular rings, size as required to suit application, minimum 11-gage with 3/8-inch diameter head.

E. Mechanical Fasteners for Sheet Metal to Metal Fabrications (Support Framing) Anchorage: Appropriate for purpose intended, size as required to suit application and achieve positive anchorage to substrate material.

2.04 ACCESSORIES

A. Solder: FS QQ-S-571, 50/50 type.

B. Flux: FS O-F-506.

C. Metal Primer: Zinc-rich, or Zinc Chromate, compatible with metal and substrate material.

D. Reglets/Receivers: Surface mounted or recessed pre-finished steel, face and ends covered with plastic tape.
E. Downspout Supports: Brackets; Pre-Finished Galvanized Steel.

F. Sealant: Urethane.
   1. Metal Contact: Type I.
   2. Pitch Pan Filler: Type II.

G. Vent Pipe, Piping, and Electrical Conduit Flashings: Pre-formed membrane pipe flashings, minimum height above roof: 8 inches.

H. Roof Drain Flashings: Membrane flashing extended minimum 36-inches beyond drain bowl in all directions.

I. Aluminum Tape: Pressure sensitive aluminum tape, approved by membrane manufacturer.

2.05 FABRICATION

A. General: Custom fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, geometry, metal thickness, and other characteristics of item indicated. Fabricate items at the shop to greatest extent possible.
   1. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
   2. Obtain field measurements for accurate fit before shop fabrication.
   3. Form sheet metal flashing and trim without excessive oil canning, buckling, and tool marks and true to line and levels indicated, with exposed edges folded back to form hems.
   4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces exposed to view.

B. Form all sheet metal sections and components (except corners) in longest practical length up to 10-feet maximum, true to shape, accurate in size, square, and free from distortion or defects detrimental to appearance or performance.

C. Fabricate continuous cleats and starter strips of same material as sheet, interlocking with sheet.

D. Form pieces in longest possible lengths.

E. Hem exposed edges on underside ½-inch, miter and seam corners.

F. Form all sheet metal material to provide watertight joints. Form material with flat lock seams, except where otherwise indicated. At moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.
   1. Unprotected Horizontal Surface (expansion joint covers, etc.) Standing seam or drive cleat joints.
   2. Vertical Surfaces (copings, cap flashings, etc.): Flat lock or cover and backer plate seams.

G. Fabricate corners on all sheet metal components (copings, cap flashings, etc.) to form one piece with minimum 18-inch and maximum 36-inch long legs.

H. Prefabricate all sheet metal accessory components (pitch pans, utility sleeves, umbrellas, etc.) as much as practical.

I. Gutter and Downspouts: Form in sections from minimum Pre-Finished 26-gage sheet metal with all required special pieces and accessories. Owner’s Representative shall select gutter and downspout color from manufacturer’s standard color. Gutter and downspouts shall be form to the profiles and sizes accord to SMACNA requirements.

J. Fabricate downspout accessories; solder watertight.
K. Miter all sheet metals corners and solder, tape, or fasten and seal all joints watertight:
   1. Pre-finished Galvanized Steel: Apply minimum ¼-inch bead of sealant between connecting metal flanges and drill and fasten with rivets at 2-inches on center.
   2. Unfinished Galvanized Steel: Solder joints watertight.
      a. After soldering, remove flux. Wipe and wash solder joints clean.
   3. Install sealant so it will not be visible on outside of joints.

L. Fabricate elements complete with required connection pieces.

M. Fabricate all components with allowance for expansion at joints. Provide enlarged or oval holes at all piercing fasteners.

N. Fabricate all components, i.e. coping cap, with horizontal (flat) surfaces with built-in slope for drainage toward roof unless indicated otherwise.

PART 3  EXECUTION

3.01 EXAMINATION

A. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.
   1. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.
   2. Verify roofing termination and base flashings are in place, sealed, and secure.

B. Report in writing to Owner's Representative prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

C. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the Owner.

3.02 PREPARATION

A. Field measure site conditions prior to fabricating Work. Contractor shall be responsible for all dimensions for all sheet metal applications and installations.

B. Apply manufacturer's approved protective backing paint, to a minimum dry film thickness of 15-mil, on surfaces in contact with dissimilar materials.

3.03 INSTALLATION - VARIOUS SHEET METAL COMPOTENTS

A. Install starter and edge strips, and cleats before starting installation.

B. Install reglets and / or receivers on vertical surfaces to receive counterflashings.
   1. Sawcut new reglets where required.
      a. Install receiver component and anchor with lead wedges at 12-inches on center.
      b. Provide bayonet style lap joints, minimum 4-inch overlap.
      c. Fill voids between wedges with backer rod.
      d. Seal receiver to vertical face of wall.
   2. Install surface mounted reglets true to lines and levels.
      a. Fasten to substrate with neoprene head screws at 12-inches on center maximum.
      b. Seal top of reglets with sealant.
C. Insert flashings into reglets or receivers to form tight fit. Apply ¼-inch bead of sealant and lap sheet metal minimum 4-inches.
   1. Reglets: Secure in place with plastic wedges at maximum 6-inches on center.
   2. Receivers: Secure in place with neoprene head screws at maximum 12-inches on center.
   3. Seal flashings into reglets with sealant.

D. Secure flashings in place using concealed fasteners. Use exposed fasteners only in locations approved by Owner's Representative.

E. Metal coping shall be secured to the parapet with a continuous metal cleat. The 24 gage metal cleat shall be secured with appropriate concrete fastener, spaced 12 inches on center, to both sides of the parapet wall.

F. Fit flashings tight in place. Make corners square surfaces true and straight in planes and lines accurate to profiles.

G. Provide minimum 6-inch wide backer and corner plates at copings. Fit to ensure complete and permanent watertight seal of joints.
   1. Apply ¼-inch bead of sealant between each layer of metal at each edge.
   2. Corner and Backer Plates: Secure with the Backer Plates by using appropriate fasteners, and securing to the parapet wall.
   3. Cover Plates: Hook front or exposed face of cover plate over drip edge; and enclosing or clamping interior seam to the metal coping drip edge.
   4. Do not use mastic between sheet metal components.

H. Lock and seal all sheet metal joints watertight.

I. Pre-fabricated vent pipe flashing.

J. Membrane flashings at all roof drains.

K. Provide Stainless Steel Rain Hoods and Umbrellas at all hot stacks, hot pipe penetrations, and at insulated pipe penetrations.

L. Pitch pans are not desired. Construct pitch pans from stainless steel. Install only where specifically indicated or approved by Owner's Representative. Provide flanged umbrellas at all pitch pans.
   1. Fill with non-shrink group to 1-inch from top of flange.
   2. Top with Pitch Pan Filler - Sealant Type II.

M. Protect all membrane penetrations as indicated and as recommended in SMACNA and NRCA manuals.

3.04 SCHEDULE - MATERIALS

A. Exposed to View Components:
   1. Through Wall Scuppers:
   2. Scupper Face Plate: Prefinished galvanized steel.
   4. Perimeter Metal Edge: Copper; Kynar Coated; color to be selected from standard colors.
   5. Wrap downspout straps and other heavy gage materials with prefinished galvanized steel.

B. Concealed Components, (Counterflashings, Etc.): Unfinished 24 gage galvanized steel.

C. Drip Pans Accessories: Stainless steel

D. Rain Hoods and Umbrellas: Stainless steel.
3.05 SCHEDULE - MINIMUM STEEL THICKNESS

A. Metal Copings, Metal Coping Caps and Counterflashing: ASTM A 653, Grade A, G90, 24 gage minimum core steel.

B. Perimeter Metal Fascia: ASTM A 653, Grade A, G90, 24 gage minimum core steel.

C. Rain Hoods and Umbrellas: Stainless Steel 26-gage.

D. Hook Cleats: 22-gage.

3.06 TESTING AND ADJUSTING

A. Test all modified, relocated, and new systems and equipment.

B. Correct all deficiencies identified, including replacement of parts and components when required.

C. Adjust all Products and equipment to ensure proper operation and function.

3.07 CLEANING

A. Clean work.

B. Clean Owner occupied areas when soiled by Work or operations of this Division.

END OF SECTION 07600
SECTION 07700 - NON-PENETRATING, ROOFTOP PIPE AND DUCT SUPPORTS

PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Rooftop pipe supports for small pipes or conduits.
   B. Rooftop duct work supports for small ducts.

1.02 RELATED SECTIONS
   A. Division 7 – Membrane Roofing

1.03 SYSTEM DESCRIPTION
   A. System design to support rooftop pipes and or duct work with an engineered prefabricated supports designed for installation without roof penetrations or other features to damage the single ply roof system.

1.04 SUBMITTALS
   A. Provide specification and data sheet.
   B. Shop Drawings: Show installation layout including sizes and spacing.
   C. Verification Samples: Actual samples of each size of support.

1.05 DELIVERY, STORAGE AND HANDLING
   A. Deliver materials to project site in manufacturer’s original packaging, marked with manufacturer’s name, product model names and catalog numbers, identification numbers and other related information.
   B. Store materials under cover until needed.

PART 2 PRODUCTS

2.01 MANUFACTURER
   A. Acceptable Manufacturer:
      2. MAPA Products, 103 W CJ Wise Parkway, Naples, Texas. 877-897-2371
      3. Owner Approved Equal

2.02 MATERIALS
   A. Pipe Support shall have the following characteristics:
      1. Capable of supporting gas piping and electrical conduit up to a diameter size of 4 inches.
   B. Duct Support shall have the following characteristics:
      1. Capable of supporting square or round duct work.
   C. Pipe Support Acceptable Products:
      1. Micro Industries, Inc. Model No. 3-RAH-7
      2. MAPA product number – MS-3RA7.
D. Duct Support Acceptable Products:
   1. Micro Industries, Inc. Model No. 10-DS

PART 3 EXECUTION

3.01 PREPARATION

A. The contractor will confirm the correct size supports have been chosen for the size of pipe and or duct work to support.

3.02 INSTALLATION

A. Install the pipe and or duct supports in accordance to manufacturer’s recommendations.

B. Pipe Supports shall be installed at all locations where existing piping or electrical conduit runs across the roof area that are presently mounted on wood blocking.

C. Contact roof system manufacturer as to requirements of separator sheet between pipe and or duct support and the installed roof system. Dead wood blocking shall be installed within the roofing system when weight of the supports exceeds recommend weight loads of the specified polyisocyanurate insulation.

D. Consult roofing manufacturer on proper installation and requirements for “dead” wood sleepers.

E. Pipe Support placement recommendations.
   1. The following are to be used as minimum recommendations. For specific requirements, the installer should consult a structural engineer.
   2. For pipe diameters of 1 ½” to 5”– space supports at a maximum distance of 8’ apart.
   3. For pipe diameters less than 1 ½” – space supports at a maximum distance of 10’ apart.
   4. Along with the above noted spacing recommendations, one additional support should be placed at every union and source and along with one at side of junctions.

F. Duct Support placement recommendations.
   1. The following are to be used as minimum recommendations. For specific requirements, the installer should consult a structural engineer.
   2. Manufacturer’s recommended spacing is not to exceed 8’ centers depending upon the load. Do not exceed load weight and make certain each duct support is adjusted in height to even load on all duct supports. Support spacing is not to exceed the maximum spacing required in the duct specifications where applicable.

END OF SECTION 07700
SECTION 07900 - JOINT SEALERS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Preparing sealant substrate surfaces.
   2. Sealant and backing.

B. Related Sections:
   1. The Contract Documents apply to the Work of this Section.
   2. Section 07522 - Membrane Roofing: Application and locations for sealants used in conjunction with roofing.
   3. Section 07600 - Flashing and Sheet Metal: Sealants used in conjunction with metal flashing for roofing.

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM):
   2. ASTM D1056 - Flexible Cellular Material- Sponge or Expanded Rubber.

B. Federal Specifications (FS):
   1. TT-S-00227 - Sealing Compound, Rubber Base, Polyurethane, Two Component.
   3. TT-S-00230C - Sealing Compound, Silicone, Single Component.
   4. FS TT-S-1657 - Sealing Compound, Single Component Butyl Rubber Based Solvent Release Type (for Buildings and other Types of Construction).

1.03 SYSTEM DESCRIPTION

A. System performance to achieve moisture and air tight joint seals.

1.04 SUBMITTALS

A. See General Conditions and Special Conditions for Submittals: Procedures for submittals.
   1. Product Data: Product chemical characteristics, performance criteria, substrate preparation, limitations, and color availability.
   2. Product List: Submit list of proposed Products and manufacturers, including all items specified in Part 2 - Products or otherwise required by the Work.
   3. Assurance/Control Submittals:
      a. Certificates: Manufacturer certificate that components and Products meet or exceed specified requirements.
      b. Qualification Documentation: Sealant installer documentation of experience indicating compliance with specification qualification requirements.
   4. Samples: Submit full range of colors available for each selected product.
   5. Manufacturer's Installation Instructions: Induced substrate preparation requirements, special precautions and installation temperature range.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing Work of this Section with minimum 3 years documented experience.

B. Perform work in accordance with SWRI (Sealant, Waterproofing and Restoration Institute) requirements for materials and installation.
C. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver Products in manufacturer's original unopened containers or packages with labels intact, identifying product and manufacturer, date of manufacture, lot number, shelf life, curing time, and mixing instructions, where applicable.

B. Store and handle materials to prevent deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

1.07 PROJECT CONDITIONS OR SITE CONDITIONS

A. Environmental Requirements: Install sealant during manufacturer's recommended temperature ranges and weather conditions for application and cure. Consult manufacturer when sealant cannot be applied during recommended conditions.

1.08 WARRANTY

A. Warranty:
   1. Submit written warranty signed by sealant manufacturer agreeing to replace sealants and accessories which fail because of loss of cohesion or adhesion or which do not cure.
   2. Warranty Period: Three (3) years.

PART 2 PRODUCTS

2.01 BUILDING SEALANTS (See Sealant Schedule at the end of this Section for specific use of sealants.)

A. Sealant Type A:
   1. For exterior joints in vertical surfaces and non-traffic horizontal surfaces such as, but not limited to:
      a. Control and expansion joints in cast-in-place concrete.
      b. Joints between architectural precast concrete units.
      c. Control and expansion joints in unit masonry.
      d. Butt joints between metal panels.
      e. Joints between marble and/or granite.
      f. Joints between different materials listed above.
      g. Perimeter joints between materials listed above and frames of doors, windows, louvers and similar openings.
      h. Control and expansion joints in overhead surfaces.
   2. Provide single-component, low-modulus, neutral cure, non-sag sealant; comply with ASTM C920, Type S or M, Grade NS, Class 25 (Class 50 ?), Class 100/50
   3. Acceptable sealant:
      a. Silicones Single Component
         1) Dow Corning 791
         2) Fire resistant

B. Sealant Type B:
   1. For exterior joints in vertical and horizontal surfaces between metal window frames and pre-cast concrete tilt-up panel surfaces and between windows and metal window frames
   2. Acceptable products:
      a. Dow Corning 795 Sealant

C. Urethanes:
      a. Vulkem 45, by Mameco.
      b. Urexpans NR-201, by Pecora Corporation.
2. One-Part Urethane (Type II Sealant): Non-Sag, ASTM C920, Type S, Grade NS, Class 25.

D. Modified-acrylic/polyurethanes for pitch pans:
   1. A two-component, solvent- and styrene-free, modified-acrylic anchoring adhesive.

E. Preformed Compressible & Non-Compressible Fillers:
   1. Backer Rod - Closed cell polyethylene foam:
      a. HBR Backer Rod, by Nomaco.
      b. #92 Greenrod, by Nomaco.
      c. Sonofoam Closed-Cell Backer Rod, Sonneborn Building Products, ChemRex Inc.
   2. Backer Rod - Open cell polyurethane foam:
      a. Denver Foam, by Backer Rod Mfg. Inc.
   3. Neoprene compression seals:
      a. WE, WF, and WG Series, by Watson Bowman & Acme Corp.
      b. Will-Seal 150 Precompressed Expanding Foam Sealants, by Will-Seal, a Division of Illbruck.

F. Bond Breaker Tape: Polyethylene tape of plastic as recommended by sealant manufacturer, to be applied to
   sealant-contact surfaces where bond to substrate of joint filler must be avoided for proper performance of sealant.

2.02 COLORS

A. Generally use sealant colors matching color of material joint is located in.

B. Where a joint occurs between two materials of differing colors and Contractor cannot determine which material to
   match, contact Owner's Representative for selection.

2.03 ACCESSORIES

A. Joint Cleaner: Provide type of joint cleaning compound recommended by sealant manufacturer for joint surfaces to be
   cleaned.

B. Primer: Non-staining type as recommended by sealant manufacturer.

C. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suite application.

D. Masking tape and similar accessories to protect surfaces from damage.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and
   ready to receive Work.
   1. Verify that joint widths are in conformance with sealant manufacturer allowable limits.
   2. Verify that contaminants capable of interfering with adhesion have been cleaned form joint and joint properly
      prepared.

B. Report in writing to Owner's Representative prevailing conditions that will adversely affect satisfactory execution of
   the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

C. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions
   encountered at no additional cost to the Owner.
3.02 PREPARATION

A. Remove all existing sealant from joints between coping stones and from all joints below the stone copings.

B. The sealant tray for all surface mounted counterflashing details shall be primed as per Manufacturer’s requirements for the applicable sealant.

C. Prepare and size joints in accordance with manufacturer’s instructions. Clean substrates of dirt, laitance, dust, or mortar using solvent, abrasion, or sandblasting as recommended by manufacturer. Remove loose materials and foreign matter, which might impair adhesion of sealant.

D. Verify that joint backing and release tapes are compatible with sealant. Verify sealant is suitable for substrate. Verify that sealant is paintable if painted finish is indicated.

E. Protect materials surrounding work of this Section from damage or disfiguration.

3.03 INSTALLATION

A. Install sealant in accordance with manufacturer's published instructions. Perform work in accordance with ASTM C804 for solvent release sealants.

B. Prime or seal joint surfaces where recommended by sealant manufacturer. Do not allow primer or sealer to spill or migrate onto adjoining surfaces.

C. Install backer rod and bond breaker tape as indicated project drawings and where required by manufacturer.

D. Install preformed compressible and non-compressible fillers in accordance with manufacturer's published instructions.

E. Install sealants to depths recommended by sealant manufacturer in uniform, continuous ribbons free of air pockets, foreign embedded matter, ridges, and sags, "wetting" joint bond surfaces equally on both sides.

F. Tool joints concave unless shown otherwise. Where horizontal joints are between a horizontal surface and a vertical surface, fill joint to form slight cove so that joint will not trap moisture and foreign matter. Dry tool joints. Do not use soap, water, or solvent to tool joints.

3.04 CURING

A. Cure sealants in compliance with manufacturer's published instructions.

3.05 CLEANING

A. Remove excess and spillage of sealants promptly as the work progresses, using materials and methods as recommended by sealant and substrate manufacturers. Clean adjoining surfaces to eliminate evidence of spillage without damage to adjoining surfaces or finishes.

3.06 PROTECTION

A. Do not permit traffic over uncured sealant.

3.07 SEALANT SCHEDULE

A. Exterior Joints:
   1. Perimeters of exterior openings where frames and other penetrations meet exterior facade of building: precast concrete, brick, CMU, polymer reinforced concrete.
      a. Sealant No. 2.01 B2
2. Expansion and control joints in exterior surfaces of cast-in-place concrete walls, precast architectural wall panels.
   a. Sealant No. 2.01 B2

3. Expansion and control joints in exterior surfaces of unit masonry walls and polymer reinforced concrete, including at metal panels.
   a. Sealant No. 2.01 A3
   b. Sealant No. 2.01 B2

4. Coping joints, coping-to-facade joints, cornice and wash, or horizontal surface joints not subject to foot or vehicular traffic. Sealant No. 2.01 A2
   a. Sealant No. 2.01 A3
   b. Sealant No. 2.01 B2

5. Exterior joints in horizontal wearing and non-wearing surfaces.
   a. Sealant No. 2.01 A3
   b. Sealant No. 2.01 C2

6. Painted metal lap or flashing joints.
   a. Sealant 2.01 C2

B. Flashing and Sheet Metal:
   1. Sealant No. 2.01 A3

C. Pitch Pan Filler:
   1. Sealant No. 2.01 D1

END OF SECTION 07900
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PART 1 GENERAL

1.01 All work shall conform to the requirements of the Local Building Code and Underwriters Laboratory. All equipment shall be installed in accordance with the Manufacturer's Requirements and shall be fully functional upon completion.

1.02 SECTION INCLUDES

A. Basic Mechanical Requirements in addition to Division 01 - General Requirements.
B. Lifting, moving, re-installation, and minor modifications to existing equipment, curbs, pipe, gas and electrical supports, and service lines and connections.
C. Plumbing and piping for roof drains, soil pipes and vents, and equipment piping and drain lines.
D. Anchors, brackets, fasteners, hardware, and accessories for related Work.

1.02 WORK SEQUENCE

A. Install work in stages to accommodate Owner's occupancy requirements during the construction period. Coordinate schedule and operations with Owner's Representative.

1.03 REFERENCES

A. Division 6, Section “Rough Carpentry for Roofing”
B. Division 7, Section “SBS Modified Bitumen Membrane”
C. Division 7, Section “Sheet Metal Flashing and Trim”
D. Division 7, Section “Joint Sealants”

1.04 SUBMITTALS

A. Submit shop drawings and product data grouped to include complete submittals of related systems, products, and accessories in a single submittal.
B. Mark dimensions and values in units to match those specified.
C. Proposed Products List: Include Products specified in this Section and all Products required for execution of Work.
D. Shop Drawings:
   1. Provide layout of any new / or modification changes to pipe supports.
   2. Provide layout of any new roof drains and associated drain piping.
   3. Provide layout of any new / or modification changes to any mechanical curb and / or supports
E. Schedule: List each area of work and all systems or equipment affected. Indicate proposed time of disconnection, reconnection, and installation of any existing or new equipment, pipe supports, and roof drains and to show the location of shutdowns within the facility.
1.05 QUALIFICATIONS

A. Installer: Company specializing in installing the work of this Division with a minimum of five (5) years documented experience working with the systems and Products in place and proposed or required. Company shall be license by jurisdictions having authority to perform the required work.

B. Conform to Local Building, Plumbing, Electrical and Mechanical Codes and other applicable codes for all work performed under this Division.

C. Obtain permits, and all required inspections from governing authority having jurisdiction.

1.06 PROJECT / SITE CONDITIONS

A. Install Work in existing locations and as required as directed, unless prevented by Project conditions.

B. Prepare drawings showing proposed re-arrangement of Work to Project conditions, including changes or additions to Work specified in other Sections. Obtain written permission of Owner's Representative before proceeding.

1.07 SEQUENCING AND SCHEDULING

A. Coordinate installation of new plumbing drains and drain lines and any disconnection to minimize disruptions to Owner's occupancy.

B. Coordinate the raising and lowering of all refrigeration piping, gas piping, and electrical conduits to minimize disruptions to Owner’s occupancy.

C. Ensure sufficient materials and workforces are on hand for all operations. Do not take equipment, drainage systems, and electrical systems out of operation longer than one day, unless specifically authorized in writing by Owner's Representative.

1.08 PROJECT RECORD DOCUMENTS

A. Accurately record locations of utilities remaining, rerouted utilities, and new utilities by horizontal dimensions, elevations or inverts, and slope gradients.

PART 2 PRODUCTS

2.01 MATERIALS

A. Primary Products: Those required for installation of new roof drains.

B. Piping Materials:
   1. Cast Iron Soil Pipe and Fittings: ASTM A 74, Class SV.
   3. Caulked Joints for CI Soil Pipe: FS HH-P_117, Type II.
   5. Copper Tubing: ASTM B 75.
   7. Steel Pipe: ASTM A 53B.
   10. Unions in Copper or Brass Lines: 125 pound all brass, screwed pattern, ground joint, equal to Chase, Crane or Mueller.
   11. Mechanical Couplings: Victaulic Style 77.
C. Roof Drain: Cast Iron body; minimum 6-inch diameter, with deck clamp, strainer, and accessories required for installation conditions.

D. Product Substitution: For any proposed change in materials or for any new materials, submit request for substitution.

2.02 TESTS

A. Test in accordance with recognized standards and as recommended by equipment manufacturers and per local governing agencies.

B. Notify Owner's Representative 24 hours prior to all testing.

C. Record all test results and corrective measures taken. Provide results to Owner with Project Record Documents.

PART 3 EXECUTION

3.01 EXAMINATION

A. Inspect existing conditions prior to commencing Work, including elements subject damage or movement during Work.

B. After uncovering existing work, inspect conditions affecting performance of Work.

C. Confirm operational condition of equipment and systems. Notify Owner in writing of any deficiencies prior to Work.

D. Beginning Work means acceptance of existing conditions and responsibility to return system or equipment to operating condition upon completion of Work.

3.02 PREPARATION

A. Provide temporary supports to ensure structural integrity of the Work.

B. Provide devices and methods to protect other portions of Project from damage, debris, or contamination.

C. Provide protection from elements for areas that may be exposed by uncovering work.

D. Provide temporary connections and maintain operational capacity of systems or equipment that will be displaced more than one day, unless instructed otherwise.

3.03 INSTALLATION

A. Execute work by methods that will avoid damage to other Work, and provide proper surfaces for the installation of new or existing roof drains, new or existing pipe and conduit supports, and equipment curbs, or to accommodate reinstallation and reconnection of equipment and/or systems.

B. Execute work by method that will not cause damage to the existing refrigeration piping, electrical conduits, gas lines, and roof mounted mechanical equipment as to accommodate the installation of the new roofing system.

C. Employ skilled, licensed and experienced installer to perform all operations for all mechanical and electrical work.

D. Modified equipment curb or roof penetration as required to ensure equipment and roof penetration has a sufficient height for installing a minimum eight (8") inch high roof membrane flashing.
E. Cut rigid materials with manufacturer approved equipment.

F. Ensure roofing system is watertight to elements and around roof penetrating elements.

G. Raising Existing Roof Mounted/Supported Mechanical Units/Curbs/Vents: Existing roof mounted units/curbs/vents shall be raised as required to install roofing, flashings, and new curbs (if applicable). Extreme care should be taken to prevent damage to the units. All support lines/conduits (gas, electrical, steam, ammonia, Freon, etc.) servicing the units shall be properly disconnected in order to facilitate moving the unit. Coordinate with the Owner and notify the Owner and Architect/Engineer at least 48-hours before disconnecting any mechanical unit.

H. Tolerances (Flashing Location) for Roof Penetrations: Flashings shall be located so as to provide access for maintenance. Flashings shall not be closer than 18 inches from other flashings and be situated so no flashing interferes with another.

3.04 TESTING AND ADJUSTING

A. Test all modified, relocated, and new systems and equipment.

B. Correct all deficiencies identified, including replacement of parts and components when required.

C. Adjust all Products and equipment to ensure proper operation and function.

3.05 CLEANING

A. Clean work.

B. Clean Owner occupied areas when soiled by Work or operations of this Division.

END OF SECTION 23010
SECTION 26010 - BASIC ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.01 All work shall conform to the requirements of the Local Building Code and Underwriters Laboratory. All equipment shall be installed in accordance with the Manufacturer's Requirements and shall be fully functional upon completion.

1.02 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions in Division 01 apply to this Section.

1.02 SUMMARY

A. This Section includes the following:
   1. Basic Electrical Requirements, in addition to Division 01 - General Requirements.
   2. Lifting, moving, re-installation, repairs, and minor modifications to existing equipment, and service lines and connections.
   3. Anchors, brackets, fasteners, hardware, and accessories for related Work.

B. Related Sections include the following:
   1. Division 7 Section “Membrane Roofing” for installation of roof penetration flashings.
   2. Division 7 Section “Sheet Metal Flashing and Trim.”
   3. Division 15 Section “Basic Mechanical Requirements”

1.03 REFERENCES


1.04 SUBMITTALS

A. See General Conditions and Special Conditions for submittal procedures in Division 01.

B. Submit shop drawings and product data grouped to include complete submittals of related systems, products, and accessories in a single submittal.

C. Mark dimensions and values in units to match those specified.

D. Proposed Products List: Include Products specified in this Section and all Products required for execution of Work:

E. Certification: Provide current letter(s) on Company’s letterhead, signed by an authorized employee or corporate officer attesting to all following items:
   1. Qualifications: Certify and document items in Article on Qualifications, and;
   2. Products: Certify that selected products meet or exceed specified requirements;
   3. Manufacturer's Certification: Each product meets or exceeds specified requirements.

1.05 QUALIFICATIONS

A. Electrical Contractor: Company specializing in installing, inspecting, and certification of the work of this Division with a minimum of five (5) years documented experience working with the systems and Products in place and proposed or required. Licensed by jurisdictions having authority for inspection and certification of the required work.

1.06 REGULATORY REQUIREMENTS

A. Conform to NFPA 70 and applicable local Building Code for all electrical work.

B. Obtain permits, and request inspections from authority having jurisdiction.
1.07 PROJECT/SITE CONDITIONS

A. On the referenced project roofing areas, the Contractor is to inspect the existing electrical system for any unacceptable or defective component. Any unacceptable item shall be brought to the attention of the Owner’s representative prior to executing work.

B. Install Work in existing locations and as directed or as required unless prevented by Project conditions.

C. Prepare drawings showing proposed re-arrangement of Work to meet Project conditions, including changes to Work specified in other Sections. Obtain permission of Owner’s Representative before processing.

1.08 SEQUENCING AND SCHEDULING

A. Construct Work in sequence under provisions of Division 01.

B. Coordinate with other Trades and Owner to ensure electrical conduit and wiring removal does not inhibit other Work.

1.09 PROJECT RECORD DOCUMENTS

A. Submit in accordance with Division 01.

B. Accurately record locations of lightning protection system by horizontal dimensions and elevations.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Primary Products: Those required for original installation.

B. Product Substitution: For any proposed change in materials or for any new materials, submit request for substitution under provisions of Division 01.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Inspect existing conditions prior to commencing Work, including elements subject to damage or movement during Work.

B. After uncovering existing work, inspect conditions affecting performance of Work.

C. Confirm operational condition of equipment and systems. Notify Owner in writing of any deficiencies prior to Work.

D. Beginning Work means acceptance of existing conditions and responsibility to return system or equipment to operating condition upon completion of Work.

E. General: All abandoned equipment or other penetrations no longer necessary as shown on the drawings or as determined by the Owner shall be removed. The roof deck shall be repaired, and the area reroofed in accordance with the Contract Documents.

3.02 PREPARATION

A. Provide temporary supports to ensure structural integrity of the Work.

B. Provide devices and methods to protect other portions of Project from damage, debris, or contamination.

C. Provide protection from elements for areas that may be exposed by uncovering work.

D. Provide temporary connections and maintain operational capacity of systems or equipment that will be displaced more than one day, unless instructed otherwise.
3.03 PERFORMANCE
A. Execute work by methods that will avoid damage to other Work, and provide proper terminations to accommodate reinstallation and reconnection.
B. Employ skilled and experienced installer to perform all operations.
C. Employ original installer to perform operations on systems or equipment under warranty.
D. Restore Work with new Products, as required for original installation, and in accordance with requirements of Contract Documents.
E. Fit Work water tight to adjacent elements and around penetrating elements.

3.04 TESTING AND ADJUSTING
A. Test all modified and relocated systems and equipment by a certified electrical company.
B. Correct all deficiencies identified, including replacement of parts and components when required.
C. Adjust all Products and equipment to ensure proper operation and function.

3.05 CLEANING
A. Clean work.
B. Clean Owner occupied areas when soiled by Work or operations of this Division.

End of Section 26010
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SECTION 26 4113
LIGHTNING PROTECTION FOR STRUCTURES

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Strike (air) terminals and interconnecting conductors.
B. Grounding and bonding for lightning protection.

1.02 RELATED REQUIREMENTS
A. Section 26 0526 - Grounding and Bonding for Electrical Systems: Electrical system grounds.
B. Surge Protection for Wiring Systems: Specified in individual system requirements.

1.03 REFERENCE STANDARDS
A. NFPA 780 - Standard for the Installation of Lightning Protection Systems.
B. UL 96 - Lightning Protection Components.

1.04 ADMINISTRATIVE REQUIREMENTS
A. Coordination with Roofing Work: Ensure adequate attachment of strike terminals and conductors without damage to roofing.
B. Preinstallation Meeting: Convene a meeting at least two weeks prior to commencement of any work affected by lightning protection system requirements to discuss prerequisites and coordination required by other installers; require attendance by representatives of installers whose work will be affected.

1.05 SUBMITTALS
A. Contractor to perform calculations and shop drawings as necessary to illustrate that the reinstallation of lightning protection components meets 2011 NEC, NFPA 780, and UL96A guidance and shall submit professionally engineered, sealed certifications as well as drawings and calculations.

1.06 QUALITY ASSURANCE
A. Installer Qualifications: Capable of providing the specified certification of the installed system.
B. Field Quality Control Testing Agency Qualifications: Firm capable of and experienced in grounding and bonding testing with documented experience and minimum of three project references.

PART 2 PRODUCTS

2.01 LIGHTNING PROTECTION SYSTEM
A. Lightning Protection System: Provide complete system complying with NFPA 780, including air terminals, bonding, interconnecting conductors and grounding electrodes.
   1. Contractor to determine the feasibility for reuse of any/all system components (which is desired) to achieve compliance with NFPA 780 and UL96 standards.
   2. Determine ground resistance by field measurement.
   3. Provide copper, bronze, or stainless steel components, as applicable; no aluminum.

2.02 COMPONENTS
A. All Components: Complying with applicable requirements of UL 96.
B. Strike (Air) Terminals: Copper, solid, with adhesive bases for single-ply roof installations.
C. Grounding Rods: Solid copper.
D. Ground Plate: Copper.
E. Connectors: Copper cable.
F. Connectors and Splicers: Bronze.
PART 3 EXECUTION

3.01 EXAMINATION
   A. Coordinate work with installation of roofing and exterior and interior finishes.

3.02 INSTALLATION
   A. Install in accordance with referenced system standards and as required for specified certification.
   B. Connect conductors using mechanical connectors or exothermic welding process; protect adjacent construction elements and finishes from damage.

3.03 FIELD QUALITY CONTROL
   A. Perform visual inspection as specified in NFPA 780 as if this were a periodic follow-up inspection.
   B. Perform continuity testing as specified in NFPA 780 as if this were testing for periodic maintenance.
   C. Obtain the services of the specified certification agency to provide inspection and certification of the lightning protection system, including performance of any other testing required by that agency.

END OF SECTION 26 4113