PROJECT MANUAL FOR:
CP170621 - SCHOOL OF MUSIC NEW BUILDING
CP172801 – GENERAL SITE: SCHOOL OF MUSIC EXTENDED UTILITIES

AT:
UNIVERSITY OF MISSOURI
COLUMBIA, MISSOURI

FOR:
THE CURATORS OF THE UNIVERSITY OF MISSOURI

PREPARED BY:
CP170621
BNIM ARCHITECTS
2460 PERSHING ROAD, SUITE 100
KANSAS CITY, MO 64108
TELEPHONE: 815.738.2500

CP172801
W.L. CASSELL & ASSOCIATES
1600 BALTIMORE, SUITE 300
KANSAS CITY, MO 64108
TELEPHONE: 816.842.8437

DATE: NOVEMBER 9, 2017
ARCHITECTURAL CERTIFICATION
PAGE INTENTIONALLY LEFT BLANK
Civil Engineer

SK Design Group
4600 N. College Ave., Suite 100
Kansas City, MO 64117
Phone: 913.451.1818

I hereby certify that these Drawings and/or Specifications have been prepared by me, or under my supervision. I further certify that to the best of my knowledge these Drawings and/or Specifications are as required by and in compliance with Building Codes of the University of Missouri.

Signature: ___________________________ Date: ________________

Sassan Mahobian – MO License No.: E-20961

VOLUME 1 - CP170621 - SCHOOL OF MUSIC NEW BUILDING
CP172801 – GENERAL SITE: SCHOOL OF MUSIC EXTEND UTILITIES

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PROJECT MANUAL FOR:
CP170621 - SCHOOL OF MUSIC NEW BUILDING
CP172801 - GENERAL SITE: SCHOOL OF MUSIC EXTEND UTILITIES

Architect

BNIM
2460 Pershing Road, Suite 100
Kansas City, MO 64108
Phone: 816.783.1500

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Signature: __________________________ Date: __11/7/17__
J. Gregory Sheldon – MO License No.: A-4649

VOLUME 2.1 - CP170621 - SCHOOL OF MUSIC NEW BUILDING

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PROJECT MANUAL FOR:
CP170621 - SCHOOL OF MUSIC NEW BUILDING
CP172801 - GENERAL SITE: SCHOOL OF MUSIC EXTEND UTILITIES

Structural Engineer

Structural Engineering Associates, Inc.
1000 Walnut Street, Suite 1570
Kansas City, MO 64106
Phone: 816.421.1042

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Signature: [Signature]
G. Kelley Gipple – Mo License No.: PE-021757
Date: 11-9-17

VOLUME 2.1 – CP170621 - SCHOOL OF MUSIC NEW BUILDING

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Acoustics

Kirkegaard Associates
7733 Forsyth Boulevard, #1100
St. Louis, MO 63105
Phone: 314-896-2511

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Signature:  
Brian Corry

Date: 11/7/17

VOLUME 2.1 - CP170621 - SCHOOL OF MUSIC NEW BUILDING

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ACOUSTICAL CERTIFICATION 0.5-1
Elevator

K.H. Lemp Elevator Consultant
211 3rd Street
Valley Park, MO 63088
Phone: 636.861.2722

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Signature: [Signature] Date: 11/6/2017

VOLUME 2.1 - CP170621 - SCHOOL OF MUSIC NEW BUILDING

DIVISION 14 – CONVEYING EQUIPMENT

Section 14 24 00 Hydraulic Elevators

END OF SEALS PAGE
Civil Engineer

SK Design Group
4600 N. College Ave., Suite 100
Kansas City, MO 64117
Phone: 913.451.1818

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Signature: ___________________________ Date: 11/7/17
Sassan Mahobian – MO License No.: E-20961

VOLUME 2.2 - CP170621 - SCHOOL OF MUSIC NEW BUILDING

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PROJECT MANUAL FOR:
CP170621 - SCHOOL OF MUSIC NEW BUILDING
CP172801 - GENERAL SITE: SCHOOL OF MUSIC EXTEND UTILITIES

Mechanical / Plumbing / Fire Protection

W.L. Cassell & Associates, Inc.
1600 Baltimore Ave, Suite 300
Kansas City, MO 64108
Phone: 816.842.8437

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Signature: [Signature]
Bruce Hart – MO License No.: E-22817
Date: 11/8/17

VOLUME 2.2 - CP170621 - SCHOOL OF MUSIC NEW BUILDING

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MECHANICAL / PLUMBING / FIRE PROTECTION CERTIFICATION
PROJECT MANUAL FOR:  
CP170621 - SCHOOL OF MUSIC NEW BUILDING  
CP172801 - GENERAL SITE: SCHOOL OF MUSIC EXTEND UTILITIES

Electrical Engineer

**Antella Consulting Engineers**  
1600 Genessee Street, Suite 260  
Kansas City, MO 64102  
Phone: 816.421.0950

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<td>Monica Santos</td>
<td>Mo License No.: PE 2000174546</td>
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END OF SEALS PAGE
Acoustics

Kirkegaard Associates
7733 Forsyth Boulevard, #1100
St. Louis, MO 63105
Phone: 314-896-2511

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Signature: [Signature]
Date: 11/7/17

Brian Corry

VOLUME 2.2 - CP170621 - SCHOOL OF MUSIC NEW BUILDING

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ACoustical Certification 0.10-1
PROJECT MANUAL FOR: 11-2017
CP170621 - SCHOOL OF MUSIC NEW BUILDING
CP172801 - GENERAL SITE: SCHOOL OF MUSIC EXTEND UTILITIES

Landscape

BNIM
2460 Pershing Road, Suite 100
Kansas City, MO 64108
Phone: 816.783.1500

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[Signature]

Date: 11/7/17
Aaron Ross – MO License No.: 2012019748

VOLUME 2.2 - CP170621 - SCHOOL OF MUSIC NEW BUILDING

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Mechanical / Plumbing / Fire Protection

SK Design Group
4600 College Blvd., Suite 100
Overland Park, KS 66211
Phone: 913.451.1818

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Sassan Mahobian – MO License No.: E-20961

VOLUME 3 - CP172801 – GENERAL SITE: SCHOOL OF MUSIC EXTEND UTILITIES

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END OF SEALS PAGES
W.L. Cassell & Associates, Inc.  
1600 Baltimore Ave, Suite 300  
Kansas City, MO 64108  
Phone: 816.842.8437  

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Signature:  
Bruce Hart – MO License No.: E-22817

VOLUME 3 - CP172801 – GENERAL SITE: SCHOOL OF MUSIC EXTEND UTILITIES

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ADVERTISEMENT FOR BIDS

Sealed bids for:

SCHOOL OF MUSIC - NEW BUILDING &
GENERAL SITE - SCHOOL OF MUSIC EXTEND UTILITIES
UNIVERSITY OF MISSOURI
COLUMBIA, MISSOURI
PROJECT NUMBER: CP170621 & CP172801

CONSTRUCTION ESTIMATE $16,907,481 - $18,786,090

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., December 14, 2017 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 for CP170621 should be directed to Greg Sheldon with BNIM Architects at (816) 783-1500 or gsheldon@bnim.com. Questions regarding the scope of work for CP172801 should be directed to Stuart Braden with W.L. Cassell & Associates, Inc. at (816) 842-8437 or sbraden@wlc-kc.net. Questions regarding commercial conditions for CP170621 should be directed to Pam Eugster at (573) 882-1444 or eugsterpj@missouri.edu. Questions regarding commercial conditions for CP172801 should be directed to Jennifer Sullivan (573) 882-8376 or sullivanjl@missouri.edu.

This first prebid meeting will be held at 9:00 a.m., C.T., November 14, 2017 in the General Services Bldg., Rm 194A, University of Missouri, Columbia, Missouri, followed by a walk-through at the site.

A second prebid meeting will be held at 10:00 a.m., C.T., November 27, 2017 in the General Services Bldg., Rm 194B.

All interested bidders are invited to attend these meetings. A walk-through of the project may be scheduled by contacting the Prebid Inspection Guide at (573) 882-2228.

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 / 3% SDVE / 10% Combined WBE, DBE and Veteran Owned Business 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: November 9, 2017

Gary L. Ward
Vice Chancellor for Operations
University of Missouri
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 Service Building
University of Missouri
Columbia, MO 65211

1. Bidder, in compliance with invitation for bids for construction work in accordance with Drawings and Specifications prepared by BNIM ARCHITECTS, entitled “MU SCHOOL OF MUSIC NEW BUILDING”, project number CP170621, dated NOVEMBER 9, 2017, and by W.L. CASSELL & ASSOCIATES, entitled “GENERAL SITE: SCHOOL OF MUSIC EXTENDED UTILITIES”, project number CP172801, dated NOVEMBER 9, 2017 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 construct the MU SCHOOL OF MUSIC NEW BUILDING and GENERAL SITE: SCHOOL OF MUSIC EXTENDED UTILITIES including traffic control for School of Music; all as indicated on the Drawings and described in these Specifications for sum of:

$ ______________________________ DOLLARS ($ ______________________________).
b. Additive Alternate Bids:

Above Base Bid may be changed in accordance with following Alternate Bids as Owner may elect. Alternates are as described in Section 1.H of Project Manual. Alternates are written in a priority order, but Owner is not required to accept or reject in order listed. This is a one (1) contract project, therefore, Alternates shall be studied by each Bidder to determine effect on Bids of Contractor and each Subcontractor and/or Material supplier.

CP170621 – SCHOOL OF MUSIC NEW BUILDING
(1) Additive Alternate No. 1: ADD Traditional Performance full room fit-out, as described in Section 1.H.1 “Alternates – CP170621”
All for sum of:

______________________________ DOLLARS ($___________).

(2) Additive Alternate No. 2: ADD Large IRR FF&E items, as described in Section 1.H.1 “Alternates – CP170621”
All for sum of:

______________________________ DOLLARS ($___________).

(3) Additive Alternate No. 3: ADD all other FF&E items in the building (excluding Traditional Performance Space and IRR), as described in Section 1.H.1 “Alternates – CP170621”
All for sum of:

______________________________ DOLLARS ($___________).

(4) Additive Alternate No. 4: ADD all Storage Units and Classroom Podiums, as described in Section 1.H.1 “Alternates – CP170621”
All for sum of:

______________________________ DOLLARS ($___________).

c. 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) Removal of unsuitable material below subgrade for building and site, proper disposal of unsuitable material, and replacement with satisfactory material when directed by the Geotechnical Engineer. NOTE: All excavation above subgrade is unclassified and shall be included in base bid.

CP170621 - SCHOOL OF MUSIC NEW BUILDING / CP172801
Base Bid quantity = ______60 / ______ / cu.yd. $___________ / cu.yd.

CP172801 – GENERAL SITE: SCHOOL OF MUSIC EXTEND UTILITIES
Base Bid quantity = ______60 / ______ / cu.yd. $___________ / cu.yd.

(7) Bulk rock excavation below exposed subgrade for building and site, proper disposal of excavated rock, and replacement with satisfactory material. NOTE: All excavation above subgrade is unclassified and shall be included in base bid.

CP170621 - SCHOOL OF MUSIC NEW BUILDING / CP172801
Base Bid quantity = ______60 / ______ / cu.yd. $___________ / cu.yd.

CP172801 – GENERAL SITE: SCHOOL OF MUSIC EXTEND UTILITIES
Base Bid quantity = ______60 / ______ / cu.yd. $___________ / cu.yd.

(8) Removal of unsuitable material below subgrade of footings, utility trenches and utility tunnels, proper disposal of unsuitable material, and replacement with satisfactory materials when directed by the Geotechnical Engineer. NOTE: All excavation above subgrade is unclassified and shall be included in base bid.

CP170621 - SCHOOL OF MUSIC NEW BUILDING / CP172801
Base Bid quantity = ______75 / ______ / cu.yd. $___________ / cu.yd.

CP172801 – GENERAL SITE: SCHOOL OF MUSIC EXTEND UTILITIES
Base Bid quantity = ______50 / ______ / cu.yd. $___________ / cu.yd.

(9) Rock excavation below the subgrade of footings, utility trenches, and utility tunnels, proper disposal of excavated rock, and replacement with satisfactory materials. NOTE: All excavation above subgrade is unclassified and shall be included in base bid.

CP170621 - SCHOOL OF MUSIC NEW BUILDING / CP172801
Base Bid quantity = ______20 / ______ / cu.yd. $___________ / cu.yd.

CP172801 – GENERAL SITE: SCHOOL OF MUSIC EXTEND UTILITIES
Base Bid quantity = ______15 / ______ / cu.yd. $___________ / cu.yd.
4. PROJECT COMPLETION

CP170621 – SCHOOL OF MUSIC NEW BUILDING
CP172801 – GENERAL SITE; SCHOOL OF MUSIC EXTENDED UTILITIES

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." This is anticipated to occur on or before January 15, 2018. Bidder agrees to complete the project and construction sequencing by the dates outlined in paragraph 2.a SPECIAL SCHEDULING REQUIREMENTS in the SPECIAL CONDITIONS 1.E. Bidder agrees to substantially complete both projects on or before October 31, 2019.

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. Special scheduling requirements - Refer to paragraph 2.a SPECIAL SCHEDULING REQUIREMENTS in the SPECIAL CONDITIONS 1.E

5. SUBCONTRACTOR LIST:

Bidder hereby certifies that the following subcontractors will be used in performance of Work:

NOTE: Failure to list subcontractors for each category of work identified on this form or listing more than one subcontractor for any category of work without designating the portion of work performed by each shall be grounds for rejection of bid. List name, city, and state of designated subcontractor, for each category of work listed in Bid for Lump Sum Contract. If work within a category will be performed by more than one subcontractor, Bidder shall provide name, city, and state of each subcontractor and specify exact portion of work to be performed by each. If acceptance/non-acceptance of Alternates will affect designation of a subcontractor, Bidder shall provide information, for each affected category, with this bid form. If Bidder intends to perform any designated subcontract work by using Bidder's own employees, then Bidder shall list their own name, city, and state. The bidder may petition the Owner to change a listed subcontractor only within 48 hours of the bid opening. See Information for Bidders Section 16 List of Subcontractors for requirements.

<table>
<thead>
<tr>
<th>Work to be performed</th>
<th>Subcontractor Name, City, State</th>
</tr>
</thead>
<tbody>
<tr>
<td>CP170621 – School of Music New Building</td>
<td></td>
</tr>
<tr>
<td>Cast-in-Place Concrete</td>
<td></td>
</tr>
<tr>
<td>Precast Architectural Concrete (fabrication)</td>
<td></td>
</tr>
<tr>
<td>Unit Masonry</td>
<td></td>
</tr>
<tr>
<td>Curtain Walls (fabrication)</td>
<td></td>
</tr>
</tbody>
</table>
Gypsum Board 

Mechanical (Heating, Ventilation and Air Conditioning) 

Electrical 

**CP 172801 - General Site; School of Music Extended Utilities**

Mechanical and Plumbing 

---

6. **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.

7. **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.

8. **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."
9. **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>
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<td>City, State, Zip</td>
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<tr>
<td>Phone No.</td>
<td>Federal Employer ID No.</td>
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<tr>
<td>Fax No.</td>
<td>E-Mail Address</td>
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</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).

   Project & Address | Owner/Owner's Representative | Phone Number | Architect | Amount of your Contract | Percent Completed

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.

   Project & Address | Owner/Owner's Representative | Phone Number | Architect | Amount of your Contract | Percent Completed

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).
   
<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>
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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.
   
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<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>
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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 _____

SD/1
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?

Yes _____  No _____  If yes, please provide details and attach a copy of the certification.

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 ____________________________________________
AFFIDAVIT FOR AFFIRMATIVE ACTION

State of Missouri

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________.
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.

<table>
<thead>
<tr>
<th>Agency</th>
<th>Address</th>
<th>Phone Numbers</th>
<th>Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>St. Louis Development Corporation</td>
<td>1015 Locust St. Louis, MO 63101</td>
<td>314/622-3400; 314/622-3413 (Fax)</td>
<td>Minority Business Development Manager</td>
</tr>
<tr>
<td>Metro</td>
<td>707 North First Street St. Louis, MO 63102-2595</td>
<td>314/982-1400; 314/982-1558 (Fax)</td>
<td>Disadvantaged Business Enterprise Coordinator</td>
</tr>
<tr>
<td>St. Louis Minority Business Council</td>
<td>308 North 21st St., 7th Floor St. Louis, MO 63101</td>
<td>314/241-1143; 314/241-1073 (Fax)</td>
<td>Executive Director</td>
</tr>
<tr>
<td>U.S. Small Business Administration - St. Louis, MO 8(a) Contractors, Minority Small Business</td>
<td>1222 Spruce Street, Suite 10.103 St. Louis, MO 63101</td>
<td>314/539-6600; 314/241-6565 (Fax)</td>
<td>Business Opportunity Specialist</td>
</tr>
<tr>
<td>Lambert St. Louis International Airport</td>
<td>11495 Navaid Bridgeton, MO 63044</td>
<td>314/551-5000; 314/551-5013 (Fax)</td>
<td>Program Specialist</td>
</tr>
<tr>
<td>City of Kansas City, Missouri</td>
<td></td>
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</tr>
<tr>
<td>Human Relations Department, MBE/WBE Division</td>
<td>4th Floor, City Hall 414 E. 12th Street Kansas City, MO 64106</td>
<td>816/513-1836; 816/513-1805 (Fax)</td>
<td>Minority Business Specialist</td>
</tr>
<tr>
<td>Mid America Minority Development Council</td>
<td>7777 Admiral Boulevard Kansas City, MO 64106</td>
<td>816/221-4200; 816/221-4212 (Fax)</td>
<td>President</td>
</tr>
<tr>
<td>U.S. Small Business Administration - Kansas City, MO 8(a) Contractors, Minority Small Business</td>
<td>1000 Walnut, Suite 500 Kansas City, MO 64106</td>
<td>816/426-4900; 816/426-4939 (Fax)</td>
<td>Business Opportunity Specialist</td>
</tr>
<tr>
<td>Missouri Department of Transportation Division of Construction</td>
<td>P.O. Box 270 Jefferson City, MO 65102</td>
<td>573/751-6801; 573/526-5470 (Fax)</td>
<td>Disadvantaged Business Enterprise Coordinator</td>
</tr>
<tr>
<td>Illinois Department of Transportation MBE/WBE Certification Section</td>
<td>2300 Dirksen Parkway Springfield, IL 62764</td>
<td>217/782-5490; 217/785-1524 (Fax)</td>
<td>Certification Manager</td>
</tr>
<tr>
<td>State of Missouri-Office of Administration Office of Supplier &amp; Workforce Diversity</td>
<td>P.O. Box 809 Jefferson City, MO 65102</td>
<td>573/513-8130; 573/522-8078 (Fax)</td>
<td>MBE/WBE Certification Coordinator</td>
</tr>
</tbody>
</table>
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
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:

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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 bid 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 and delivered; 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 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.

11.2 The bonds required hereunder shall be meet 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.

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 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.

15.4.3.1 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.

15.4.3.2 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.

15.4.3.3 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.

15.4.4 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.

15.4.5 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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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 Serviced Disabled 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 Service Disabled Veterans, and whose management and daily business operations are controlled by one (1) or more Serviced Disabled Veterans.

5. Disadvantaged Business Enterprise (DBE)
A Disadvantaged Business Enterprise (DBE) is a for-profit small business concern where a socially and economically disadvantaged individual owns at least 51% interest and also controls management and daily business operations. These firms can and also be referred to as Small Disadvantaged Businesses (SDB). Eligibility requirements for certification are stated in 49 CFR (Code of Federal Regulations), part 26, Subpart D.

U.S. citizens that are African-Americans, Hispanics, Native Americans, Asian-Pacific and Subcontinent Asian Americans, and women are presumed to be socially and economically disadvantaged. Also recognized as DBE’s are Historically Black Colleges and Universities (HBCU) and small businesses located in Federal HUB Zones.

To be regarded as economically disadvantaged, an individual must have a personal net worth that does not exceed $1.32 million. To be seen as a small business, a firm must meet Small Business Administration (SBA) size criteria (500 employees or less) and have average annual gross receipts not to exceed $22.41 million. To be considered a DBE/SDB, a small business owned and controlled by socially and/or economically disadvantaged individuals must receive DBE certification from one of the recognized Missouri state agencies to be recognized in this classification.

1.1.9 Work
Work shall mean supervision, labor, equipment, tools, material, supplies, incidentals operations and activities required by the Contract Documents or reasonably inferable by Contractor therefrom as necessary to produce the results intended by the Contract Documents in a safe, expeditious, orderly, and workmanlike manner, and in the best manner known to each respective trade.

1.1.10 Approved
The terms "approved", "equal to", "directed", "required", "ordered", "designated", "acceptable", "satisfactory", and similar words or phrases will be understood to have reference to action on the part of the Architect and/or the Owner's Representative.

1.1.11 Contract Documents
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) 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.

1.2  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 by 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 departure 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;

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.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 
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 Contractor 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
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.

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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 reinsurers of any of the foregoing (hereafter collectively referred to as the “Indemnitees”) 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 Indemnitees 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 Indemnitees 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 hereunder. 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 Indemnitees 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 damages, compensation or benefits payable by or for the Contractor or a Subcontractor of any tier under workers’ or workmen’s compensation acts, disability benefit acts or other employee benefit acts.

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 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. Samples shall be twice the number required for testing so that Architect can return one set of the Samples. Quantities of Samples shall be twice the number required for testing so that Architect can return one set of the Samples. Samples required by 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.

3.13.11 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.

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.

3.16.3 Any excess resalable tangible personal property or materials which were purchased for the project under this Project Tax Exemption Certificate but which were not incorporated into or consumed in the Work shall either be returned to the supplier for credit or the appropriate sales or use tax on such excess property or materials shall be reported on a return and paid by such purchasing party not later than the due date of the purchasing party’s Missouri sales or use tax return following the month in which it was determined that the materials were not used in the Work.

3.16.4 If it is determined that sales tax is owed by the Contractor on property and materials due to the failure of the Owner to revise the certificate expiration date to cover the applicable date of purchase, Owner shall be liable for the tax owed.

3.16.5 The Owner shall not be responsible for any tax liability due to Contractor’s neglect to make timely orders, payments, etc. or Contractor’s misuse of the Project Tax
Exemption Certificate. Contractor represents that the Project Tax Exemption Certificate shall be used in accordance with RSMo § 144.062 and the terms of the Project Tax Exemption Certificate. Contractor shall indemnify the Owner for any loss or expense, including but not limited to, reasonable attorneys' fees, arising out of Contractor's use of the Project Tax Exemption Certificate.

3.17 Contractor's Construction Schedules

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 insure 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 the 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 rescission. 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

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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.
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 Christmas Day, unless that specific day was approved in writing for work by the Owner’s Representative.

.1 The Contractor must have fulfilled its contract obligations with respect to temporary facilities and protection of its work; and worker protection for hot and cold weather per OSHA guidelines.
.2 If the contract obligations have been satisfied, the Owner will review 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, University of Missouri, 109 Old Alumni Centers, University of Missouri, Columbia, Missouri 65211] within fifteen (15) days after receipt of the Owner’s Review Administrator’s proposal. The UM System Contracting Officer will call a meeting of the Contractor, the Owner’s Representative, and the Owner’s Review Administrator by written notice, within thirty (30) days after receipt of the Contractor's written appeal. The Owner’s Review Administrator shall provide the UM System Contracting Officer with a copy of the written decision and summary of the review meeting, the Contractor's corrections or comments regarding the summary of the review meeting, and any written documentation presented by the Contractor and the Owner’s Representative at the initial review meeting. The parties may present further documentation and/or present the testimony of any knowledgeable person regarding the claim at the meeting called by the UM System Contracting Officer.

4.9.4 The UM System Contracting Officer will issue a written decision to resolve the claim within fifteen (15) days after the meeting. If the Contractor is in agreement with the UM System Contracting Officer's proposal, the Contractor shall notify the UM System Contracting Officer in writing within five (5) days, and the Contractor and the Owner shall sign appropriate documents. The issuance of the UM System Contracting Officer's written proposal shall conclude the administrative review process even if the Contractor is not in agreement. However, proposals and any opinions expressed in such proposals issued under this section will not be binding on the Contractor nor will the decisions or any opinions expressed be admissible in any legal actions arising from the Claim and will not be deemed to remove any right or remedy of the Contractor as may otherwise exist by virtue of Contract Documents or law. Contractor and Owner agree that the Missouri Circuit Court for the County where the Work is located shall have exclusive jurisdiction to determine all issues between them. Contractor agrees not to file any complaint, petition, lawsuit or legal proceeding against Owner except with such Missouri Circuit Court.


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 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 other than 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 2% 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
.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 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:

.1 Contract
.2 Bond (See Article 11)
.3 Insurance (See Article 11)
.4 List of Subcontractors of any tier
.5 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:
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 they 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 time 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
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 portion thereof is substantially complete. If the Owner’s Representative's inspection discloses any item which is not in accordance with the requirements of the Contract Documents, the Contractor shall complete or correct such item upon notification by the Owner’s Representative. The Contractor shall then submit a request for another inspection by the Owner’s Representative to determine Substantial Completion. When the Work or designated portion thereof is substantially complete, the Owner will issue a Certificate of Substantial Completion. Substantial Completion shall transfer from the Contractor to the Owner responsibilities for security, maintenance, heat, utilities, damage to the Work and insurance. In no event shall Contractor have more than thirty (30) days to complete all items on the Punch List and achieve Final Completion. Warranties required by the Contract Documents shall commence on the date of Substantial Completion or as agreed otherwise.

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 or on or off the site, under care, custody, or control of the Contractor or subcontractors of any tier; and

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

10.2.2 The Contractor shall 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 its employees and its 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 effect 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.

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
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, lightening, 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:

1. the date which all persons and organization who are insured 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 proceed 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 would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium 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
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/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

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 trustee or 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.

The Contractor may pay workers a rate of pay less than required by the wage rates made a part of the Contract, provided the worker is a bona fide Apprentice or Trainee and also meets the other criteria as set forth in MDLIR 8 CSR 30-3.030.

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 determine and establish. In the event that Contractor fails to comply with the provisions of this Article 13.6, 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 The Contractor may pay workers a reduced rate of pay, provided the worker is a bona fide Apprentice or Trainee and also meets the other criteria as set forth in MDLIR 8 CSR 30-3.030.

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.

13.7 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
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 Architects 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:

CP170621 - SCHOOL OF MUSIC NEW BUILDING, November 9, 2017
CP172801 – GENERAL SITE: SCHOOL OF MUSIC EXTENDED UTILITIES, Nov. 9, 2017

b. Architect
BNIM
2460 Pershing Road, Suite 100
Kansas City, MO 64108
816.783.1500

c. Mechanical / Plumbing / Fire Protection
W.L. Cassell & Associates
1600 Baltimore Ave, Suite 300
Kansas City, MO 64108
816.842.8437

d. Electrical
Antella Consulting Engineers
1600 Genessee Street, Suite 260
Kansas City, MO 64102
816.421.0950 (p)

e. Structural Engineer
Structural Engineering Associates, Inc.
1000 Walnut, Suite 1570
Kansas City, MO 64106
816.421.1042

f. Civil Engineer
SK Design Group, Inc.
4600 College Blvd., Suite 100
Overland Park, KS 66211
913.451.1818

g. Acoustics / AV
Kirkegaard & Associates
801 W Adams Street, Suite 800
Chicago, IL 60607
312.441.1980
2. SPECIAL SCHEDULING AND COORDINATION REQUIREMENTS

a. Special coordination requirements supplemental to the bid form.

(1) The buildings and the site within the project limits indicated on the drawings, shall be turned over to the contractor upon notice to proceed, approximately January 15, 2018.

(2) CP172801 and CP170621 – University Avenue and its sidewalks shall remain open to all pedestrian and vehicular traffic except:

a) Phase 2 – March 23 - April 27: Closure of the east bound lane of University Avenue.

b) Phase 3a – June 2 – June 22: Closure of the east bound lane of University Avenue.

c) Phase 4 – June 22 – July 6: Closure of the west bound lane of University Avenue. Contractor shall maintain eastbound University Avenue traffic though out Phase 4 construction.

(3) CP172801 and CP170621 – All work within the Hitt Street and University Avenue intersection shall commence and complete within a 3-week construction window between May 14 and June 1, 2018, Phase 3. Contractor shall coordinate exact dates with the City and the University of Missouri.

(4) CP172801 and CP170621 – Contractor shall coordinate construction schedule and activities with the City in order to maintain bus service and pedestrian access to the current permanent bus stop on the south side of University Avenue, and/or to a temporary alternate bus stop. Refer to Traffic Control Diagrams included in the Construction Contract Drawings for additional information.

(5) CP170621 – Contractor shall close Hitt Street between June 2 thru June 22 in order to construct the new electrical duct bank and manhole at Hitt Street just south for the Hitt Street garage. Following construction of the ductbank, Hitt Street traffic will maintain 2 lanes of traffic through the remainder of construction. Refer to Contract Drawings for additional information regarding traffic control criteria during Phase 3a.

(6) P172801 and CP170621 – Contractor shall be responsible for coordinating and scheduling requirements for all street closures with the City and the University of Missouri.
(7) CP172801 and CP170621 – the Contractor shall be responsible for City coordination and all costs associated with temporary closure of metered parking, and/or removal and replacement of parking meters as may be required to complete the work.

(8) CP170621 – the Contractor shall coordinate with the University of Missouri’s Owner Representative any primary power outages and building outages required for transfer of service. High Voltage Electrical Utility shall remain in service at all times. Refer to Construction Documents for additional information and sequencing.

(9) CP172801 and CP170621 – Coordinate utility building construction trades and schedules with construction sequencing. Provide utilities as required to maintain the building construction schedule.

(10) CP170621 – Existing Fire Hydrant at the north east corner of Hitt Street and University Avenue shall remain active at all times. Coordinate with the Fire Marshal to maintain visibility and ready access plan to the fire hydrant.

(11) Bidder agrees to substantially complete both projects on or before October 31, 2019.

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 (CP172801 – SCHOOL OF MUSIC NEW BUILDING):

      (1) The project anticipates future building additions that are not part of this project. The contractor shall take care to coordinate locations of the new building and site utilities with future master-planned building footprints as shown on the drawings.

      (2) Demolition shall consist of the removal of an existing building, and related sidewalks/landscaping/asphalt pavement. A section of the sanitary sewer will be removed. Removed/abandoned items include underground telecom duct banks, transformer/pad/bollards, trees, curbs/gutters and an electrical manhole. The existing sign, light fixtures and existing switch will be returned to MU. A fire hydrant will be relocated. A bus stop sign and bench will be removed and replaced.

      (3) Architectural work shall consist of providing attention to sound isolation and noise control through special acoustical materials and construction. Room acoustics balance the room shape, volumes, surface finishes and backup
construction of walls, ceilings and floor to ensure a beautiful, supportive acoustic for unamplified performances, as well as a clear, exciting environment for amplified sound. Specific concerns include the projection and distribution of sound, control of echo and flutter, communication among performers, and appropriate levels of loudness and reverberation for each use of each room. Design features allow for flexibility and adaptability to emerging trends and needs.

(4) Structural work shall consist of construction of a new building at the proposed site. Building generally consists of the following framing elements: cast-in-place concrete spread footings, cast-in-place concrete columns and framed structure, Concrete Masonry Unit (CMU) load-bearing walls, precast concrete panel exterior walls, and structural steel columns and framed roof. Building consists of a three levels and a fourth floor penthouse.

(5) The Mechanical work considered each systems sound isolation and building system noise. Vibration control will consist of a single VAV AHU with building heating water and chilled water supplied from campus utility loops and with pumps to distribute throughout the building. Ductwork will include silencers for acoustical treatment and elimination of HVAC system noise.

(6) Electrical work shall consist of rerouting the primary HVE lines on the site, providing new HVE ductbanks, installing new HVE manholes and equipment prior to demolishing the existing switch serving the fine arts annex slated to be demolished. The new school of music building has specific conduit routing restrictions as noted on the acoustic drawings. Complete power distribution for new building will be provided including all LED lighting and addressable fire alarm system with voice notification. There is a service upgrade component for the Telecom North Switch Node Building.

d. General Description of Work (CP170621- GENERAL SITE: SCHOOL OF MUSIC EXTENDED UTILITIES):

(1) Project consists of installation of a new heating water plant in the basement of Middlebush Hall and the associated campus loop piping.

(2) Demolition shall not be limited to consist of the existing Middlebush steam to water heat exchangers and associated heating pumps, an existing chilled water pump, an abandoned steam storage water heater, an abandoned cooling tower surge tank, an existing flow meter and various piping and controls.

(3) Architectural work shall consist of demolition and replacement of certain existing ceilings.

(4) There is no planned structural work.

(5) Mechanical work shall not be limited to installation of new steam to water heat exchangers, heating water pumps, auto fill assembly, expansion tanks, steam
PRV station, steam and heating water flow meters, backflow preventer and auto fill system, temperature controls and various piping.

(6) Electrical work shall not be limited to demolition and reinstallation/replacement of existing lighting, relocation of an existing chilled water pump VFD system, a new distribution panel for the new heating plant loads, revenue metering and power for new heating pumps and other mechanical equipment.

(7) Civil work shall not be limited to new campus heating water loop piping, extension of campus chilled water piping and water service piping to the New School of Music building and associated valves and conduit.

4. LOCATION

Work shall be performed under this Contract on campus of the University of Missouri – Columbia.

5. NUMBER OF CONSTRUCTION DOCUMENTS

a. The Owner’s Representative will furnish the Contractor a copy of executed Contract and three (3) complete sets of Drawings and Specifications.

b. Additional sets may be obtained from the printer at contractor’s cost.

6. SUBMITTALS

a. The Contractor shall submit for approval to the Architect, equipment lists and Shop Drawings, as expediently 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: 033000 _01-Cast-In-Place Concrete.pdf

(2) Reference the accompanying Shop Drawing and Submittal Log at the end of this section (1.E.3) for required submittal information.

d. The Contractor shall submit to the Architect one (1) bound copies and two (2) CD copies of all required Operating Instructions and Service Manuals 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.4).

e. The Contractor shall submit to the Owner’s Representative all items referenced in the accompanying Closeout Log (1.E.5) 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

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 on Drawings and as directed by the Owner's Representative.

b. Parking:

(1) The Owner will issue Contractor zero (0) service vehicle parking permits.

(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 Turner Avenue Parking Structure. 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: Hot water and water can be obtained from existing utilities at locations designated by the Owner's Representative at the following rates.

(1) **HOT WATER***
    
    For each kLB (1,000 lbs) $18.76
    
    For kLB (1,000 lbs) $1.79

(2) **CHILLED WATER***
    
    For each Ton-hour (12,000 Btu/ton) up to 3,000 full load hours $0.335
    
    For each Ton-hour (12,000 Btu/ton) over 3,000 full load hours $0.096
    
    *Full Load Hours = Ton Hrs. Used / Peak Tons*

    *Hot Water & Chilled Water rates are adjusted monthly (up or down) to reflect fuel and purchased utilities market fluctuations.*

(3) **WATER**
    
    For each (1,000 Gallons) $3.25
Provisions for obtaining power, including temporary extensions, shall be furnished and maintained by the Contractor. Upon completion of the work, such extensions shall be removed, and any damage caused by use of such extensions shall be repaired to the satisfaction of the Owner's Representative, at no cost to the Owner. Electricity can be obtained from the City of Columbia, contractor to coordinate service with the city.

Contractor will need to meter:

(1) All potable water use. Backflow prevention required for all use

(2) All Electric use. Installation (including temporary) must meet NEC and be labeled for Arc Flash

(3) All Chilled water use.

(4) All Hot water use.

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.

l. “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”)

(1) The locations of permit required confined spaces currently known to exist within the project limits include, but are not limited to:
   (a) Utility manhole and/or tunnel work

(2) The hazards or potential hazards in each permit required confined space or the reason it is a permit required confined space:
   (a) Low oxygen
   (b) Possible high ambient temperatures

(3) Any precautions that the owner or previous contractors have implemented for the protection of employees in the permit required controlled space.
   (a) Supplemental oxygen

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 after evaluation by a competent person; or

(3) During 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 24 hours 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 imbedded in concrete. 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.

(2) Fence screening fabric shall be used on all perimeter fencing. Fabric shall be black in color, full height of the project fence, securely attached and properly maintained throughout the duration of the project.

(3) 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.

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

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

(6) 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 fixed chain link 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.

(b) In the event that damage(s) to the Owner's trees, shrubs or vegetation occurs as a result of the Contractor's unauthorized operations, the Contractor shall pay or allow to the Owner compensation for said damage(s). Compensation 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.

(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 MU Landscape Services Department trained tree maintenance personnel at the direction of the Owner’s Representative. Limbs shall be cut off cleanly and cut surfaces treated according to established horticultural standards.

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 of **any item** described in the Contract Documents will be **allowed only prior to the receipt of bids** provided that a request for approval has been 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.

d. No substitutions will be entertained and/or permitted after bid date.

d. No substitutions and/or equal will be allowed for the following items:

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<th>Specification Section</th>
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</thead>
<tbody>
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<td>08 71 00</td>
</tr>
<tr>
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<td>23 09 00</td>
</tr>
<tr>
<td>Water Meter</td>
<td>23 09 00</td>
</tr>
<tr>
<td>Medium Voltage Cable</td>
<td>337149 – two manufacturers specified</td>
</tr>
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11. CODES AND STANDARDS

The Contractor shall comply with applicable codes and standards as listed in General Conditions and those noted in the Contract Drawings and Specifications. The following codes and standards shall also apply:

a. City of Columbia - Sewer Line Installation Standards - Department of Public Works

“All sanitary sewer construction shall be in accordance with the City of Columbia Specifications and Standards and in conformance with the rules and regulations of the Missouri Clean Water Commission.”

b. All curb, gutter and street details shall be in accordance with the City of Columbia Specifications and Standards.


12. PERMITS

a. Before commencement of Boilers, Water Heaters or Pressure Vessels the Contractor must obtain an installation permit from the State of Missouri, Division of Fire Safety, Boiler and Pressure Unit as required by 11 CSR 40-2.010 through 11 CSR 40-2.065. The permit applications are available at http://www.dfs.dps.mo.gov/programs/bpv/.

b. Hot Work Permitting: The contractor shall make efforts to minimize the amount of hot work within the School of Music.

(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.
(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) 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.

c. Energized Work Permit: No energized electrical work shall be allowed unless coordinated with Owner’s Representative.

13. SPECIALTIES

a. Owner furnished topsoil: The Owner will place the topsoil and provide final grade. The contractor shall rough grade to the following specification:

(1) The sub-grade is to be left at minus six inches (6”) in all areas unless indicated otherwise. All planting bed sub-grades are to be left a minus eighteen inches (18”). The contractor is to remove all deleterious material from the sub-grade prior to placing topsoil. All subgrade areas shall contain at least 6” of subsoil, (i.e. cover clean rock backfilled areas). All subgrade areas shall be “ripped” a minimum of 6” deep and a maximum of 12” apart in opposite directions with minimal tire traffic to follow. All exposed deleterious material and unacceptable rock shall be removed.

(2) The contractor shall adjust all yard boxes valve boxes, pull boxes, cleanouts, and manhole lid rings etc. (includes irrigation, sewers, water and electric), to the indicated finish grade.

(3) Final plantings will be by the Owner. The Owner will water and maintain all seed, sod and landscaping.

14. PRE-BID INSPECTION

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 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.

b. Following final inspection and acceptance of the roofing system(s) by the Owner and the roofing system manufacturer(s), the Contractor shall submit a manually signed standard warranty agreement provided and executed by the roofing system manufacturer for each roofing system provided. Standard warranty agreement(s) shall be of the duration specified in Division 7.
c. 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.

d. The Roofing contractor or subcontractor shall provide the Owner with an Application for a Roof Warranty.

16. MODIFICATIONS TO INFORMATION TO 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. MODIFICATION TO INFORMATION FOR BIDDERS: BIDDERS STATEMENT OF QUALIFICATIONS

a. Information for Bidders

   (1) Reference: Information for Bidders, Article 8.4

   Insert new Article 8.4 to read as follows:

   In addition to the Bidder’s Statement of Qualifications, the Bidder must also submit evidence and meet the following qualifications:

   The project requires the services of a prime contractor who has demonstrated success in completing process/power plant work in an operating plant environment with little or no interruption of plant operations.

   (a) MINIMUM QUALIFICATIONS

      (i) The schedule for the project is aggressive and requires a contractor with a successful track record of managing projects with average monthly expenditures of more than $1-million

      (ii) Successful completion of one project of similar type and scope.

      (iii) Successful completion of at least three projects of $18-million or greater value. Submit references for the three most recent projects over $15-million in value.
(iv) Mechanical Contractor must have carried a PP (Power Piping) Stamp for the last three years.

(v) Electrical Contractor must have extensive experience installing 13.8-kV equipment and cable.

(vi) Successful and sustained track record of effectively utilizing project/schedule management software for at least the last two years.

(b) QUALIFICATION SUBMITTALS

(i) Submitted qualification packages should include the following information:
   • Project and Schedule
     - Management Experience managing projects with equal or greater schedule demands.
     - Demonstrated and consistent on-time completion success
   • Project Organization / Personnel
     - Key project team members and their resume
     - Project team roles and responsibilities of team members
     - Reporting/accountability procedures
     - Quality control program and procedures
   • Organizational Support
     - Home office support
     - Labor and subcontractor relations
     - Submittal processing procedures
     - Material ordering/tracking/delivery Procedures
     - Cost accounting support
     - Financial stability/capacity
     - Record of mentoring and supporting Supplier Diversity Subcontractor Participation

(ii) Packages must include the following items:
   • Corporate Organizational Charts
   • Project Organizational Charts
   • Summary of Similar Projects
   • Client References
   • Resumes – resumes for each key individual proposed for the project, include: position in the firm, project responsibility, education, license or registration and relevant experience over the last five years.
   • Financial Statements and/or Evidence of Bonding Capacity
   • Sample progress reports and schedules
   • Brief Narratives indicating how the Contractor intends to manage this project, including subcontractors.

(c) QUALIFICATION PROCEDURE
(i) All qualification information and supporting materials must be submitted with your bid. Following the bid date, the Owner reserves the right to request additional information material to evaluate qualifications. Failure of the Contractor to demonstrate their ability to comply with these qualifications may be grounds for the Owner not recommending aware of the Contract.

18. MODIFICATIONS TO GENERAL CONDITIONS

a. General Conditions:

(1) Add to the Insurance Requirements in General Conditions Article 11, Asbestos Liability Coverage, for specified asbestos abatement in the contract documents, in a limit no less than $1,000,000 combined single limit, per occurrence and aggregate, for both bodily injury and property damage combined. The Owner will accept coverage from the Asbestos Removal Subcontractor in lieu of the General Contractor subject to all requirements set forth in article 11.

(2) Add to the Insurance Requirements in General Conditions Article 11, Pollution Liability Coverage, for specified hazardous waste disposal in the contract documents, in a limit no less than $1,000,000 combined single limit, per occurrence and aggregate, for both bodily injury and property damage combined. The Owner will accept coverage from the Hazardous Waste Disposal Subcontractor and/or Hauler in lieu of the General Contractor subject to all requirements set forth in article 11.

(3) 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.

Delete in the first sentence of 11.2.1: “$2,000,000 per occurrence, $5,000,000 in general aggregate, $5,000,000 products and completed operations aggregate and $1,000,000 personal injury and advertising injury”

and insert: “$2,000,000 per occurrence, $15,000,000 in general aggregate, $15,000,000 products and completed operations aggregate and $1,000,000 personal injury and advertising injury”

19. PROJECT SCHEDULING

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.

Option 1: Contractor Schedule – Contractor is responsible for the schedule and must comply with the Owner’s requirements. See Contractor Schedule Specification included in these documents.
20. PROJECT COORDINATION

a. Coordinate construction operations included in various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections that depend on each other for proper installation, connection, and operation.

(1) Schedule construction operations in the sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.

(2) Coordinate installation of different components to assure maximum accessibility for required maintenance, service, and repair.

(3) Make provisions to accommodate items scheduled for later installation.

b. Coordination Drawings: Within sixty (60) days of Notice to Proceed provide coordination drawings for the integration of the Work, including work first shown in detail on shop drawings or product data. Show sequencing and relationship of separate units of work which must interface in a restricted manner to fit in the space provided, or function as indicated.

(1) Show the interrelationship of components shown on separate shop drawings.

(2) Indicate required installation sequences.

(3) Call attention in advance to Architect of any dimensional or detail information needed to complete the coordination drawings.

21. PROJECT PARTNERING (Not Used)

22. BUILDING SYSTEM COMMISSIONING

a. Contractor shall provide all personnel and equipment required to complete the commissioning activities referenced in the Commissioning Plan. The requirements of the commissioning plan shall be completed in their entirety before substantial completion and submitted as referenced in the Closeout Log.

b. The Contractor shall designate a competent person, separate from the Superintendent or Project Manager, to act as the Contractor’s Commissioning Coordinator. The Commissioning Coordinator is responsible for planning, scheduling, coordinating, conducting and verifying all commissioning activities required by the commissioning plan and ensuring all building systems are complete, operable and ready for use by the Owner. The commissioning coordinator shall chair all commissioning meetings (Agenda provided by Owner), ensure timely commissioning log entry sign off and coordinate all system commissioning schedules and completion. At a minimum, building ventilation systems, chilled/hot water generation systems, hydronic distribution systems, power distributions systems and fire detection and alarm systems,
as applicable.

23. MECHANICAL, ELECTRICAL, PLUMBING (MEP) PRE-INSTALLATION MEETING(S)

a. Before the start of MEP installation, the Owner’s Representative will convene an MEP pre-installation meeting. Meeting participants to include contractor (including MEP subcontractors), Owner’s Representative and additional contractor and University operational staff invited by the Owner’s Representative. Topics will include underground rough-ins, steam piping, chilled water piping, sprinkler piping, hot water piping, electrical system, duct, telephone/data wiring, control wiring. Additional meetings will be conducted as required for the review of coordination drawings and scope specific installations. Cross section drawings of corridor ceilings and other congested areas will be of highest priority and will be reviewed prior to the start of installations in the affected areas. Meeting minutes and sign-up sheet will be transcribed by contractor and distributed to attendees.

24. COST BREAKOUT FOR OWNER’S ACCOUNTING PURPOSES

a. Contractor will be required to submit the following cost breakouts on company letterhead prior to the end of the next business day following the bid opening.

   (1) Cost Break Out #1: CP17062 New School of Music.
   (2) Cost Break Out #2: CP172801 General Site: School of Music Extend Utilities.

b. Contractor shall submit separate Schedule of Values for each listed project.

25. 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.

b. The Contractor shall use a current industry standard (Primavera SureTrack or P3, Microsoft Project, Oracle P6, or other as approved by Owner’s Representative) project scheduling software which provides as a minimum: Critical paths, milestones, estimated and actual start and completion dates, scheduled vs. actual progress, and detailed task and subtask breakdown. The following schedules shall be provided as a minimum and kept current: Overall project schedule reflecting Contractor’s plan for performing the work, four- (4-) week look-ahead, and a schedule narrative describing progress for the month, schedule impacts and assessment for time extensions.

c. The Contractor shall furnish on-site Internet access for use by his Project Manager and superintendent. The contractor shall utilize the Owner’s secure information sharing
system for submittals, construction payment process, change orders, RFI’s/ASI’s, O&M manuals and all other project manual requirements as directed by the Owner’s Representative Field staff are also required to utilize this software as directed by the Owner’s Representative.

26. SAFETY PRECAUTIONS AND PROGRAMS

a. The Bidder’s Statement of Qualifications includes a requirement that the Bidder provide its Worker’s Compensation Experience Modification Rates (EMR) and Incidence Rates for the three recent years. The Bidder shall also include the EMR and Incidence Rates of listed major subcontractors on the Bid for Lump Sum Contract. If the EMR exceeds 1 or the Incidence Rate exceeds 13, the Contractor or major subcontractor shall take additional safety measures including, but not limited to, developing a site specific safety plan and assigning a Safety Manager to the Project to perform inspections on a schedule as determined acceptable by the Owner with written reports to be submitted to the Owner. The Owner reserves the right to reject a Bidder or major subcontractor whose rates exceed these stated rates.

b. The contractor shall provide Emergency Contact Information for the Contractor’s on-site staff and home office management as well as contact information for all major subcontractor personnel. This information shall contain business and personal phone numbers for each individual for contact during or after hours in case of an emergency. This information shall be submitted within 15 days of the Notice to Proceed.

c. Reference Hot Work Permitting, Section 12.b Permits.

27. WARRANTY WALKTHROUGH

Contractor shall attend a walk-thru with the Owner at 11 months after acceptance to review and document any warranty items to be addressed as part of the 12 month warranty stated in article 3.1 of the General Conditions.

28. DELEGATED DESIGN

a. The following sections contain requirements for Delegated Design:

**CP170621 – SCHOOL OF MUSIC NEW BUILDING**

- 034500 – Precast Architectural Concrete
- 052100 – Steel Joist Framing
- 054000 – Cold Formed Metal Framing
- 055100 – Metal Stairs
084413 – Glazed Aluminum Curtain Walls
084423 – Structural Sealant-Glazed Aluminum Curtain Walls
111300 – Loading Dock Equipment
112400 – Maintenance Equipment
211313 – Wet-Pipe Sprinkler Systems
260529 - Hangers and Supports for Electrical Systems
   Hanger and support systems.
260536 - Cable Trays for Electrical Systems
   Cable tray supports and seismic bracing
262413 - Switchboards
   Arc Flash Hazard Study
   Arc Flash Labels
262500 - Enclosed Bus Assemblies
   Design enclosed bus assemblies.
034500 – Precast Architectural Concrete (by BNIM, referenced in SEA drawings)

20. SPECIAL INSPECTIONS

CP170621 – SCHOOL OF MUSIC NEW BUILDING

a. The following tests and inspection shall be performed by an independent inspection agency, and conform to Chapter 17 of the 2015 International Building Code:

1. Special Inspection Requirements:
   a. Soils – bearing capacity of foundation (periodic)
   b. Controlled fill – placement, compaction, moisture content (periodic)

2. Reinforced concrete – 2015 IBC Table 1705.3:
   a. Soils – bearing capacity of foundations (periodic)
   b. Inspection f bolts installed in concrete (continuous)
   c. Verification of required mix design (periodic)
   d. Sampling concrete, compressive strength cylinders, slump, air content (continuous)
   e. Inspection of concrete placement (continuous)
   f. Inspection of curing techniques (periodic)

3. Structural steel – 2015 IBC Table 1705.2.2:
   a. Material verification – structural steel, high-strength bolts, nuts, washers
b. Inspection of high-strength bolting – bearing connections (periodic)
c. Inspection of steel frame (periodic)
d. Inspection of welding:
   i. Single pass fillet welds >5/16 inch (continuous)
   ii. Single pass fillet welds <5/16 inch (continuous)
   iii. Floor and roof deck (periodic)
   iv. Complete and partial penetration groove welds (periodic)
e. In-plant steel inspection:
   i. Note: In-plant inspection is not required if steel fabrication plant has AISC certification for steel and SJI certification for steel joists.

4. Reinforced structural masonry – ACI 530-11 Table 1.19.2:
   a. Proportions of mortar (periodic)
   b. Reinforcing steel bar placement (periodic)
   c. Grout placement (continuous)
   d. Grout specimens (continuous)

5. Post-Installed Anchors:
   a. Inspection of epoxy adhesive post-installed anchors (continuous)
   b. Inspection of mechanical post-installed anchors (periodic)

6. Fire-Resistant Penetrations and joists:
   a. Inspection for proper installation (periodic)

END OF SECTION
SUBSURFACE INVESTIGATION, SOIL ANALYSIS
and
FOUNDATION DESIGN RECOMMENDATIONS
for
NEW SCHOOL OF MUSIC BUILDING – PHASE 1
COLUMBIA, MISSOURI

Prepared for

MS. PAMELA EUGSTER, RA
UNIVERSITY OF MISSOURI SYSTEM
114 GENERAL SERVICES BUILDING
COLUMBIA, MISSOURI

Prepared by

ENGINEERING SURVEYS & SERVICES
1113 FAY STREET
COLUMBIA, MISSOURI 65201

Missouri Engineering Corporation Number 2004005018

April 6, 2017
April 6, 2017

Ms. Pamela Eugster, RA
University of Missouri System
114 General Services Building
Columbia, MO 65211

RE: Geotechnical Engineering
New School of Music Building
CP170621
Columbia, Missouri

Dear Ms. Eugster:

We have conducted a subsurface investigation and evaluated subsurface conditions for the referenced project. The following report includes the results of the investigation and evaluation and our recommendations regarding foundation design and construction considerations.

We appreciate the opportunity to assist you on this project and anticipate inquiries during the design phase. We stand ready to assist during the design phase and through construction with a full range of construction oriented engineering, surveying, and laboratory services. If we can be of further assistance, please do not hesitate to contact us.

Prepared by,

Randall A. Lee, P.E., R.G.

Reviewed by,

Joshua D. Lehmen, P.E.

cc: Eugster (email)
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1 Executive Summary

An exploration of subsurface conditions has been conducted for the proposed New School of Music Building on the campus of The University of Missouri in Columbia, Missouri. The proposed project consists of two phases. The first phase involves the construction of a 3 story free standing classroom and office building with a mezzanine level between the second and third levels. The building will be located in the southern half of the project site, where the current Fine Arts Annex Building exists. The second phase consists of a future addition of a Music Hall that will be approximately 136 by 88 feet in plan and located to the north of Phase 1.

The phase one structure will be approximately rectangular in shape with the long axis running in the north/south direction and 125 by 250 feet in plan. Construction is anticipated to cast-in-place concrete columns and post tensioned concrete decks. Exterior walls will be light gage metal studs with a brick veneer although pre-cast concrete panels are an option. Anticipated finished floor elevation of the 1st level is 763 feet. At this time, preliminary column loads are estimated to be 600 kips. Wall loads are estimated to be up to 25 kips per linear foot.

A total of 8 soil and rock borings were drilled for this investigation. Six of the borings were drilled within the footprint of the proposed first phase and the remaining two were in the footprint of Phase 2. A geotechnical investigation has previously been performed by this firm over portions of this site in June of 1993 for the proposed Fine Art Support building. A copy of that report is included in Appendix B of this report.

The borings indicate that the subsurface profile of this site is fairly consistent. Underlying a thin mantle of surface covering consisting of asphalt and baserock to topsoil, clay rich soils with varying amounts of sand and gravel was encountered. A review of the boring logs shows that auger refusal was encountered as shallow as 53 feet in boring B8 and as deep as 79.5 feet in boring B3. Groundwater was encountered in all of the borings at depths ranging from 20 to 38.5 feet. Depending on the chosen foundation system, groundwater may influence the construction of the foundation system and should be planned for accordingly.

It is our recommendation that the structure be supported on a spread footing foundation system; however, intermediate foundation recommendations are also provided. Spread footings should be designed for a net allowable bearing pressure of 7,000 psf for isolated and 6,000 psf for continuous foundations, if bearing at an elevation of 760 feet or lower. Intermediate foundation recommendations are provided later in this report. Additional slab, pavement and retaining wall design recommendations are also provided in this document.

The exploration and analysis of the foundation conditions are considered to be in sufficient detail and scope to form a reasonable basis for design. The recommendations submitted are based on the results of our geotechnical investigation and analysis, and the preliminary design concepts provided by Mr. Kelly Gipple, PE and Mr. Nick Pino, PE with Structural Engineering Associates, Kansas City, Missouri.
This summary should be used in combination with the complete report for design considerations. Additional information and details on the investigation and recommendations, not mentioned in this summary, are contained within the report.

2 PROJECT SCOPE

The scope of the investigation included a reconnaissance of the site, a review of all available subsurface data in the vicinity, a subsurface investigation consisting of 16 soil and rock borings to depths ranging from 17.5 to 44.5 feet, laboratory soil testing, and an engineering analysis and evaluation of the foundation materials present at the site.

The purpose of the investigation was to determine the types of subsurface materials present at the site likely to be encountered or affected by the proposed construction; to determine the general engineering characteristics of the various materials; to determine the seismic site class according to the 2015 International Building Codes; and to provide a basis for recommendations regarding bearing capacity and compressibility of the foundation and subgrade materials.

3 DESCRIPTION OF THE SITE AND PROJECT

3.1 SITE LOCATION

The site of new School of Music Building is located near the northeast edge of the campus of The University of Missouri in Columbia, Missouri. The site is bordered to the north by Paquin Street, to the west by Hitt Street, to the south by University Avenue and to the east by the Danciger House/Hillel Foundation Building and the University North Telecom Building. Specifically, the project is located in the Northwest 1/4 of Section 18, Township 48 North, Range 12 West (See Vicinity Map, page 3).

3.2 PROJECT DESCRIPTION

The proposed project consists of two phases. The first phase involves the construction of a 3 story free standing classroom and office building with a mezzanine level between the second and third levels. The building will be located in the southern half of the project site where the current Fine Arts Annex Building exists. The second phase consists of a future addition of a Music Hall that will be approximately 136 by 88 feet and located to the north of Phase 1.

The phase one structure will be approximately rectangular in shape with the long axis running in the north/south direction. Construction is anticipated to cast-in-place concrete columns and post tensioned concrete decks. Exterior walls will be light gage metal studs with a brick veneer although pre-cast concrete panels are an option. Anticipated finished floor elevation of the 1st level is 763 feet. At this time, the largest preliminary column loads are estimated to be 600 kips. Wall loads are estimated to be up to 25 kips per linear foot.
3.3 SITE DESCRIPTION, TOPOGRAPHY, AND DRAINAGE

The project site has been highly modified by man. A review of historic aerial photographs indicates at least 5 additional residential structures north of the Fine Arts Annex. By 1992, the number of structures had diminished to one in the northwest corner. The rest of the area was used for landscaping and parking lots. By 2002, the last remaining structure had been removed and the entire area north of the existing Fine Arts Annex has been used as a parking lot.

The site can best be described as sloping to the southwest for the southern 2/3 of the site and northwest for the northern third. There is approximately 8 feet of vertical relief between the northeast and southwest corners. Site drainage is handled by infiltration in the landscape areas and runoff into storm sewer inlets.

4 VICINITY MAP
5 GEOLOGY OF AREA

5.1 GENERAL
Columbia, Missouri is located near the northern terminus of the Ozark Highland Landform and is in the Central Missouri Hills Subsection. The geology of the area is characterized by dissected Pleistocene age glacial drift that unconformably overlays Pennsylvanian aged limestone and shale and/or Mississippian aged limestone.

5.2 LOESS
Loess is a windblown soil with variable proportions of clay, silt and fine sand. Shear strength and compressibility of loess is generally low to moderate, but may vary dependent upon site specific conditions. A clayey silt to silty clay blanketed Boone County at one time. This material is readily erodible and appears to have been removed from this project site.

5.3 PLEISTOCENE GLACIAL DEPOSITS
Almost all of Boone County was covered by glacial material at one time. Glacial till is typically silty or sandy clay with a fine sand grit to boulder sized inclusions in the soil matrix. Pockets or “lenses” of nearly clean sand may also be found in this till. These soils are typically moderately to highly over consolidated and exhibit high shear strengths and low compressibility characteristics under low to moderate foundation loads. Glacial till underlies the entire project area and was encountered in all 8 borings.

5.4 PENNSYLVANIAN DEPOSITS
Pennsylvanian sediments composed mostly of shale with some minor limestone and sandstone occur erratically throughout the Columbia area. The deposits appear commonly in filled depressions and sinkholes that occur in the underlying Mississippian surface. Thin limestones and shale that contain some chert boulders are Pennsylvanian in age. This material was encountered in all of the boreholes drilled for this investigation.

5.5 MISSISSIPPIAN LIMESTONE AND DOLOMITE
Most of Boone County is underlain by the Mississippian age Burlington formation. The Burlington formation consists of a fairly coarse-grained, massive, clastic limestone. The upper portion is commonly white to light gray or buff in color and is characterized by an abundance of chert which is more pronounced in the upper level. This formation typically exhibits high shear strength and low compressibility characteristics. The Burlington formation can be heavily characterized by karst features, including pinnacles, caves, sinkholes, and filled sinks. A review of the maps on the Missouri Center for Applied Research and Environmental Systems does not indicate any sinkhole activity within a 1.9 mile radius. None of the borings were extended to this material.

Future sinkhole activity is difficult to predict. Sinkholes and caves in this area are in various stages of development and can appear at any time. Activities of man, both on the site and off, can alter surface
drainage and other site conditions. These activities could accelerate the development of caves and sinkholes in areas with no evidence of this activity.

6 FIELD INVESTIGATION

Field investigations consisting of a site reconnaissance, a review of subsurface records for the area and the drilling of soil and rock borings were performed on January 30 and February 1, 2017. The field investigation and the site reconnaissance were performed in accordance with procedures outlined in ASTM D420.

6.1 DRILLING

Sixteen borings were advanced to depths ranging from 53 to 79.5 feet, for this investigation. All drilling was powered with a track mounted drill rig using a carbide tipped finger bit. Boring locations are shown on the Boring Location Plan included in the Appendix of this report. Disturbed samples were obtained from auger cuttings or using a split-barrel sampler in accordance with ASTM D1586. Undisturbed samples were obtained using 3-inch O.D. thin-walled sampling procedures in accordance with ASTM D1587.

Drilling was monitored by an engineer from this firm. The engineer provided technical direction, logged the borings, performed field tests, and prepared and transported the samples to the laboratory for testing.

6.2 FIELD TESTS AND MEASUREMENTS

Boring locations were selected by and based on recommendations presented by Structural Engineering Associates (SEA). Boring elevations were determined from a topographic survey developed by this firm. The elevations are assumed correct to within ± 0.2 feet. Field observations are detailed in the boring logs included in the Appendix of this report.

7 LABORATORY INVESTIGATION

In conjunction with the field investigation, a laboratory investigation was conducted on the sampled materials to determine the engineering properties needed to analyze and predict foundation and subgrade performance. The laboratory investigation included supplementary visual classification, water content tests, unconfined compressive strength tests, dry unit weight measurements and Atterberg limit tests. All tests were performed by this firm in accordance with appropriate ASTM procedures in a USACE Validated Lab. Results may be found in the Appendix of this report.

Laboratory tests performed on soil samples retrieved during the field investigation provided a range of results. The natural moisture contents of the soils (ASTM D 2216) were found to range from 10 to 25 percent. The dry density of the undisturbed samples ranged from 111 to 117 pounds per cubic foot (pcf). The cohesion, as measured in the unconfined compression test (ASTM D 2166), was found to range from a low of 0.4 tons per square foot (tsf) to a high of 2.3 tsf. The Atterberg liquid limits (ASTM D 4318)
ranged from 41 to 52 percent while the plastic limits ranged from 13 to 17 percent, giving plasticity indices from 26 to 37. This indicates the tested soils have a moderate to high plasticity.

8 SUBSURFACE CONDITIONS

8.1 GENERAL
The materials encountered during the subsurface investigation were visually classified according to ASTM D2488. The materials encountered during the field investigation are described in detail in Boring Logs included in the Appendix of this report. The stratification lines represent approximate boundaries, and the transition may be gradual.

8.2 DESCRIPTION OF SUBSURFACE MATERIALS
The subsurface conditions in the vicinity of the proposed structures were fairly consistent over the investigation site. In general, underlying a thin mantle of topsoil or asphalt and baserock, a man made fill consisting of silty clay soils with varying amounts of sand and gravel was encountered. The fill in borings B2 thru B7 and the asphalt or topsoil in borings B1 and B8 was underlain by native glacial soils containing varying amounts of sand, silt and gravel. Underlying the native clay soils in the above referenced borings and the fill in the remaining borings, shaley clay and shale was encountered. Where penetrated the shaley clay and shale is underlain by limestone bedrock.

As mentioned above, undocumented fill was encountered in all of the borings except B1 and B8 and ranged in thickness from 4 to 5 feet. The fill consisted of silty clay with varying amounts of natural and man-made sand, gravel, aggregate and building rubble. The fill was described as dark brown and dark gray to brown in color, moist and varied between soft to firm in consistency.

Beneath the man-made fill naturally occurring glacial till soils were encountered. The native clay soils were described as brown to orangish brown and gray in color, moist, stiff to hard in consistency and contained varying amounts of sand and gravel. Thickness of the stratum ranged between 35 and 53 feet. The lower portion of the glacial soils transitioned to shaley clay and shale.

The shaley clay and shale was described as gray to light gray and tan in color, moist and stiff to hard in consistency. Thickness of this stratum tended to range between 3 and 30 feet.

Beneath the shaley clay and shale in, limestone bedrock was encountered. Drilling was terminated at auger refusal on limestone at elevations between 695 and 717 feet which, is approximately 53 to 79.5 feet below existing grade.

8.3 UTILITIES
Underground utilities were marked along utility corridors along the west, north and south sides as well as high voltage electric and underground communication lines running east/west near the center of the property. Existing as well as abandoned utility trench backfill may contain material that is unsuitable for
9 ENGINEERING ANALYSIS AND RECOMMENDATIONS

9.1 GENERAL
The engineering analysis and recommendations which follow are based upon the results of a geotechnical investigation, soil and rock analysis, and the preliminary design information provided by Mr. Kelly Gipple, PE and Mr. Nick Pino, PE of Structural Engineering Associates, for the proposed building. If the project scope is altered appreciably or differing geotechnical conditions are encountered than those noted in the Boring Logs, a review of the changes or conditions is recommended to determine their impact upon design.

Spread, Intermediate and Deep foundation systems were considered for this project; however, due to the depth to rock ranging from 53 to 80 feet and the presence of groundwater in all 8 borings, a spread or intermediate foundation system are considered the best viable options. We recommend that a geotechnical engineer observe the bearing surface immediately after excavation and prior to concrete placement to verify the suitability of the bearing surface and bearing material.

9.2 GROUNDWATER
Groundwater was encountered in all 8 of the borings and is associated as perched water in various sand lenses. Groundwater was encountered at depths ranging from 20 to 38.5 feet. Depending on the foundation system chosen, groundwater may influence construction of the foundations and an allowance should be included in the bid documents for groundwater control. The exact location of the groundwater surface should be expected to fluctuate depending on normal seasonal variations in precipitation and other climatic conditions, surface runoff, permeability of onsite soils, continuity of pervious material, and other factors.

9.3 SEISMIC LOADING
In the design of the proposed structure the following seismic parameters may be used. These parameters are based on the 2015 International Building Codes and are site specific.

1. Site Class  D
2. Mapped Spectral Response, Short Periods (Ss)  0.168
3. Mapped Spectral Response, Short Periods (S1)  0.093
4. Site Coefficient as a Function of Ss (Fa)  1.6
5. Site Coefficient as a Function of S1 (Fv)  2.4
9.4 SITE GRADING
Prior to grading the site, the existing Fine Arts Annex building will need to be demolished and the rubble removed from site. The existing floor slab and foundations should also be removed. Additionally all trees including the front 20-inch oak and its root ball will need to be removed.

Preliminary plans indicate that Phase 1 New School of Music will have anticipated finished floor elevations of ±763 feet for the first level. To accomplish this at least 13 feet of cut will be required in the northeast corner of proposed Phase 1 building. Excavation down to the 763 elevation should remove any existing fill within the building pad for Phase 1. Additionally, we recommend that any remaining existing fill within the proposed Phase 2 addition footprint or under paved areas be removed and replaced with engineered fill.

Engineered fill should meet the requirements stated in the Construction Fill and Backfill section of this report. Any fill placed within the upper 2 feet of subgrade, extending to 5 feet beyond the building footprint, should consist of low volume change material. Low volume change material may consist of on-site or imported soils with a liquid limit less than 50 and a plasticity index less than 30 or a granular fill containing sufficient fines to exhibit a definite moisture/density relationship. Most of the on-site native soils meet this criterion. Due to the presence of questionable construction debris, we do not recommend the use of the existing onsite fill as part of the engineered fill.

Construction should not begin until all cuts have been completed and fill placed within the plan area of the proposed structures. Prior to the start of construction, it is recommended that all vegetation, debris, and other unsuitable materials be removed from the site.

Following completion of excavation and stripping, and prior to fill placement or slab-on-grade construction, it is recommended that the subgrade be proof-rolled with a rubber-tired piece of construction equipment such as a fully loaded, tandem-axle dump truck to help identify any soft or unsuitable areas. Areas identified as unsuitable should be overexcavated and reconstructed with engineered fill.

Site grading will be dependent on weather conditions. The soils are sensitive to moisture changes caused by atmospheric conditions and precipitation. Clay and silt rich soils can be subject to high rates of erosion and loss of shear strength with increases in moisture content. Moisture content changes can also lead to volumetric changes in the soils. The first few inches of exposed soil will be most affected by changing conditions. The site contractor should take steps to minimize erosion of the site following stripping and up to establishment of ground cover or turf. Earthwork operations may be delayed by heavy precipitation at the site.

9.5 FOUNDATION RECOMMENDATIONS
The phase one structure will be approximately rectangular in shape with the long axis running in the north/south direction. The structure will be a 3 story free standing classroom and office building with a mezzanine level between the 2nd and 3rd levels. Construction is anticipated to be steel framed with composite decks. Exterior walls will be light gage metal studs with a brick veneer although pre-cast concrete panels are an option. Anticipated finished floor elevation is 763 feet for the first floor. At this
time, the highest preliminary column loads are estimated to 600 kips. Wall loads are estimated to be up to 25 kips per linear foot.

9.5.1 Spread Footing Foundations
Based upon the proposed project configuration and anticipated column and wall loads, a spread foundation system is recommended. Isolated and continuous foundations bearing on natural stiff glacial till at or near an elevation of 760 feet should be sized for a net allowable bearing capacity of 7,000 and 6,000 psf, respectively. These bearing pressures assume a 2.5 factor of safety. The recommended minimum continuous footing width is 18 inches, individual square footings should not be less than 30 inches. Frost protection will be provided if exterior foundations are maintained at a minimum depth of 30 inches below finished exterior grade. Settlement is expected to occur fairly quickly as the load is applied with most of the settlement occurring during construction. Total settlement for the structure is estimated to be on the order of one inch or less. Differential settlement should be limited to ½-inch or less.

Shallow foundations for future structures bearing on native soils above the 760 elevation may be proportioned for a net allowable bearing pressure of 3,000 psf and 2,500 psf for isolated and continuous foundations, respectively. Depending on the column and wall loads, total settlement for the structure is estimated to be up to 1.5 inches for loads similar to the Phase 1 structure. Differential settlement should be limited to ½-inch or less. We do not recommend bearing the structure on the existing fill without some form of subgrade improvement.

A perimeter foundation drainage system at the base of the spread footings is recommended to discharge accumulated moisture away from the structure. The perimeter drainage system should consist of a perforated pipe bedded and backfilled with free draining aggregate. The free draining aggregate zone should be wrapped in geotextile filter fabric with an apparent opening size (ASTM D 4751) of 70 to 100 and minimum trapezoid tear strength (ASTM D 4533) of 50 pounds. The free draining aggregate should be covered with at least 2 feet of compacted low permeability clay soil. Downspouts and gutters should not be designed to flow into the foundation drain system. Trees or other vegetation whose root systems have the ability to remove excessive moisture from the subgrade and foundation soils should not be planted next to the structures.

Incidental shallow foundations for signs or small walls should be proportioned for an allowable bearing pressure of 2,000 psf, if bearing on the existing fill after all unsuitable material has been removed. To minimize the effect of seasonal moisture variations, provide frost protection, and improve performance, auxiliary foundations should be constructed such that the bearing surface is a minimum of 36 inches below the exterior finish grade. Settlement should be less than one inch.

9.5.2 Intermediate Foundations with a Slab-on-Grade
Should a higher bearing elevation be preferred (above the 760 elevation), possibly for the Phase 2 Music Hall addition, a viable option for the proposed structure is the improvement of weaker soils through the installation of stone columns, commercially known as Geopiers© or vibro-piles. These methods involve the excavation of a cylindrical hole, typically 18-36 inches in diameter. The hole is then refilled with thin lifts (12 inches or less) of well-graded granular material, with each lift compacted with the tamper or vibrated into the surrounding soils to induce horizontal stress on the surrounding weak soils, effectively
causing their overconsolidation. The surrounding overconsolidated soils and the stone column can be considered to act as one stiff matrix with an improved bearing capacity from the soil alone. Shallow foundations can bear on the stone column/soil matrix with a preliminarily estimated composite bearing capacity of approximately 5,000 psf. Should a stone column foundation system be chosen for this structure, the specialty contractor will provide final design parameters and construction details. The specialty contractor should be made aware of any abandoned utilities that may affect construction of the foundation system. The structural engineer should also review the number of structural elements each type of system requires since the number may differ for alternate stone column systems.

Total settlement of the stone column foundation system is expected to be in the order of one inch or less, although final settlement calculations will be provided by the specialty contractor. Settlement is expected to occur during construction and is related to both the composite stiffness modulus of the stone column/soil matrix and the consolidation characteristics of the unimproved material below the stone columns.

To minimize the effect of seasonal moisture variations, provide frost protection, and improve performance, shallow foundations should be constructed such that the stone column/soil matrix bearing surface is a minimum of 36 inches below the adjacent exterior finish grade.

9.6 RETAINING WALLS

Any walls subject to unbalanced earth pressure such as basement and retaining walls, such as the north and east walls for the Phase 1 structure should be designed for earth pressures equal to or greater than those provided on the following table. For the granular or cohesionless backfill values to be valid the “Structural Backfill” zone must extend 45° from vertical from the heel of the retaining structure’s foundation. These load distributions do not include a factor of safety or include the influence of hydrostatic pressures on the wall. Surcharge loads above the top of the wall due to vehicles, equipment, structures, or sloped backfill should be considered in the design as well.

The following chart is based on these conditions.

- Equivalent Fluid Pressures are based on a unit soil weight of 120 pcf and a cohesionless or aggregate unit weight of 140 pcf.
- No groundwater is acting on the wall.
- For active earth pressure, wall must rotate at base, top lateral movement should be between 0.002 and 0.004 times the height of the wall (H).
- Surcharge pressure (S) acts at H/2 above the base.
- Backfill is compacted to a minimum of 95% of Maximum Dry Density (ASTM D698).
- Ignore passive pressure in the frost zone.
EARTH PRESSURE COEFFICIENTS

<table>
<thead>
<tr>
<th>Earth Pressure Conditions</th>
<th>Coefficient for Backfill Type</th>
<th>Equivalent Fluid Pressure (psf)</th>
<th>Surcharge Pressure $P_1$ (psf)</th>
<th>Earth Pressure $P_2$ (psf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active ($K_a$)</td>
<td>Cohesionless or Granular – 0.30</td>
<td>42</td>
<td>(0.30)$S$</td>
<td>(42)$H$</td>
</tr>
<tr>
<td></td>
<td>Low Plasticity Clays (LL&lt;50) – 0.42</td>
<td>50</td>
<td>(0.42)$S$</td>
<td>(50)$H$</td>
</tr>
<tr>
<td></td>
<td>High Plasticity Clays (LL&gt;50) – 0.52</td>
<td>60</td>
<td>(0.52)$S$</td>
<td>(60)$H$</td>
</tr>
<tr>
<td>At-Rest ($K_0$)</td>
<td>Cohesionless or Granular – 0.46</td>
<td>65</td>
<td>(0.46)$S$</td>
<td>(65)$H$</td>
</tr>
<tr>
<td></td>
<td>Low Plasticity Clays (LL&lt;50) – 0.59</td>
<td>70</td>
<td>(0.59)$S$</td>
<td>(70)$H$</td>
</tr>
<tr>
<td></td>
<td>High Plasticity Clays (LL&gt;50) – 0.69</td>
<td>82</td>
<td>(0.69)$S$</td>
<td>(82)$H$</td>
</tr>
<tr>
<td>Passive ($K_p$)</td>
<td>Cohesionless or Granular – 3.4</td>
<td>475</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>Low Plasticity Clays (LL&lt;50) – 2.4</td>
<td>285</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>High Plasticity Clays (LL&gt;50) – 1.9</td>
<td>230</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

A maximum toe pressure of 2,500 psf may be used for design on native or properly placed engineered fill soils. A coefficient of friction 0.3 may be used to calculate sliding resistance.

Shallow temporary below grade excavations should be stable long enough to allow for construction of the foundation and walls of the proposed structure. All excavations should be benched, sloped or shored in accordance with OSHA guidelines. Some sloughing may occur due to weathering and freeze/thaw cycles. Long term excavation slopes and deep excavations should be analyzed prior to construction to insure that adequate stability is achieved.

9.7 FLOOR SLAB DESIGN

As mentioned earlier, most of the existing undocumented fill should be removed during excavation for the first level. Slabs-on-grade may be designed using a modulus of subgrade of 150 pounds per cubic inch (pci). We recommend that the floor slab thickness be a minimum of 5 inches and that the slab subgrade include a capillary break (3/4" to 1" "clean" aggregate) that is a minimum of 6 inches thick. A minimum 6 mil thickness polyethylene vapor barrier should be installed beneath the slab to improve its performance. In addition, it is recommended that the slab be reinforced with a minimum of 6 by 6-inch woven wire mesh. Final design thickness and reinforcing however, shall be provided by the structural engineer.

Prior to placement of the drainage layer of aggregate and if a cohesive soil is used for the slab subgrade, the upper 8 inches of the entire slab soil subgrade should be scarified, moisture conditioned to within 0 to +4 percent of optimum moisture content and recompacted as engineered fill. The drainage aggregate should be compacted by a vibratory plate or smooth roller when placed.

Construction and saw joints are recommended for all slabs-on-grade. Saw and construction joints should be installed such that the panels are nearly square but do not exceed a length to width ratio of
1.4 to 1.0. Maximum panel size depends on several factors including the amount of cement in the mix, the maximum coarse aggregate size, and slab thickness.

Several precautions are normally used to insure adequate long-term performance of the slab on grade. These precautions include the installation of a precipitation removal system involving the use of gutters, downspouts, and landscaping; not allowing water to pond next to the proposed structure during or after construction; and not allowing the subgrade soil to become inundated or desiccated prior to or during the time required for construction of the floor slab.

9.8 PAVEMENT DESIGN AND RECOMMENDATIONS

The pavement associated with the project is expected to be a minor parking area for cars and light trucks and may also contain a trash collection area. Because trash collection areas carry heavier vehicles, it is recommended that the pavement in these areas be designed to be more durable than the pavement in the parking areas. It is preferred that trash collection areas (heavy duty pavement) be constructed with Portland cement concrete. Recommendations for both asphalt and Portland concrete are provided. Rigid pavements should be reinforced, at a minimum, with 6 by 6-inch welded wire fabric and 1/2-inch epoxy coated dowel bars for transverse joints.

The following pavement design recommendation has taken into account site specific traffic estimates, geotechnical information, and subgrade modification or reinforcement. A California Bearing Ratio (CBR) value of 3 was used to develop the following pavement design recommendations for the parking lot.

HEAVY DUTY

Portland Cement Concrete
- 8" Portland Cement Concrete (4,000 psi mix)
- 6" MoDOT Type 1 crushed stone base

Asphaltic Cement Concrete
- 2" Type 'BP-2' Asphaltic Concrete Surface Course
- 5" MoDOT Plant Mix Bituminous Course
- 7" MoDOT Type 1 crushed stone base

STANDARD DUTY

Portland Cement Concrete
- 4" Portland Cement Concrete (4,000 psi mix)
- 6" MoDOT Type 1 crushed stone base

Asphaltic Cement Concrete
- 2" Type 'BP-2' Asphaltic Concrete Surface Course
- 2" MoDOT Plant Mix Bituminous Course
- 6" MoDOT Type 1 crushed stone base
10 CONSTRUCTION CONSIDERATIONS

10.1 SITE PREPARATION
Site preparation will require clearing trees, stripping and grubbing, and pavement demolition. All utility trenches should be backfilled in accordance with appropriate controlled engineered fill specifications. All trench excavations should be made with sufficient working space to permit the placing, inspection, and completion of all work including backfill construction. It is recommended that a representative of the geotechnical engineer be present during fill placement and compaction to assure that adequate compaction is achieved and that proper methods are employed.

10.2 SITE EXCAVATION
General site excavation may be accomplished using earthwork equipment such as dozers, trackhoes and scrapers. It is recommended that a unit price for debris removal be established in the contract documents, to address the presence of debris cells that may be encountered.

In areas where the excavation side wall cannot be sloped to meet OSHA requirements, some form of shoring system will be required. Shoring systems may consist of trench boxes, soldier piles and lagging and sheet piles. The same design parameters presented in the retaining wall section may be used for design of the shoring system.

10.3 SLAB SUBGRADE PREPARATION
The subgrade soils should not be permitted to dry excessively or become inundated prior to or during construction of the floor slab. If subgrade soils are found to be unsuitable or become disturbed by nature or construction activities, these areas should be excavated to a solid base and then regraded with controlled engineered fill.

10.4 FOUNDATION EXCAVATION AND CONSTRUCTION
Foundation bearing surfaces should be free of loose soil and standing water, and should be level. Foundation concrete should be placed the same day the foundation is excavated. Deleterious materials or isolated soft spots within the foundation should be overexcavated to suitable base and filled to design bearing elevation with lean concrete.

10.5 CONSTRUCTION FILL AND BACKFILL
Engineered fill is defined as soil or granular fill containing sufficient fines to establish a moisture/density relationship. Engineered fill should be free of frozen soil, organics, rubbish, large rocks, wood, or other deleterious material. Cohesive soils should be uniformly compacted to at least 95 percent of the "Standard" maximum dry density and be within -2 to +4 percent of optimum moisture content as described by ASTM D698. Granular fill, such as MoDOT 1007 Type 1/5, should be compacted to at least 95% of the maximum dry density as determined by the Standard Proctor, ASTM D698. The moisture content should be high enough to provide for proper compaction but low enough to prevent undue pumping. Should the results of the in-place density tests indicate that the specified compaction limits
have not been achieved, the area represented by the test should be reworked and retested as required until the specified limits are reached. Proposed fill should be analyzed by the geotechnical engineer as soon as borrow sources are identified to determine suitability and conformance with the following recommendations.

Soil classified as MH, OHL, OLS, or PT (high plasticity soils and organic soils) by the Unified Soil Classification System (ASTM D 2487) should not be imported for use as engineered fill. Soils that classify as CH should be analyzed and approved by a qualified geotechnical engineer prior to use on site. Limestone screenings or “wastelime” is not recommended for use as fill on this site.

The fill material should be placed in layers, not to exceed eight inches in loose thickness, and should be wetted or dried as required to secure specified compaction. Effective spreading equipment should be used on each lift to obtain a uniform lift thickness prior to compaction. Each layer should be uniformly compacted by means of suitable equipment of the type required by the materials composing the fill. Material that is too wet to permit proper compaction may be stockpiled or spread and permitted to dry assisted by diskng, harrowing, or pulverizing until the moisture content is reduced to a satisfactory value. The fill layers should be placed in horizontal lifts. Fill placed on slopes greater than 5H:1V should be benched into the slope. Rocks and stones that exceed the thickness of the 8 inch loose lift layer should be removed and disposed of off the immediate construction site.

Fill and subgrade construction should not be started on foundation soil, partially completed fill, or subgrades that contain frost or ice. Fill should not be constructed of frozen soil. Frozen soil should be removed prior to placing fill material.

10.6 CLIMATIC CONSIDERATIONS
The on-site soils are relatively sensitive to changes in atmospheric conditions and precipitation. These soils are predominantly clay and silt, and are subject to high rates of erosion, rapid loss of shear strength upon wetting, and shrink-swell behavior with changes in moisture content. The greatest impact of climatic conditions will occur within the first few inches of exposed soil surface. The contractor should take positive measures to limit erosion of the site following stripping and up to establishment of ground cover or turf. Earthwork operations may be delayed by heavy precipitation at the site.

11. WARRANTIES AND LIMITATIONS

This report has been prepared for the exclusive use of University of Missouri and their consultants for the specific project discussed, in accordance with generally accepted soils engineering practices common to the East Missouri area. No other warranties, expressed or implied, are made.

This investigation and report do not constitute a guarantee of subsurface conditions, groundwater conditions, excavation characteristics or construction conditions. We recommend that excavation conditions across the site be evaluated during construction relative to this interpretation of subsurface conditions. Variations in subsurface conditions may occur that require evaluation or revision of geotechnical design parameters or recommendations. If the scope of the project is altered or differing
geotechnical conditions are encountered, it would be advisable to review and update our recommendations in consideration of those findings or variations.

Recommendations contained in this report are based on subsurface conditions and proposed designs provided as of this date. The above study and recommendations are applicable only for the conditions and locations described, and for the specific project mentioned. Use of the data contained herein by others may require interpretation or analysis that was not contemplated by our investigation and analysis. The use of this data and any interpretations or conclusions developed by others are the sole responsibility of those firms or individuals.

Factors affecting design and construction often become apparent during detailed design or actual construction that were not anticipated in the pre-design or early design phases. Engineering Surveys and Services is available during design and construction to assist in evaluating these factors and their impact on these geotechnical recommendations.
12 APPENDIX A
**LAB NO.** 3504
**PROJECT:** New School of Music Building — CP170621
**Columbia, Missouri**

**SYMBOLS AND TERMS**

**SAMPLE TYPES**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Auger</td>
<td>Shelby Tube</td>
</tr>
<tr>
<td>Split Spoon</td>
<td>Giddings Tube</td>
</tr>
<tr>
<td>No Recovery</td>
<td>NX Core Boring</td>
</tr>
<tr>
<td>Roller Bit (Tri-Cone)</td>
<td>Concrete Corer</td>
</tr>
<tr>
<td>Down Hole Hammer</td>
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</tr>
</tbody>
</table>

**ABBREVIATIONS**

- Unconfined Compression (1)
- Water Content (2)
- Plastic (PL) & Liquid (LL) Limit (2)
- USCS Unified Soil Classification System
- PI Plasticity Index
- ATD At Time of Drilling
- RQD Rock Quality Designation
- SS Split Spoon — 1 3/8" I.D., 2" O.D.
- ST Shelby Tube — 3" O.D.
- PA Power Auger
- HA Hand Auger
- AS Auger Sample
- S Cuttings Sample
- TV Hand—Held Torvane

**DEFINITIONS**

Blows per ft.—Indicates blows per 12 inches of sampler penetration when driven by a 140-pound hammer falling freely 30 inches. The Standard Penetration Resistance is the number of blows for the last 12 inches of penetration of the split—spoon sampler.

**NOTES**

(1) Shear Strength Data plotted on cohesion scale of Boring Logs.
(2) Classification and Index Properties plotted on Water Content Scale of Boring Logs.
<table>
<thead>
<tr>
<th>SAMPLE NO.</th>
<th>BORING NO.</th>
<th>USCS CLASS</th>
<th>DRY LIMIT (TSF)</th>
<th>ATTERBERG LIMITS</th>
<th>UNCONFINED COMPRESSION DENSITY (PCF)</th>
<th>NATURAL MOISTURE CONTENT (%)</th>
<th>PI</th>
<th>COHESION (PSF)</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1</td>
<td>AS1</td>
<td>1.2-3.0</td>
<td>20</td>
<td>18</td>
<td>18</td>
<td>18</td>
<td>17</td>
<td>16</td>
<td>TV=1.4 tsf, PP=3.5 tsf</td>
</tr>
<tr>
<td></td>
<td>ST2</td>
<td>3.0-5.0</td>
<td>18</td>
<td>18</td>
<td>17</td>
<td>16</td>
<td>15</td>
<td>14</td>
<td>TV=2.0 tsf, PP=3.8 tsf</td>
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<td>ST3</td>
<td>9.0-9.5</td>
<td>16</td>
<td>15</td>
<td>14</td>
<td>13</td>
<td>13</td>
<td>12</td>
<td>TV=2.3 tsf, PP=4.5 tsf</td>
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<tr>
<td></td>
<td>SS4</td>
<td>13.0-14.5</td>
<td>15</td>
<td>14</td>
<td>13</td>
<td>13</td>
<td>12</td>
<td>11</td>
<td>TV=2.1 tsf, PP=4.5 tsf</td>
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<td>SS5</td>
<td>18.5-20.0</td>
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<td>14</td>
<td>13</td>
<td>13</td>
<td>12</td>
<td>11</td>
<td>TV=1.9 tsf, PP=4.5 tsf</td>
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<td>ST4</td>
<td>20.0-24.5</td>
<td>12</td>
<td>11</td>
<td>10</td>
<td>10</td>
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<td>9</td>
<td>TV=2.4 tsf, PP=4.5 tsf</td>
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<td>SS5</td>
<td>25.0-26.0</td>
<td>12</td>
<td>11</td>
<td>10</td>
<td>10</td>
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<td>9</td>
<td>TV=2.0 tsf, PP=4.5 tsf</td>
</tr>
<tr>
<td></td>
<td>ST5</td>
<td>20.0-20.2</td>
<td>12</td>
<td>11</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>9</td>
<td>TV=2.3 tsf, PP=4.5 tsf</td>
</tr>
<tr>
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<td>SS1</td>
<td>20.0-16.5</td>
<td>17</td>
<td>16</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>14</td>
<td>TV=1.9 tsf, PP=4.5 tsf</td>
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<tr>
<td></td>
<td>ST4</td>
<td>16.0-16.5</td>
<td>17</td>
<td>16</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>14</td>
<td>TV=2.4 tsf, PP=4.5 tsf</td>
</tr>
<tr>
<td></td>
<td>SS5</td>
<td>25.0-26.0</td>
<td>17</td>
<td>16</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>14</td>
<td>TV=2.0 tsf, PP=4.5 tsf</td>
</tr>
<tr>
<td></td>
<td>ST5</td>
<td>20.0-20.2</td>
<td>17</td>
<td>16</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>14</td>
<td>TV=2.3 tsf, PP=4.5 tsf</td>
</tr>
</tbody>
</table>

TV = Hand Held Tonneau, PP = Pocket Penetrometer
<table>
<thead>
<tr>
<th>BORING NO.</th>
<th>SAMPLE NO.</th>
<th>DEPTH (FEET)</th>
<th>USCS CLASS</th>
<th>NATURAL MOISTURE CONTENT (%)</th>
<th>NATURAL DENSITY (PCF)</th>
<th>ATTERBERG LIMITS LL</th>
<th>PL</th>
<th>PI</th>
<th>UNCONFINED COMPRESSION COHESION STRAIN (TSF)</th>
<th>REMARKS</th>
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<tbody>
<tr>
<td>B7</td>
<td>ST3</td>
<td>15.5-16.0</td>
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<td>17</td>
<td>112</td>
<td>0.6</td>
<td>3.1</td>
<td></td>
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<td>B8</td>
<td>AS1</td>
<td>2.0-4.0</td>
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</tr>
<tr>
<td></td>
<td>SS2</td>
<td>5.0-6.5</td>
<td></td>
<td>14</td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>ST3</td>
<td>10.5-11.0</td>
<td>CL</td>
<td>16</td>
<td>114</td>
<td>45 17 28</td>
<td>1.6</td>
<td>1.3</td>
<td></td>
<td>TV=2.0 tsf, PP=4.5 tsf</td>
</tr>
<tr>
<td></td>
<td>SS4</td>
<td>15.0-16.5</td>
<td></td>
<td>10</td>
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<tr>
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<td>SS5</td>
<td>20.0-21.5</td>
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<td>TV=2.3 tsf, PP=4.5 tsf</td>
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</tbody>
</table>

TV = Hand Held Torsion, PP = Pocket Penetrometer
**LOG OF BORING NO. **

**B1**

**PROJECT:** New School of Music Building – CP170621
Columbia, Missouri

**LAB NO.:** 3804

**TYPE:** 4" Solid Stem Auger w/ Finger Bit

**SOIL DESCRIPTION**

**TYPE, COLOR, MOISTURE & OTHER**

**LOCATION:** Boring Locations
SURF. ELEV.: 770.5'

**DEPTH, FT.** | **SAMPLE TYPE** | **UNIFIED CLASSIFICATION** | **BLOWS PER FT.** | **COHESION, TON/SQ.FT.** |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>ASPHALT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>BASEROCK</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SILTY CLAY: Brown, moist, firm to stiff, some sand</td>
<td>CL 115</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- light brown, some gray, manganese stains, some small gravel and sand</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-; some small gravel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SANDY SILTY CLAY: Brown and brownish gray, moist, very stiff to hard, some small gravel, trace of</td>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-; brown, some gray streaks, very stiff, manganese stains, some large sand and small gravel</td>
<td>18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SANDY SILTY CLAY: Brown with gray streaks, some reddish brown, moist, very stiff, some thin gray sand lenses</td>
<td>18</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-; brown</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-; occasional cobbles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-; brown</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>SANDY SILTY CLAY: Dark brown to dark gray</td>
<td>18</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-; cobbles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>SHALE: Dark gray</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-; gray</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>35</td>
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<td>40</td>
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<tr>
<td>45</td>
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<td></td>
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<tr>
<td>50</td>
<td></td>
<td></td>
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<tr>
<td>55</td>
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</table>

**Completion Depth:** 63.1'
**Depth to Water ATD:** 37.0'

**Date:** 30 January 2017

*Engineering Surveys & Services*
Columbia, Missouri
**LOG OF BORING NO. B1 Cont.**

**PROJECT:** New School of Music Building — CP170621  
Columbia, Missouri

**TYPE:** 4" Solid Stem Auger  
w/ Finger Bit

<table>
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<th>DEPTH, FT.</th>
<th>SAMPLE TYPE</th>
<th>SOIL DESCRIPTION</th>
<th>BLOWS PER FT.</th>
<th>BLOWN DRY WT.</th>
<th>COHESION, TON/SQ.FT.</th>
<th>PLASTIC LIMIT</th>
<th>WATER LIMIT</th>
<th>LIQUID LIMIT</th>
<th>MOISTURE &amp; OTHER</th>
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</thead>
<tbody>
<tr>
<td>60</td>
<td></td>
<td>-; considerable cobbles</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>65</td>
<td></td>
<td>Auger Refusal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70</td>
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**Completion Depth:** 63.1'  
**Date:** 30 January 2017  
**Depth to Water ATD:** 37.0'
**LOG OF BORING NO. B2**

**PROJECT:** New School of Music Building - CP170621
Columbia, Missouri

**TYPE:** 4" Solid Stem Auger w/ Finger Bit

<table>
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<th>DEPTH, FT.</th>
<th>SAMPLE TYPE</th>
<th>BLOW *</th>
<th>UNIFIED CLASSIFICATION</th>
<th>COHESION, TON/SQ.FT.</th>
<th>PLASTIC LIMIT</th>
<th>WATER LIMIT</th>
<th>LIQUID LIMIT</th>
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<tbody>
<tr>
<td>0</td>
<td>ASPHALT</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>BASEROCK</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>FILL: SILTY CLAY: Dark gray to black, moist, firm</td>
<td>11</td>
<td>CL</td>
<td>0.2 0.4 0.6 0.8 1.0 1.2 1.4</td>
<td>0.2</td>
<td>0.4</td>
<td>0.6</td>
</tr>
<tr>
<td>15</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>20</td>
<td>SILTY CLAY: Brown</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>25</td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>30</td>
<td>SANDY SILTY CLAY: Brown, light brown and gray, moist, stiff very stiff</td>
<td>117</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.3</td>
</tr>
<tr>
<td>35</td>
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<td></td>
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</tr>
<tr>
<td>40</td>
<td>CLAYEY SAND: Orangish brown, trace gray, moist, dense</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>SANDY SILTY CLAY: Brown and gray, trace of orangish brown, moist, very stiff to hard, some small gravel</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>55</td>
<td>SANDY SILTY CLAY: Dark gray to black, damp, hard</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SHALE: Gray</td>
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</tr>
</tbody>
</table>

**Completion Depth:** 69.2'
**Depth to Water ATD:** 35.0'

**Date:** 1 February 2017

---

**Surf. Elev.:** 773.5'

---

*Engineering Surveys & Services*
Columbia, Missouri
**LOG OF BORING NO. B2 Cont.**

**TYPE:** 4" Solid Stem Auger  
**w/ Finger Bit**

<table>
<thead>
<tr>
<th>DEPTH, FT.</th>
<th>SAMPLE TYPE</th>
<th>SOIL DESCRIPTION</th>
<th>LOCATION:</th>
<th>SURF. ELEV.: 773.5'</th>
</tr>
</thead>
<tbody>
<tr>
<td>70</td>
<td></td>
<td>-; dark gray</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70</td>
<td></td>
<td>-; cobbles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70</td>
<td></td>
<td>-; light gray</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70</td>
<td></td>
<td>Auger Refusal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70</td>
<td></td>
<td>0.2 0.4 0.6 0.8 1.0 1.2 1.4</td>
<td>COHESION, TON/SQ.FT.</td>
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</tr>
<tr>
<td>70</td>
<td></td>
<td>10 20 30 40 50 60 70</td>
<td>PLASTIC WATER LIQUID</td>
<td></td>
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</table>

**Completion Depth:** 69.2'  
**Depth to Water ATD:** 35.0'  
**Date:** 1 February 2017  

*Engineering Surveys & Services  
Columbia, Missouri*
### Soil Description

**Type, Color, Moisture & Other**

- **Asphalt**
- **Basal Rock**
- **Fill: Silty Clay**: Brownish black, moist, firm, trace of brick
- **Silty Clay**: Gray and light brown, moist, stiff, trace of sand
- **Sandy Silty Clay**: Brown, some gray, moist, stiff to hard, some small gravel
- **Shale**: Gray, some cobbles

**Location:** Boring Locations

**Surf. Elev.:** 774.6'

**UNIFIED CLASSIFICATION**

<table>
<thead>
<tr>
<th>Depth, FT.</th>
<th>Sample Type</th>
<th>Btu Per FT.</th>
<th>Cohesion, Ton/Sq.Ft.</th>
<th>Plastic Limit</th>
<th>Water Content, %</th>
<th>Liquid Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 5</td>
<td>Asphalt</td>
<td></td>
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<td>5 - 10</td>
<td>Silty Clay</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>10 - 15</td>
<td>Sandy Silty Clay</td>
<td>16</td>
<td></td>
<td></td>
<td>113</td>
<td></td>
</tr>
<tr>
<td>15 - 20</td>
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<td>20 - 25</td>
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<td>25 - 30</td>
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<tr>
<td>40 - 45</td>
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<td>45 - 50</td>
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<td>50 - 55</td>
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</tbody>
</table>

**Completion Depth:** 79.5'

**Depth to Water ATD:** 38.5'

**Date:** 30 January 2017
**LOG OF BORING NO. 3804**

**PROJECT:** New School of Music Building - CP170621  
Columbia, Missouri

**TYPE:** 4" Solid Stem Auger  
**w/ Finger Bit**

<table>
<thead>
<tr>
<th>DEPTH, FT.</th>
<th>SAMPLE TYPE</th>
<th>SOIL DESCRIPTION</th>
<th>BLOWS PER FT.</th>
<th>UNIFIED CLASSIFICATION</th>
<th>COHESION, TON/SQ.FT.</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td></td>
<td>SHALE: Gray</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>65</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>70</td>
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<tr>
<td>80</td>
<td></td>
<td>-; considerable cobbles</td>
<td></td>
<td></td>
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<tr>
<td>85</td>
<td></td>
<td>Auger Refusal</td>
<td></td>
<td></td>
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<td>110</td>
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**Completion Depth:** 79.5'  
**Date:** 30 January 2017

**Depth to Water ATD:** 38.5'

**LOCATION:** Boring Locations  
**SURF. ELEV.:** 774.6'

**SOIL DESCRIPTION**  
TYPE, COLOR, MOISTURE & OTHER

See Plan of

**ENGINEERING SURVEYS & SERVICES**  
Columbia, Missouri
<table>
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<th>DEPTH, FT.</th>
<th>SAMPLE TYPE</th>
<th>SOIL DESCRIPTION</th>
<th>COHESION, TON/SQ.FT.</th>
<th>PLASTIC LIMIT</th>
<th>WATER CONTENT % LIMIT</th>
<th>LIQUID LIMIT</th>
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<td></td>
<td></td>
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</tr>
<tr>
<td>5</td>
<td>BASEROCK</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>FILL: SILTY CLAY</td>
<td>Brownish black, moist, firm</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SILTY CLAY: Brown</td>
<td>brown and orangish brown, moist, firm to stiff, rust stains</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>10</td>
<td>SANDY SILTY CLAY</td>
<td>Brown, some gray and black streaks, moist, very stiff to hard, rust stains, some small gravel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>-; some sand lenses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>SANDY SILTY CLAY</td>
<td>Brown and orangish brown, moist, very stiff, sand lenses, some small gravel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>SAND: Brown, wet, dense, subangular, medium grained, with stiff silty sandy clay stringers</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>SANDY SILTY CLAY</td>
<td>Brown</td>
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<td></td>
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<tr>
<td>30</td>
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<td>Light brown and gray</td>
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<tr>
<td>40</td>
<td>-; cobbles</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>55</td>
<td>SANDY SILTY CLAY</td>
<td>Dark gray to black, moist, very stiff, some small gravel</td>
<td></td>
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Completion Depth: 63.1'
Date: 30 January 2017

Depth to Water ATD: 25.0'
### LOG OF BORING NO. \( B^4 \) Cont.

**PROJECT:** New School of Music Building – CP170621  
Columbia, Missouri  

**TYPE:** 4" Solid Stem Auger  
\( w/ \) Finger Bit  

<table>
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<td>SHALE: Gray</td>
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<tr>
<td>65</td>
<td></td>
<td></td>
<td></td>
<td>-; cobbles</td>
</tr>
<tr>
<td>70</td>
<td></td>
<td></td>
<td></td>
<td>Auger Refusal</td>
</tr>
<tr>
<td>75</td>
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<td></td>
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<tr>
<td>110</td>
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</table>

**LOCATION:** Boring Locations  
**SURF. ELEV.: 771.1'**  

**Completion Depth:** 63.1'  
**Depth to Water ATD:** 25.0'  
**Date:** 30 January 2017  

---

**Columbia, Missouri**  
**Engineeering Surveys & Services**
# Soil Description

**TYPE, COLOR, MOISTURE & OTHER**

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<th>Depth, FT</th>
<th>Sample</th>
<th>Location</th>
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<td>15</td>
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<td>Boring Locations</td>
<td>FILL: SILTY CLAY: Dark gray to black, moist, firm to stiff</td>
</tr>
<tr>
<td>20</td>
<td></td>
<td>Boring Locations</td>
<td>SILTY CLAY: Light brown and gray, moist, firm to stiff, trace sand</td>
</tr>
<tr>
<td>25</td>
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<td>SANDY SILTY CLAY: Brown, gray streaks, some light brown and black streaks, moist, stiff</td>
</tr>
<tr>
<td>30</td>
<td></td>
<td>Boring Locations</td>
<td>; brown, manganese stains, stiff to very stiff, limestone fragments</td>
</tr>
<tr>
<td>35</td>
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<td>Boring Locations</td>
<td>SANDY SILTY CLAY: Light brown, trace of gray, moist, very stiff to hard, limestone fragments, some fine grained brown and gray sand lenses</td>
</tr>
<tr>
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<td>; brown and orangish brown and gray, some small gravel</td>
</tr>
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<td>45</td>
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<td>Boring Locations</td>
<td>; brown, trace gray</td>
</tr>
<tr>
<td>50</td>
<td></td>
<td>Boring Locations</td>
<td>; stiff</td>
</tr>
<tr>
<td>55</td>
<td></td>
<td>Boring Locations</td>
<td>; cobbles</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Boring Locations</td>
<td>; darker in color</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Boring Locations</td>
<td>; brown</td>
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**Cohesion, Ton/Sq.Ft.**

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<th>Bows Per Ft</th>
<th>Unified Classification</th>
<th>Unit Dry Wt.</th>
<th>Cohesion, Ton/Sq.Ft.</th>
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<tr>
<td>55</td>
<td>17</td>
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<td></td>
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</tbody>
</table>

**Completion Depth**: 77.1’

**Depth to Water ATD**: 37.0’
| DEPTH, FT. | SAMPLE TYPE | SOIL DESCRIPTION 
|------------|-------------|----------------------------------|
|            |             | SHALE: Gray 
| 60         |             | -; cobbles 
| 65         |             | -; considerable cobbles 
| 70         |             | Auger Refusal 
| 75         |             | 
| 77.1       |             | Completion Depth: 77.1' 
| 77.0       |             | Depth to Water ATD: 37.0' 
|            |             | Date: 30 January 2017 
| 110        |             | 

**LOG OF BORING NO. B5 Cont.**

**PROJECT:** New School of Music Building - CP170621 
Columbia, Missouri

**TYPE:** 4" Solid Stem Auger 
w/ Finger Bit

**SOIL DESCRIPTION**
TYPE, COLOR, MOISTURE & OTHER

See Plan of Location: Boring Locations
SURF. ELEV.: 775.0'

**COHESION, TON/SQ.FT.**

<table>
<thead>
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<th>0.2</th>
<th>0.4</th>
<th>0.6</th>
<th>0.8</th>
<th>1.0</th>
<th>1.2</th>
<th>1.4</th>
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**PLASTIC WATER LIQUID LIMIT CONTENT, % LIMIT**

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<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
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**DATE:** 30 January 2017

**Columbia, Missouri**
### LOG OF BORING NO. B6

**PROJECT:** New School of Music Building - CP170621  
**Location:** Columbia, Missouri  
**Type:** 4" Solid Stem Auger w/ Finger Bit

<table>
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<td>Asphalt</td>
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<td>10</td>
<td>Baserock</td>
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</tr>
<tr>
<td>15</td>
<td>Fill: Silty Clay</td>
<td>Dark gray to black, moist, soft to firm</td>
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<tr>
<td>20</td>
<td>Silty Clay: Brown</td>
<td>- light brown and gray, moist, firm to stiff, some sand</td>
</tr>
<tr>
<td>25</td>
<td>Sandy Silty Clay: Brown, some gray and orangish brown, moist, stiff</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>Sand: Brown, very moist, fine to medium grained</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>Sandy Clay: Orangish brown and brown, some gray, wet, fine grained sand lenses</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>-; brown</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>-; cobbles</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>-; darker in color</td>
<td></td>
</tr>
<tr>
<td>55</td>
<td>Shale: Gray to dark gray, dry to damp, very stiff to hard</td>
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<tr>
<td></td>
<td>Auger Refusal</td>
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**Boring Locations**  
**Surf. Elev.: 771.8'**

**Blasting Locations**  
**See Plan of Boring Locations**

**PLASTIC:**  
**WATER:**  
**LIQUID LIMIT CONTENT,% LIMIT**

**Blows per ft.**

**Unified Classification**

**Unit dry wt. lb./cu.ft.**

**Plots of Cohesion**

**Depth to Water ATD: 22.0'**  
**Completion Depth: 55.5'**  
**Date: 1 February 2017**
**LOG OF BORING NO. B7**

**PROJECT:** New School of Music Building – CP170621
Columbia, Missouri

**TYPE:** 4" Solid Stem Auger w/ Finger Bit

<table>
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<tr>
<td>5</td>
<td>SILTY CLAY: Gray and light brown, moist, firm to stiff, trace of sand</td>
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<td></td>
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<tr>
<td>10</td>
<td>SANDY SILTY CLAY: Light brown and gray, moist, stiff to very stiff, manganese stains</td>
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<td></td>
<td></td>
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<tr>
<td>15</td>
<td>- brown to orangish brown, gray streaks, some large sand and small gravel, highly weathered limestone fragments</td>
<td>112</td>
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<td>20</td>
<td>SANDY SILTY CLAY: Brown and orangish brown, some gray, moist, very stiff, some large sand and small gravel</td>
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<td></td>
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<tr>
<td>25</td>
<td>SAND: Brown, wet, dense, medium grained</td>
<td>45</td>
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<td>30</td>
<td>SANDY SILTY CLAY: Orangish brown and gray, moist, very stiff</td>
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<td></td>
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<tr>
<td>30</td>
<td>- cobbles</td>
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Completion Depth: 54.5'  
Depth to Water ATD: 25.0'  
Date: 1 February 2017  

**ENGINEERING SURVEYS & SERVICES**  
Columbia, Missouri
**LOG OF BORING NO. 88**

**PROJECT:** New School of Music Building – CP170621
Columbia, Missouri

**TYPE:** 4" Solid Stem Auger
w/ Finger Bit

### SOIL DESCRIPTION

**TYPE, COLOR, MOISTURE & OTHER**

*See Plan of Boring Locations*

**LOCATION:** Boring Locations

**SURF. ELEV.: 769.8’**

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</tr>
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<td>33</td>
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<tr>
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<td>34</td>
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<tr>
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<td>; brown</td>
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</tr>
<tr>
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<td>; dark gray</td>
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**Completion Depth: 53.0’**
**Depth to Water ATD: 20.0’**
**Date: 1 February 2017**

*Engineering Surveys & Services*
Columbia, Missouri
13 APPENDIX B
SUBSURFACE INVESTIGATION, SOIL ANALYSIS
and
FOUNDATION DESIGN RECOMMENDATIONS
for
PROPOSED ART SUPPORT BUILDING
COLUMBIA, MISSOURI

Prepared for

MS. SUSAN ELLEDGE
UNIVERSITY OF MISSOURI
ROOM 6, CLARK HALL
COLUMBIA, MISSOURI

Prepared by

ENGINEERING SURVEYS AND SERVICES
1113 FAY STREET
COLUMBIA, MISSOURI

JUNE 29, 1993
June 29, 1993

Ms. Susan Elledge  
University of Missouri  
Room 6, Clark Hall  
Columbia, MO 63211

RE: Geotechnical Engineering  
Proposed Art Support Building  
Columbia, Missouri

Dear Ms. Elledge:

We have conducted a subsurface investigation and evaluated subsurface conditions for the referenced project. The following report includes the results of the investigation and evaluation and our findings regarding the depth of unsuitable fill, foundation design, floor slab design, and construction considerations.

We appreciate the opportunity to assist you on this project and anticipate inquiries during the design phase. We stand ready to assist during the design phase and through construction with a full range of construction oriented engineering, surveying, and laboratory services. If we can be of further assistance, please do not hesitate to contact us.

Respectfully submitted,

Eric H. Lidholm, P.E.  
Chief Geotechnical Engineer

Reviewed by,

Larry L. Hendren  
President

EHL:ms  
cc: 4-Elledge
# CONTENTS

<table>
<thead>
<tr>
<th>SECTION</th>
<th>PAGE</th>
</tr>
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<tbody>
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<td>EXECUTIVE SUMMARY</td>
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SUBSURFACE INVESTIGATION, SOIL ANALYSIS
and
FOUNDATION DESIGN RECOMMENDATIONS
for
PROPOSED ART SUPPORT BUILDING
COLUMBIA, MISSOURI

EXECUTIVE SUMMARY

The exploration of subsurface conditions has been conducted for the proposed Art Support Building. The purpose of the investigation was to determine if debris cells were present in the subsurface, principally in the former location of two houses. In addition, the investigation was to determine the types of foundation materials present and to provide design recommendations. The proposed project consists of the construction of a pre-engineered steel building about 7,200 square feet in size and an adjacent 2,000 square foot sculpture yard. Column loads are anticipated to be on the order of 40,000 pounds and wall load are not expected to exceed 2,000 pounds per lineal foot.

The site of the proposed project is located in Boone County, Missouri and is in the eastern part of the City of Columbia. The property is estimated to be approximately 200 feet long (north to south) and 150 feet wide (east to west) and is bounded to the west by Hitt Street. The northwestern corner of the property is located about 100 feet south of the intersection of Hitt Street and Paquin Avenue.

A total of 17 soil borings were made for this investigation. The borings revealed that a large portion of the site was underlain by a mantle of fill. The fill, for the most part, extended to about 5 feet in depth and was encountered in all but three of the borings. The fill was noted to be soft to firm to a depth of about 1.5 feet and became stiff to very stiff below this level. The upper portion of the fill was noted to contain some construction debris, primarily broken brick, some occasional boulders that may be concrete rubble, and some wood debris. Boulders were encountered in borings B3, B4, and B10 wood debris was encountered in boring B4. The underlying fill (below 1.5 feet) appeared to be relatively free of debris except noted in the boring logs. It is recommended that the fill be removed from the site to a depth of about 1.5 feet. Groundwater was encountered in borings B1, B9, B10, and B16 at depths ranging from 6.0 to 22.0 feet. Groundwater is not expected to adversely affect construction.

A spread footing type foundation system may be used to support the proposed structure. Isolated and strip footings should be sized for an allowable bearing capacity of 2,000 and 1,600 psf, respectively. These bearing pressures apply if the foundations are designed such that they bear directly on the existing stiff to very stiff fill. A higher bearing pressure may be used if the footings are designed to bear directly on the natural silty clay soil. If this is the case, the isolated and strip footings may be sized for a net allowable bearing pressure of 3,000 and 2,400 psf, respectively. Frost protection will be provided if exterior footings are a minimum of 30 inches below finished exterior grade. Settlement is expected to be tolerable. Finished floor slab elevation was assumed to be at about elevation 772.0.

The exploration and analysis of the foundation conditions are considered to be in sufficient detail and scope to form a reasonable basis for final design. The recommendations submitted are based on the results of our geotechnical investigation and analysis and the preliminary design concepts provided by Ms. Susan Elledge of the University of Missouri.
PROJECT SCOPE

The scope of the investigation included a reconnaissance of the site, a review of all available subsurface data in the vicinity, a subsurface investigation consisting of 12 probe and 5 geotechnical borings, laboratory soil testing, and an engineering analysis and evaluation of the foundation materials present at the site. The probe borings ranged in depth from 12.0 to 12.5 feet and the geotechnical borings ranged in depth from 20.0 to 26.5 feet.

The purpose of the investigation was to determine if debris cells were present in the subsurface, principally in the location of two former houses. In addition, the investigation was to determine the types of foundation materials present at the site; to determine the general engineering characteristics of the various soil materials; to provide a basis for recommendations regarding bearing capacity, compressibility, and drainage characteristics of the foundation materials. Results are indicated on the Boring Logs.

DESCRIPTION OF SITE AND PROJECT

Site Location

The site of the proposed project is located in Boone County, Missouri and is in the eastern part of the City of Columbia. The property is estimated to be approximately 200 feet long (north to south) and 150 feet wide (east to west) and is bounded to the west by Hitt Street. The northwestern corner of the property is located about 100 feet south of the intersection of Hitt Street and Paquin Avenue. Specifically, the project is located in the northwestern 1/4 of Section 18, Township 48 North, Range 12 West (See Vicinity Map, page 3).

Project Description

The proposed project consists of the construction of a pre-engineered, one story, steel building. The proposed structure is anticipated to be about 7,200 square feet in size and will have a 2,000 square foot sculpture yard. No basement is planned for the structure. Column loads are anticipated to be on the order of 40,000 pounds (40 kips) and wall loads are not expected to exceed 2,000 pounds per lineal foot (plf).

Site Description, Topography, and Drainage

At the time of the subsurface investigation, the site was being used as a parking lot. Records indicate that the site had, until recently, been occupied by two homes. The homes had been demolished prior to the field investigation. No visible evidence of the former homes being located on the site was noted with the exception of the old sidewalk and steps that lead up from Hitt Street.

The ground surface slopes towards the west at a gentle grade throughout much of the site with the western edge being at a much steeper grade. Site access was easily achieved. Site drainage is handled by a combination of runoff and infiltration.
FIELD INVESTIGATION

Drilling

A field investigation consisting of a site reconnaissance and the drilling of 17 soil borings was performed on June 21 and 22, 1993. All of the borings were advanced using 4-inch solid stem augers equipped with a drag-type drill bit and powered with a truck-mounted Failing Power Auger drill rig. Borings were drilled to depths ranging from 12.0 to 26.5 feet. None of the borings encountered bedrock. Boring locations are shown on the Boring Plan included in the Appendix of this report.

The field investigation and the site reconnaissance were performed in accordance with procedures outlined in ASTM D420. Undisturbed samples were obtained using three-inch O.D. thin-walled tube sampling procedures in accordance with ASTM D1587. Two-inch Gidding tube samples were obtained using similar procedures as those outlined in ASTM D1587; however, Gidding tube soil samples should be considered as disturbed samples and are similar to split barrel soil samples with the exception that they may be up to five feet in length and are obtained by pushing instead of driving the sampler.

A Gidding tube sampler was sheared from the drill string during the sampling of boring B9. Several unsuccessful attempts were made to retrieve the 5.0 foot long sampler; however, it was lost in the borehole. The sampler is located between 15 and 20 feet in depth and is not expected to be encountered during the construction of the proposed structure.

Drilling was monitored by an engineer from this firm. The engineer provided technical direction, logged the borings, performed field tests, and prepared and transported the samples to the laboratory for testing.

Field Tests and Measurements

The ground surface elevations for the borings were determined by a topographic survey performed by Engineering Surveys and Services. Elevations are assumed correct to within 0.1 feet.

Field measurements made during drilling include groundwater level determinations and field classification of the soils encountered during drilling. Results may be found in the Appendix of this report.

LABORATORY INVESTIGATION

In conjunction with the field investigation, a laboratory investigation was conducted on the foundation materials to determine the engineering properties needed to analyze and predict foundation and subgrade performance. The laboratory investigation included supplementary visual classification, water content tests, and Atterberg limits analysis. All tests were performed in strict accordance with appropriate ASTM procedures. Results may be found in the Appendix of this report.
Laboratory tests performed on soil samples retrieved during the field investigation provided somewhat inconsistent results. In general, the upper few feet of soil, primarily the existing fill, had a higher moisture content than the underlying natural soil. The moisture content of the fill was noted to be in the range of 18 to 33 percent whereas the underlying natural material had much more consistent moisture contents that were measured to range from 14 to 24 percent. The highest plasticity material encountered during the field investigation was located in the fill. Atterberg limit analysis of this material revealed that it is a moderately to high plasticity silty clay to a clay. The unconfined compressive strength of the soils (including the fill below 1.5 feet in depth) was relatively consistent across the site and ranged from 0.8 to 1.6 tons per square foot. The strength of the soils was noted to increase with depth and was verified in the field using a hand held torvane and pocket penetrometer.

**SUBSURFACE CONDITIONS**

**General**

A total of 17 soil borings were made for this investigation. Boring locations are provided on the Boring Plan included in the Appendix of this report. The materials encountered during the foundation investigation have been visually classified according to ASTM D2488. These materials were further classified using the results of Atterberg limit testing and the Unified Soil Classification System. The materials encountered during the field investigation are described in detail in Boring Logs included in the Appendix of this report. The stratification lines represent approximate boundaries, and the transition may be gradual.

**Description of Subsurface Materials**

The subsurface conditions are relatively consistent throughout the site. In general, the investigated area is covered with chip and seal pavement and its associated base rock or topsoil. Approximately 90 percent of the investigated area was paved. The base rock was primarily a 3-inch minus crushed limestone aggregate that extended to an average depth of 0.6 to 0.7 feet.

Underlying the topsoil and pavement in much of the area was a mantle of fill material mixed with some construction debris. The fill was encountered in all of the borings except B1, B11, and B16. The fill was noted to be soft to firm to a depth of about 1.5 feet at which time it became stiff to very stiff. The upper portion of the fill was noted to contain some construction debris, primarily broken brick, some occasional boulders that may be concrete rubble, and some wood debris. The boulders were encountered in borings B3, B4, and B10 and the wood debris was encountered in boring B4. The underlying stiff to very stiff fill appeared to be relatively free of debris except where occasionally noted in the boring logs.

Underlying the topsoil and/or fill material to a depth of about 12 to 16 feet is a natural silty clay soil. The silty clay was noted to be brown with some gray in color, moist, stiff to very stiff in consistency, and contained occasional rust stains. White calcareous nodules and streaks were encountered at the lower levels of this stratigraphic unit.

Underlying the silty clay was a sandy clay. This material was noted to be brown in color, moist, was very stiff to dense, and also contained white calcareous nodules and streaks in its upper
levels. This material was also mixed with occasional cobbles and boulders that appeared to be randomly distributed. The five geotechnical borings drilled for this investigation terminated in this material.

Groundwater

Groundwater was noted during drilling in borings B1, B9, B10, and B16 and was encountered at depths ranging from 6.0 to 22.0 feet. Groundwater was not encountered in any of the other borings during drilling and for the short time that the boreholes were left open. It should be noted that groundwater is commonly encountered at depths of about 15 to 20 feet, depending on topographic profile, in the vicinity of the subject tract.

The groundwater encountered in boring B10 is believed to be perched and thought to be related to the presence of the fill material. The fill in this boring was noted to extend to a depth of 4.6 feet and, at the base of which, lies boulders or possibly concrete rubble. The boulders or concrete rubble is likely to be more permeable than the surrounding silty clay fill and underlying natural silty clay and, therefore, may tend to collect water in its voids. The groundwater encountered in this boring is thought to be of limited quantity and areal extent.

The exact location of the groundwater surface should be expected to fluctuate depending on normal seasonal variations in precipitation and other climatic conditions, surface runoff, permeability of on-site soils, continuity of pervious material, and other factors.

ENGINEERING ANALYSIS AND RECOMMENDATIONS

General

The engineering analysis and recommendations which follow are based upon the results of a geotechnical investigation, analysis, and the preliminary design information provided by Ms. Susan Elledge of the University of Missouri. If the project scope is altered appreciably or differing geotechnical conditions are encountered than those noted in the Boring Logs, a review of the changes or conditions is recommended to determine their impact upon design.

Prior to the start of any construction, it is recommended that the wood debris encountered in boring B4 be removed from the immediate construction area. This material was encountered from 4.5 to 5.5 feet in depth, is considered to be unsuitable, and may contribute to future unsatisfactory performance of the subgrade or foundation system.

The upper part of the fill material encountered in the some of the borings also appears to be unsuitable. This material appears to be limited to about 1.5 feet in depth. The soft, unsuitable fill material should also be removed from the immediate construction area. The underlying stiff to very stiff fill material appears to be adequate for use to support the future structure and the sculpture yard.

During the site grading process it is recommended that the site be proof-rolled to identify any soft areas. The identified soft areas should be excavated to a firm base and be reconstructed as engineered fill. It is recommended that a representative of the geotechnical engineer be retained
to evaluate the proof-rolling process.

The chip and seal pavement and underlying base rock appeared to be suitable for use as fill material. The 3-inch maximum size of the base rock make this material difficult to test to verify that satisfactory compaction has been achieved. Because of this, it is recommended that the chip and seal pavement and associated base rock, if used as fill, be limited to no more than 2 feet in thickness. This material should be placed and compacted under the direct supervision of a qualified geotechnical engineer.

Foundation Recommendations

A spread footing type foundation system may be used to support the proposed structure. Isolated and strip footings should be sized for a net allowable bearing capacity of 2,000 and 1,600 psf, respectively. These bearing pressures apply if the foundations are designed such that they bear directly on the existing fill (the fill left after removal of the unsuitable material). A higher bearing pressure may be used if the footings are designed to bear directly on the natural silty clay soil. If this is the case, the isolated and strip footings may be sized for a net allowable bearing pressure of 3,000 and 2,400 psf, respectively.

To help limit differential settlement between the columns and walls, it is recommended that the continuous footings be designed to act as grade beams. Frost protection will be provided if exterior footings are a minimum of 30 inches below finished exterior grade. It is recommended that a geotechnical engineer observe all bearing surfaces immediately after excavation and prior to concrete placement to verify the suitability of the bearing surface and bearing materials. Settlement is expected to be less than 1-inch. Finished floor slab elevation was assumed to be about elevation 772.0.

Floor Slab Design

Soils with moderate to high swelling potential were encountered in nearly all of the borings. In order to reduce the potential damaging effects of the subgrade volume change, the floor slab design should include a free draining, granular fill base course at least four inches thick. The floor slab should be designed using a modulus of subgrade reaction of 150 pounds per cubic inch (pci). Minimum recommended floor slab thickness is six inches of reinforced concrete. A vapor barrier should be installed beneath the slab to improve its performance.

It is recommended that construction joints be provided at the foundation wall and column locations to ensure that the floor slab can move independently of the wall or columns. Saw joints are recommended to help control the location of shrinkage cracks. Saw joint spacing is not recommended to exceed 15 feet in spacing. Ideally, saw joints should be cut in such a manner as to make each panel roughly square and at worst, have no more than a 1.5:1 length to width ratio.

Slab Subgrade Preparation

The moderate shrink-swell potential of the foundation and subgrade soils require that they do not dry excessively or become saturated prior to or during construction of the floor slab. If
subgrade soils are found to be unsuitable or become disturbed by nature or construction activities, these areas should be excavated to a solid base and then graded and engineered fill.

CONSTRUCTION CONSIDERATIONS

Site Preparation

Site preparation will require the removal of unsuitable materials. All organic or other deleterious materials should be removed from the project area prior to construction. This may require overexcavation of the questionable material and replacement with controlled engineered fill material.

All new utility trenches should be backfilled in accordance with appropriate controlled engineered fill specifications. All trench excavations should be made with sufficient working space to permit the placing, inspection, and completion of all work including backfill construction. It is recommended that a representative of the geotechnical engineer be present during fill placement and compaction to assure that adequate compaction is achieved and that proper methods are employed.

Foundation Excavation and Construction

Foundation bearing surfaces should be free of loose soil, standing water, and be level. Foundation concrete should be placed the same day the foundation is excavated. Deleterious materials or isolated soft spots within a foundation should be overexcavated to suitable base and filled to design bearing elevation with lean concrete.

Construction of Fill and Backfill

Engineered fill should be free of frozen soil, organics, rubbish, large rocks, wood, or other deleterious materials. Proposed fill should be analyzed by the geotechnical engineer as soon as borrow sources are identified to determine suitability and to conform to the applicability of the following recommendations.

Cohesive soils should be uniformly compacted to at least 95 percent of the "Standard" maximum dry density and be within -2 to +4 percent of optimum moisture content as described by ASTM D698. Should the results of the in-place density tests indicate that the specified compaction limits have not been achieved, the area represented by the test should be reworked and retested as required until the specified limits are reached.

The fill material should be placed in layers not to exceed eight inches in loose thickness and should be wetted or dried as required to secure specified compaction. Moisture specifications may be waived for open (poorly) graded rock used as fill material. Effective spreading equipment should be used on each lift to obtain a uniform lift thickness prior to compaction. Each layer should be uniformly compacted by means of suitable equipment of the type required by the materials composing the fill. Material that is too wet to permit proper compaction may be stockpiled or spread and permitted to dry assisted by diskig, harrowing, or pulverizing until the moisture content is reduced to a satisfactory value. The fill layers should be placed approximately
parallel to the finished grade. Rocks or stones that exceed the thickness of the eight-inch loose lift layer should be removed and disposed of out of the immediate construction area.

Fill and subgrade construction should not be started on foundation soil, partially completed fill, or subgrades that contain frost or ice. Nor should the fill be constructed of frozen soil. Frozen soil should be removed prior to placing fill material.

Recommendations contained in this report are based on soil conditions and designs provided as of this date. The above study and recommendations are applicable only for the conditions described, locations, and for the specific project mentioned. Any significant changes in plans or soil conditions should be brought to our attention. To avoid misunderstandings as to intent, personnel from Engineering Surveys and Services will be available at any stage of development of plans or during construction.
APPENDIX
SAMPLE TYPES

<table>
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<tr>
<th>Auger</th>
<th>Shelby Tube</th>
<th>Split Spoon</th>
<th>Piston</th>
<th>No Recovery</th>
<th>NX Core</th>
<th>Roller Bit (Tri-Cone)</th>
<th>Concrete Corer</th>
<th>Down Hole Boring</th>
</tr>
</thead>
</table>

ABBREVIATIONS

- ® Unconfined Compression (1)
- ● Water Content (2)
- + Plastic (PL) & Liquid (LL) Limit (2)

USCS Unified Soil Classification System
PI Plasticity Index
ATD At time of drilling
RQD Rock Quality Designation
SS Split Spoon - 1 3/8" I.D., 2" O.D.
ST Shelby Tube - 3" O.D.
PA Power Auger
HA Hand Auger
AS Auger Sample
S Cuttings Sample
TV Hand-Held Torvane

DEFINITIONS

Blows per ft.- Indicates blows per 6 inches of sampler penetration when driven by a 140-pound hammer falling freely 30 inches. The Standard Penetration Resistance is the number of blows for the last 12 inches of penetration of the split-spoon sampler.

NOTES

(1) Shear Strength Data plotted on Cohesion scale of Boring Logs.
(2) Classification and Index Properties plotted on Water Content Scale of Boring Logs.
<table>
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<tr>
<th>BORING NO.</th>
<th>SAMPLE NO.</th>
<th>DEPTH (FEET)</th>
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<th>NATURAL DRY DENSITY (PCF)</th>
<th>ATTERBERG LIMITS</th>
<th>UNCONFINED COMPRESSION</th>
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LAB NO. 4057
PROJECT: Proposed Art Support Building
Columbia, Missouri

PLAN OF BORING LOCATIONS

SCALE: 1" = 30'

HITT STREET

ELECTRIC TRANSFORMER

BUILDING

B1
B2
B3
B4
B5
B6
B7
B8
B9
B10
B11
B12
B13
B14
B15
B16
B17

LOT

PARKING

BUILDING

Engineering Surveys & Services
Columbia, Mo.
<table>
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<tr>
<th>DEPTH, FT.</th>
<th>TYPE, COLOR, MOISTURE &amp; OTHER</th>
<th>BLOWS PER FT.</th>
<th>UNIFIED CLASSIFICATION</th>
<th>UNIT DRY WT.</th>
<th>COHESION, TON/SQ.FT.</th>
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<td>0.2  0.4 0.6 0.8 1.0 1.2 1.4</td>
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<td>BLOW</td>
<td>LIMIT</td>
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<td>SURF. ELEV.: 771.5</td>
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<tr>
<td>0</td>
<td>TOPSOIL: Silty clay, brown, moist, friable, with roots</td>
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<tr>
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<td>SILTY CLAY: Brown with gray, moist, stiff to very stiff, with some roots</td>
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<tr>
<td>10</td>
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<td></td>
</tr>
<tr>
<td>25</td>
<td>SANDY CLAY: Brown, moist, very stiff to hard, with white calcareous streaks, intermixed with occasional sand layers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>BOULDER: Weathered</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SANDY CLAY: Brown, moist, very stiff to hard</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Completion Depth: 26.5'
Date: 22 June 1993

Depth to Water: 22.0' ATD
Date: 22 June 1993
**LOG OF BORING NO. B2**

**PROJECT:** Proposed Art Support Building  
Columbia, Missouri

**TYPE: 4" Solid stem augers**

<table>
<thead>
<tr>
<th>DEPTH, FT.</th>
<th>TYPE, COLOR, MOISTURE &amp; OTHER</th>
<th>LOCATION: See Boring Plan SURL. ELEV.: 775.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>CHIP &amp; SEAL PAVEMENT</td>
<td>BASE ROCK: 1&quot; minus crushed limestone aggregate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FILL: Silty clay, black, moist, soft to firm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- black, brown and gray</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SILTY CLAY: Brown with gray, moist, stiff to very stiff</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- with 1&quot; limestone gravel and white calcareous streaks</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>SANDY CLAY: Brown, moist, stiff, with gravel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SILTY CLAY: Brown, moist, very stiff</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Completion Depth:** 25.0'  
**Date:** 21 June 1993  
**Depth to Water:** Not Encountered  
**Date:** 21 June 1993
**LOG OF BORING NO. 83**

**PROJECT:** Proposed Art Support Building
Columbia, Missouri

**TYPE:** 4" Solid stem augers

<table>
<thead>
<tr>
<th>DEPTH, FT.</th>
<th>BLOWS PER FT.</th>
<th>UNIFIED CLASSIFICATION</th>
<th>UNIT DRY WT. LB./CU. FT.</th>
<th>COHESION, TON/SQ.FT.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td>0.2</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td>0.4</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td>0.6</td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td>0.8</td>
</tr>
<tr>
<td>25</td>
<td></td>
<td></td>
<td></td>
<td>1.0</td>
</tr>
<tr>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td>1.2</td>
</tr>
<tr>
<td>35</td>
<td></td>
<td></td>
<td></td>
<td>1.4</td>
</tr>
</tbody>
</table>

**SOIL DESCRIPTION**

**TYPE, COLOR, MOISTURE & OTHER**

**LOCATION:** See Boring Plan
**SURF. ELEV.:** 772.3

- **CHIP & SEAL PAVEMENT**
- **BASE ROCK:** 2" minus crushed limestone aggregate
- **BOULDER:** Possibly concrete
- **FILL:** Silty clay, moist, stiff, with some gravel
- **SILTY CLAY:** Brown, moist, stiff to very stiff, with some sandatched, mixed with occasional white streaks

**Completion Depth:** 12.5'
**Date:** 21 June 1993

**Depth to Water:** Not Encountered
**Date:** 21 June 1993
**LOG OF BORING NO. B4**

**PROJECT:** Proposed Art Support Building  
Columbia, Missouri  
**TYPE:** 4" Solid stem augers

<table>
<thead>
<tr>
<th>DEPTH, FT.</th>
<th>SOIL DESCRIPTION</th>
<th>BLOWS PER FT.</th>
<th>UNIFIED CLASSIFICATION</th>
<th>UNIT DRY Wt. LB/CU FT.</th>
<th>COHESION, TON/SQ.FT.</th>
<th>PLASTIC LIMIT CONTENT, %</th>
<th>WATER LIMIT CONTENT, %</th>
<th>LIQUID LIMIT CONTENT, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.2</td>
<td>0.4</td>
<td>0.6</td>
<td>0.8</td>
</tr>
</tbody>
</table>

**LOCATION:** See Boring Plan  
**SURF. ELEV.:** 774.1

- **CHIP & SEAL PAVEMENT**
- **BASE ROCK:** 1" minus crushed limestone aggregate
- **FILL:** Silty clay, brown and blackish gray, moist, stiff
- **BOULDERS:** Possibly concrete rubble
- **FILL:** Silty clay, black, mixed with wood debris
- **CLAY:** Brown with some gray, moist, stiff to very stiff, rust stains

- Becomes silty, with occasional white streaks

**Completion Depth:** 12.2'  
**Date:** 21 June 1993

**Depth to Water:** Not Encountered  
**Date:** 21 June 1993

**Engineering Surveys & Services**  
**Columbia, Mo.**
LAB NO. 4057  
PROJECT: Proposed Art Support Building  
Columbia, Missouri  

LOG OF BORING NO. B5  
TYPE: 4" Solid stem augers

<table>
<thead>
<tr>
<th>DEPTH, FT.</th>
<th>SAMPLE TYPE</th>
<th>SOIL DESCRIPTION</th>
<th>LOCATION: See Boring Plan Boring</th>
<th>SURF. ELEV.: 775.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td>CHIP &amp; SEAL PAVEMENT</td>
<td>BASE ROCK: 2&quot; minus crushed limestone</td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td></td>
<td></td>
<td>FILL: Silty clay, blackish brown, moist, very stiff</td>
<td></td>
</tr>
<tr>
<td>0.2</td>
<td></td>
<td></td>
<td>SILTY CLAY: Brown with some grey, moist, stiff to very stiff, some sand and rust stains</td>
<td></td>
</tr>
<tr>
<td>0.4</td>
<td></td>
<td></td>
<td>, with white calcareous streaks</td>
<td></td>
</tr>
<tr>
<td>0.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

COHESION, TON/SQ.FT.  
0.2  0.4  0.6  0.8  1.0  1.2  1.4
PLASTIC LIMIT CONTENT, %  
WATER LIMIT CONTENT, %  
LIQUID LIMIT

Completion Depth: 12.0'  
Date: 21 June 1993  
Depth to Water: Not Encountered  
Date: 21 June 1993

Engineering Surveys & Services  
Columbia, Mo.
**LOG OF BORING NO. B6**  
**PROJECT:** Proposed Art Support Building  
Columbia, Missouri  
**TYPE:** 4" Solid stem augers

<table>
<thead>
<tr>
<th>Sample Type</th>
<th>Blows per ft.</th>
<th>Unified Classification</th>
<th>Unit Dry Wt.</th>
<th>Cohesion, Ton/Sq.Ft.</th>
<th>Plastic Limit Content, % Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SOIL DESCRIPTION**  
**LOCATION:** See Boring Plan  
**SURF. ELEV.:** 772.6

- **CHIP & SEAL PAVEMENT**
- **BASE ROCK:** 1" minus crushed limestone aggregate
- **FILL:** Silty clay, brownish gray, moist, stiff, some gravel mixed
- **SILTY CLAY:** Brown, moist, stiff to very stiff, rust stains, some sand  
  - brown with gray
- **brown**

**Completion Depth:** 12.5'  
**Date:** 21 June 1993  
**Depth to Water:** Not Encountered  
**Date:** 21 June 1993
### Soil Description

**TYPE, COLOR, MOISTURE & OTHER**

<table>
<thead>
<tr>
<th>DEPTH, FT.</th>
<th>SOIL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>U.0.2040.60.81.0 1.21.4</td>
</tr>
<tr>
<td>5.0</td>
<td>I.0.20.40.60.81.0 1.21.4</td>
</tr>
<tr>
<td>10.0</td>
<td>WoPLASTICWATERLIQUID</td>
</tr>
<tr>
<td>15.0</td>
<td>LIMITCONTENT,% LIMIT</td>
</tr>
<tr>
<td>20.0</td>
<td>10 20 30 40 50 60 70</td>
</tr>
<tr>
<td>25.0</td>
<td>10 20 30 40 50 60 70</td>
</tr>
<tr>
<td>30.0</td>
<td>10 20 30 40 50 60 70</td>
</tr>
</tbody>
</table>

**LOCATION:** See Boring Plan

**SURF. ELEV.:** 773.8

**Completion Depth:** 12.5'
**Date:** 21 June 1993

**Depth to Water:** Not Encountered
**Date:** 21 June 1993

---

**LAB NO.:** 4057

**PROJECT:** Proposed Art Support Building Columbia, Missouri

**TYPE:** 4" Solid stem augers

---

**CHIP & SEAL PAVEMENT**

**BASE ROCK:** 2" minus crushed limestone aggregate

**FILL:** Silty clay, brownish black, moist, firm to stiff, with broken brick

**SILTY CLAY:** Brown with some gray, moist, stiff to very stiff, rust stains, slightly sandy, some 1/4" gravel

---

**Eng/ neering Surveys & Services**
**Columbia, Mo.**
<table>
<thead>
<tr>
<th>SAMPLE</th>
<th>TYPE</th>
<th>COLOR</th>
<th>MOISTURE</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>SOIL</td>
<td>Plastic</td>
<td>Water</td>
<td>Liquid</td>
</tr>
<tr>
<td>10</td>
<td>COHESION, TON/SQ.FT.</td>
<td>0.2</td>
<td>0.4</td>
<td>0.6</td>
</tr>
<tr>
<td>20</td>
<td>LIMIT</td>
<td>Plastic</td>
<td>Water</td>
<td>Liquid</td>
</tr>
<tr>
<td>30</td>
<td>LIMIT</td>
<td>Plastic</td>
<td>Water</td>
<td>Liquid</td>
</tr>
</tbody>
</table>

**LOCATION:** See Boring Plan
**SURF. ELEV.:** 775.5

**Completion Depth:** 12.0'
**Date:** 21 June 1993
**Depth to Water:** Not Encountered
**Date:** 21 June 1993
**LOG OF BORING NO. B9**

**TYPE:** 4" Solid stem augers

**PROJECT:** Proposed Art Support Building
Columbia, Missouri

<table>
<thead>
<tr>
<th>DEPTH, FT.</th>
<th>SOIL DESCRIPTION</th>
<th>BLOWS PER FT.</th>
<th>UNIFIED CLASSIFICATION</th>
<th>COHESION, TON/SQ.FT.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>LOCATION: See Boring Plan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>SURF. ELEV.: 773.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>CHIP &amp; SEAL PAVEMENT</td>
<td>109</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>BASE ROCK: 3' minus crushed limestone aggregate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>FILL: Silty clay, dark gray, moist, firm, some gravel mixed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SILTY CLAY: Brown and gray, moist, very stiff, rust stains , slightly sandy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>, with occasional 1&quot; limestone gravel and white calcareous pockets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>, lignite stains, blocky</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>, with 1/4&quot; gravel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SAND: Brown, medium grained, with alternating very stiff clay layers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>, moist to wet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Completion Depth:** 20.0'
**Depth to Water:** Trace @ 19.0' ATD

**Date:** 21 June 1993

*Engineering Surveys & Services*
*Columbia, Mo.*
**LOG OF BORING NO. B10**

**PROJECT:** Proposed Art Support Building  
**Location:** Columbia, Missouri

**SOIL DESCRIPTION**

<table>
<thead>
<tr>
<th>DEPTH, FT.</th>
<th>TYPE, COLOR, MOISTURE &amp; OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>CHIP &amp; SEAL PAVEMENT</td>
</tr>
<tr>
<td></td>
<td>BASE ROCK: 2&quot; minus crushed limestone aggregate</td>
</tr>
<tr>
<td></td>
<td>FILL: Silty clay, dark gray, moist, firm</td>
</tr>
<tr>
<td>10</td>
<td>BOULDERS: Possibly concrete rubble</td>
</tr>
<tr>
<td>15</td>
<td>SILTY CLAY: Brown with some gray, moist, stiff to very stiff</td>
</tr>
<tr>
<td></td>
<td>-, moist to wet</td>
</tr>
<tr>
<td></td>
<td>-, moist</td>
</tr>
</tbody>
</table>

| DEPTH, FT. | LOCATION: See Boring Plan |
|------------| SURF. ELEV.: 771.0 |

**COHESION, TON/SQ.FT.**

<table>
<thead>
<tr>
<th>COHESION, TON/SQ.FT.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.2</td>
</tr>
<tr>
<td>0.4</td>
</tr>
<tr>
<td>0.6</td>
</tr>
<tr>
<td>0.8</td>
</tr>
<tr>
<td>1.0</td>
</tr>
<tr>
<td>1.2</td>
</tr>
<tr>
<td>1.4</td>
</tr>
</tbody>
</table>

**PLASTIC LIMIT CONTENT, %**

<table>
<thead>
<tr>
<th>PLASTIC LIMIT CONTENT, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
</tr>
<tr>
<td>20</td>
</tr>
<tr>
<td>30</td>
</tr>
<tr>
<td>40</td>
</tr>
<tr>
<td>50</td>
</tr>
</tbody>
</table>

**WATER LIMIT CONTENT, %**

<table>
<thead>
<tr>
<th>WATER LIMIT CONTENT, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
</tr>
</tbody>
</table>

**LIMIT CONTENT, %**

<table>
<thead>
<tr>
<th>LIMIT CONTENT, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
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</tbody>
</table>

**LOCATION:** See Boring Plan

**SURF. ELEV.: 771.0**

**Completion Depth:** 12.0'  
**Depth to Water:** Trace @ 6.0' AITD

**Date:** 21 June 1993

*Columbia, Mo.*
<table>
<thead>
<tr>
<th>DEPTH, FT.</th>
<th>SOIL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>CHIP &amp; SEAL PAVEMENT</td>
</tr>
<tr>
<td>1</td>
<td>BASEROCK: 1&quot; to 3&quot; clean crushed limestone aggregate</td>
</tr>
<tr>
<td>1.5</td>
<td>SILTY CLAY: Brown with gray, moist, stiff to very stiff</td>
</tr>
<tr>
<td>5</td>
<td>, with some sand</td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td></td>
</tr>
<tr>
<td>32.5</td>
<td></td>
</tr>
</tbody>
</table>

**LOCATION:** See Boring Plan

**SURF. EL.:** 772.9

**BASEWOOD:**

- **LAND:** Clean crushed limestone aggregate

- **SILTY CLAY:** Brown with gray, moist, stiff to very stiff

**COHESION, TON/SQ. FT.**

<table>
<thead>
<tr>
<th>UNIT DRY WT. LB./CU. FT.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.2</td>
</tr>
</tbody>
</table>

**PLASTIC LIMIT WATER CONTENT, %**

<table>
<thead>
<tr>
<th>LIMIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>+-----</td>
</tr>
</tbody>
</table>

**LIQUID LIMIT**

<table>
<thead>
<tr>
<th>LIMIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>+-----</td>
</tr>
</tbody>
</table>

**Completion Depth:** 12.5'

**Date:** 21 June 1993

**Depth to Water:** Not Encountered

**Date:** 21 June 1993
<table>
<thead>
<tr>
<th>Depth, FT.</th>
<th>Sample Type</th>
<th>Soil Description</th>
<th>Location: See Boring Plan</th>
<th>Surf. ELEV.: 774.7</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td></td>
<td>CHIP &amp; SEAL PAVEMENT</td>
<td>BASE ROCK: 1&quot; minus crushed limestone aggregate</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>FILL: Silty clay, brownish black, moist, firm</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td>SILTY CLAY: Brown, moist, very stiff, with rust stains</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>, mixed with gray, some sand</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
<td>SANDY CLAY: Brown, moist, friable</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td></td>
<td></td>
<td>SILTY SAND: Brown, moist, friable</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Completion Depth: 12.5'  
Date: 21 June 1993

Depth to Water: Not Encountered  
Date: 21 June 1993
**LOG OF BORING NO. B13**

**PROJECT:** Proposed Art Support Building, Columbia, Missouri  
**TYPE:** 4" Solid stem augers

<table>
<thead>
<tr>
<th>DEPTH, FT.</th>
<th>SOIL DESCRIPTION</th>
<th>LOCATION: See Boring Plan SURF. ELEV.: 771.0</th>
</tr>
</thead>
</table>
| 5          | CHIP & SEAL PAVEMENT  
BASE ROCK: 3" minus crushed limestone aggregate  
FILL: Silty clay, gray and brown, moist, firm, faint solvent odor |
| 10         | SILTY CLAY: Brown with gray, moist, stiff to very stiff |
| 15         |  
| 20         |  
| 25         |  
| 30         |  

**COHESION, TON/SQ. FT.**

<table>
<thead>
<tr>
<th>COHESION LIMIT</th>
<th>0.2</th>
<th>0.4</th>
<th>0.6</th>
<th>0.8</th>
<th>1.0</th>
<th>1.2</th>
<th>1.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLASTIC WATER LIMIT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LIMIT CONTENT, %</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LIQUID LIMIT</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**BLOWS PER FT.**

**UNIT DRY WT. LB./CU. FT.**

**Completion Depth:** 12.5'  
**Date:** 21 June 1993  
**Depth to Water:** Not Encountered  
**Date:** 21 June 1993

*Engineering Surveys & Services  
Columbia, Mo.*
**LOG OF BORING NO. B14**

**PROJECT:** Proposed Art Support Building  
Columbia, Missouri

**TYPE:** 4" Solid stem augers

<table>
<thead>
<tr>
<th>DEPTH, FT.</th>
<th>SAMPLE TYPE</th>
<th>SOIL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>Chip &amp; Seal Pavement</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>Base Rock: 2&quot; minus crushed limestone aggregate</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>Fill: Silty clay, grayish brown, moist, stiff, mixed with some gravel</td>
</tr>
<tr>
<td>20</td>
<td></td>
<td>Silty Clay: Brown, moist, stiff, gritty</td>
</tr>
<tr>
<td>25</td>
<td></td>
<td>, brown with gray, slightly sandy, moist</td>
</tr>
<tr>
<td>30</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Completion Depth:** 12.5'  
**Date:** 21 June 1993

**Depth to Water:** Not Encountered  
**Date:** 21 June 1993

**DATE:** 21 June 1993  
**ENG/NEERING SURVEYS & SERVICES**  
*COLUMBIA, MO.*
**LAB NO.** 4057  
**PROJECT:** Proposed Art Support Building  
Columbia, Missouri  

**LOG OF BORING NO.** BL5  
**TYPE:** 4" Solid stem augers

<table>
<thead>
<tr>
<th>DEPTH, FT.</th>
<th>SOIL DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>TYPE, COLOR, MOISTURE &amp; OTHER</strong></td>
</tr>
</tbody>
</table>
|            | LOCATION: See Boring Plan  
|            | SURF. ELEV.: 773.8 |

<table>
<thead>
<tr>
<th>CHIP &amp; SEAL PAVEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>BASE ROCK: 3&quot; minus crushed limestone aggregate</td>
</tr>
<tr>
<td>FILL: Silty clay, dark gray, moist, firm, some gravel mixed</td>
</tr>
<tr>
<td>SILTY CLAY: Brown, moist, stiff to very stiff</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DEPTH, FT.</th>
<th>BLOWS PER FT.</th>
<th>UNIFIED CLASSIFICATION</th>
<th>UNIT DRY WT. LB./CU. FT.</th>
<th>COHESION, TON/SQ.FT.</th>
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</thead>
<tbody>
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<td></td>
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<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>DEPTH, FT.</th>
<th>COHESION, TON/SQ.FT.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.2 0.4 0.6 0.8 1.0 1.2 1.4</td>
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<tr>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>DEPTH, FT.</th>
<th>PLASTIC LIMIT</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>WATER CONTENT, %</td>
</tr>
<tr>
<td></td>
<td>LIQUID LIMIT</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>DEPTH, FT.</th>
<th>PLASTIC LIMIT</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>WATER CONTENT, %</td>
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<tr>
<td></td>
<td>LIQUID LIMIT</td>
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</tbody>
</table>

**Completion Depth:** 12.5'  
**Date:** 21 June 1993  

**Depth to Water:** Not Encountered  
**Date:** 21 June 1993
**LOG OF BORING NO. B16**

**PROJECT:** Proposed Art Support Building  
**Columbia, Missouri**

**TYPE:** 4" Solid stem augers

<table>
<thead>
<tr>
<th>DEPTH, FT.</th>
<th>SAMPLE TYPE</th>
<th>SOIL DESCRIPTION</th>
<th>BLOWS PER FT.</th>
<th>UNIT DRY WT. LB./CU. FT.</th>
<th>COHESION, TON/SQ.FT.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td></td>
<td>TOPSOIL: Silty clay, dark brown, moist, stiff, with roots</td>
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<td></td>
<td></td>
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<tr>
<td>10</td>
<td></td>
<td>SILTY CLAY: Brown with gray, moist, stiff</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>- with root hairs, rust stains</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>15</td>
<td></td>
<td>- blocky structure, marbled appearance, lignite stains on fractures</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>20</td>
<td></td>
<td>SILTY SAND: Brown, moist, very dense</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>25</td>
<td></td>
<td></td>
<td></td>
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<td>30</td>
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</tbody>
</table>

Completion Depth: 25.0'  
Depth to Water: 17.0' A TD  
Date: 22 June 1993
**LOG OF BORING NO. B17**

**PROJECT:** Proposed Art Support Building  
Columbia, Missouri  
**TYPE:** 4" Solid stem augers

---

### SOIL DESCRIPTION

<table>
<thead>
<tr>
<th>DEPTH, FT.</th>
<th>SAMPLE TYPE</th>
<th>LOCATION</th>
<th>SURF. ELEV.: 774.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>CHIP &amp; SEAL PAVEMENT</td>
<td>BASE ROCK: 2&quot; minus crushed limestone aggregate</td>
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<tr>
<td>5</td>
<td></td>
<td>FILL: Silty clay, black, moist, firm, grades to greenish gray with rust stains</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>SILTY CLAY: Brown and gray, moist, stiff to very stiff, gritty, sandy at times, occasionally sandy</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>, with gravel and cobbles, blocky, marbled appearance, with 1/4&quot; gravel</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td>, occasionally sandy</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td></td>
<td>, occasionally sandy</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td></td>
<td>, occasionally sandy</td>
<td></td>
</tr>
</tbody>
</table>

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**Completion Depth:** 25.0'  
**Date:** 22 June 1993  
**Depth to Water:** Not Encountered  
**Date:** 22 June 1993
Contractor Schedule

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.

<table>
<thead>
<tr>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
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</thead>
<tbody>
<tr>
<td>5 days</td>
<td>5 days</td>
<td>4 days</td>
<td>4 days</td>
</tr>
<tr>
<td>May</td>
<td>Jun</td>
<td>Jul</td>
<td>Aug</td>
</tr>
<tr>
<td>3 days</td>
<td>3 days</td>
<td>2 days</td>
<td>2 days</td>
</tr>
<tr>
<td>Sep</td>
<td>Oct</td>
<td>Nov</td>
<td>Dec</td>
</tr>
<tr>
<td>3 days</td>
<td>4 days</td>
<td>4 days</td>
<td>5 days</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.
TO: ________________________________ School of Music – New Building  
Project No.: CP170621  
Location: University of Missouri, Columbia, MO

Our technical staff has examined the Architect/Engineer’s Drawings, Specifications and required warranty for the roofing work on this project. We do not wholly endorse the building design or any materials or services not part of our advertised roofing system.

CERTIFICATION

We hereby certify that:

1. All materials we will furnish and deliver to the project shall be of good merchantable quality, shall meet or exceed the Specifications required and shall, if properly applied by one of our approved roofing applicator firms in accord with our instructions, provide a sound weather/watertight roofing system.

2. Upon completion of the installation in accord with the Drawings and specifications and our recommended installation procedures, we shall issue a total system warranty specified in the project Specifications.

3. The Drawings and Specifications follow the recommendations of our roofing manual for this type of roofing system with:

   No exceptions.

   The following exceptions: (The roofing system will be approved for this project if the following changes are made to the Contract Documents. The bid provided with this Document includes the required changes).

   NOTE: Exceptions may cause Owner to reject bid.

   Exceptions are as follows:

   __________________________________________
   __________________________________________
   __________________________________________
   __________________________________________

4. The Warranty will be issued for the following proposed roofing system:

   __________________________________________
   __________________________________________

ROOFING SYSTEM MANUFACTURER: ________________________________

Authorized Signature: __________________________________________

Title: ________________________________ Date ________________________

Telephone Number: ( ) __________________

Fax Number: ( ) ________________
UNIVERSITY OF MISSOURI
CONTRACTORS ROOFING/FLASHING/SHEET METAL GUARANTEE
(Revised 12/94)

WHEREAS (NAME AND ADDRESS OF COMPANY) 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: Project No.: CP170621 – School of Music New Building

Owner: University of Missouri-Columbia
105 Jesse Hall
Columbia, MO 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.
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, alterations, 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: ( ) __________
# SHOP DRAWING AND SUBMITTAL LOG

**Project:** SCHOOL OF MUSIC NEW BUILDING  
**Project Number:** CP170621  
**Contractor:**

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Contractor</th>
<th>Date Rec’d</th>
<th>#</th>
<th>Date Sent to Cons.</th>
<th>Date Ret’d</th>
<th>Remarks</th>
<th>Date ret’d</th>
<th>Cont’r</th>
<th>Copies To Owner</th>
<th>File</th>
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SDSL - 1
# SHOP DRAWING AND SUBMITTAL LOG

Project: GENERAL SITE; SCHOOL OF MUSIC EXTEND UTILITIES  
Project Number: CP172801  
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# OPERATING INSTRUCTIONS AND SERVICE MANUAL LOG

**Project:** SCHOOL OF MUSIC NEW BUILDING  
**Project Number:** CP170621  
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## OPERATING INSTRUCTIONS AND SERVICE MANUAL LOG

Project: GENERAL SITE; SCHOOL OF MUSIC EXTEND UTILITIES  
Project Number: CP172801  
Contractor:

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# CLOSEOUT LOG

**Project:** SCHOOL OF MUSIC NEW BUILDING  
**Project Number:** CP170621  
**Contractor:**

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CLOSEOUT- 1
**CLOSEOUT LOG**

**Project:** GENERAL SITE; SCHOOL OF MUSIC EXTEND UTILITIES  
**Project Number:** CP172801  
**Contractor:**

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<td><strong>15713</strong> Temporary Erosion and sediment Control and SWPPP</td>
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<td>Conduct a preinstallation conference at project site per specifications</td>
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9/29/2017  COM 4 of 21
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<td>83113 Access Doors and Frames</td>
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<td><strong>87100</strong></td>
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<td><strong>93000</strong></td>
<td>Tiling</td>
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<td><strong>95250</strong></td>
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<td><strong>96543</strong></td>
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<td>Perform pH, Chloride (moisture) and bond tests per manufacturer. Do not proceed until all manufacturing requirements are met.</td>
<td>test reports</td>
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<td>99123 Interior Painting</td>
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<td>Test Report</td>
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<td>111300 Loading Dock Equipment</td>
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<td>Perform Demonstration Section of specifications</td>
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<td>Sign up sheet</td>
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<td>112400 Maintenance Equipment</td>
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<td>Test Report</td>
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**122413**

Roller Window Shades

| Provide Extra Material as specified | | | | | Transmittal | ✔ |
| Provide factory training | | | | | Sign up sheet | ✔ |

**142400**

Hydraulic Elevators

| Perform Field Quality Control section of specifications | | | | | Elevator test report | ✔ |
| Perform Instruction and Maintenance section of specifications | | | | | Sign up Sheet | ✔ |
| Verify no hydraulic leaks | | | | | | |

**211313**

Wet-Pipe Sprinkler Systems

<p>| Perform Field Quality Control section of specifications | | | | | NFPA certification | ✔ |
| Perform Sprinkler Training | | | | | Sign-up Sheet | ✔ |
| Provide extra materials as specified | | | | | Transmittal | ✔ |</p>
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<td>Check valves for leaks and replace in necessary</td>
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<td>Install valve tags on valves and control devices per specifications</td>
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<td>Valve Schedule framed/posted</td>
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<td>Verify all valve stems are extended and accessible</td>
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<td>Provide pressure testing per Field Quality Control section of specifications</td>
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<td>Transmittal</td>
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<td><strong>Drinking Fountains and Water Coolers</strong></td>
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<td>Commissioning Items by CSI Division</td>
<td>Common Work Results for HVAC Equipment</td>
<td>Common Motor Requirements for HVAC Equipment</td>
<td>Meters and Gauges for HVAC Piping</td>
<td>Identification for HVAC Piping and Equipment</td>
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<td>230500 Hold MEP pre-installation meeting(s).</td>
<td>Common Motor Requirements for HVAC Equipment</td>
<td>Verify basic motor requirements are in accordance with documents, Including Efficiency</td>
<td>Verify calibration, adjustment and cleanliness of specified meters and gauges</td>
<td>Install pipe markers per specifications</td>
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<td>230700</td>
<td>Control Systems</td>
<td>Ensure I/O drawings are submitted and reviewed by ENKCS</td>
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<td>230900</td>
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<td>Ensure shipping material has been removed from thermostats and other control devices</td>
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**Meeting Minutes:**

Inspection report

**Test Report:**

I/O Drawings

**COM 11 of 21**
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<tr>
<td>Install and assist at start up as specified</td>
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<tr>
<td>Post laminated control diagram in mechanical room</td>
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<tr>
<td>Start, test and adjust controls and safeties</td>
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<td>Verify all field devices provided by contractor are terminated</td>
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<td>Verify method of labeling used for identification has been defined to the Owners Representative</td>
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<td>Verify safety alarms hard wired to control panels</td>
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<td>Verify systems are completely operable and ready for testing and balancing</td>
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**232113**

**Hydronic Piping**

- Drain, flush and refill system with clean water. | | | Flush Report | | |
- Perform Commissioning Section of specifications | | | Cx Report | | |
- Pressure test piping per Field Quality Control Section of specifications | | | test report | | |
- Provide Extra Material as specified | | | Transmittal | | |

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<td>Align pumps to conform with manufacturer's published tolerances</td>
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<td>Commission and demonstrate per specifications</td>
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<td>test for duct leakage per &quot;Testing&quot; section of spec. Ducts shall meet leakage requirement prior to testing and balancing. Leakage Class of 4</td>
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<td>Notify owner's rep after fully installing a representative unit (in-place mockup) for approval. Coordinate and cooperate with owner's commissioning of the boxes.</td>
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<td>Replace filters</td>
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<td>Verify all equipment, panel, conduits and conductors are correctly labeled.</td>
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<td>Factory certified technician to set electronic overcurrent devices to approved coordination study setpoints</td>
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<td>Inspection Report</td>
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<td>Train owners representatives in setting of overcurrent devices</td>
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<td>Place arcflash labels on equipment as specified</td>
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<td>Factory rep shall provide testing and adjustment per &quot;Field Quality Control&quot; section of spec</td>
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<td><strong>262816</strong> Enclosed Switches and Circuit Breakers</td>
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<td>Perform Tests per &quot;Field Quality Control&quot; section of spec to verify correct operation</td>
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#### 262913

**Enclosed Controllers**

- Perform Demonstration section of specifications
  - Sign-up Sheet

- Perform Tests per "Field Quality Control" section of spec to verify correct operation
  - Test Report

#### 262923

**Variable Frequency Motor Controllers**

- Provide factory training Per Demonstration section of spec
  - Sign up Sheet

- Start-up of VFD's shall be by factory rep. Perform all checks per manufacturer's written start-up checklist
  - field report, certification

#### 264113

**Lightning Protection for Structures**

- Provide periodic and final inspections as required by LPI-177 in order to obtain UL Master Label
  - field report, certification, and Master Label

#### 265119

**LED Interior Lighting**

- Perform lighting tests per Field Quality Control section of specifications
  - test reports

- Provide Extra Material as specified
  - Transmittal

#### 265219

**Emergency and Exit Lighting**

- Illuminate emergency lights for 90 minutes on battery power.
  - Test Report

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<thead>
<tr>
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<td><strong>274100</strong></td>
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<td><strong>Digital, Addressable Fire-Alarm System</strong></td>
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<td>Test system operation of pull stations horns/strobes by factory trained representative</td>
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<td>Written certification of fire alarm system per NFP</td>
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<td>Verify battery power available</td>
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<td>Verify tamper/flow switches operational</td>
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<td>Provide temporary fencing around drip lines of trees remaining</td>
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<td>Notify Owner's Representative to inspect bottom of all utility trenches.</td>
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<td>Notify Owner's Representative 24 hours prior to placement of concrete.</td>
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<td>Assure painting is done immediately after final surfacing as soon as practical</td>
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9/29/2017
### Commissioning Items by CSI Division

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<tr>
<td>Obtain domestic water bacteria test and certification (Notify City of Columbia 48 hours prior to testing if city water is affected)</td>
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<td>Test Report</td>
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</table>
Construction Management Checklist for Energizing Utilities
(Contractor to initial each item upon completion and provide completed form to the Owner's Representative prior to energizing utility)

Water – turned on to the first valve past Energy Management’s last valve.

___ Review all piping and equipment being turned on for proper installation and completed testing.
___ Insulation installed (preferred but not required).
___ Meter properly installed, working, and in readable location.
___ Contractor has swabbed out with chlorine all piping from the backflow preventer to the source while installing.
___ All bacteriological tests have been completed and passed.
___ Backflow preventer installed and tested. (will need water pressure to test)
___ Pressure test completed in piping being turned on.
___ Contractor has method to communicate “Services On” to other contractor personnel and Owner’s personnel.

Steam – turned on to the first valve past Energy Management’s last valve.

___ Review all piping, equipment, valves, reducing stations, relief valves, etc. for proper installation and complete testing.
___ Piping protected from the weather.
___ Insulation must be installed.
___ All hangers and bolts have been installed.
___ Meter installed, working and in readable location. (Don’t need metasys to turn on.)
___ All needed traps are installed and able to be tested as they are turned on.
___ Condensate system is installed and operating including the pumping system.
___ Pressure test completed in piping being turned on.
___ Contractor has method to communicate “Services On” to other contractor personnel and Owner’s personnel.

Condensate – turned on to the first valve past Energy Management’s last valve.

___ Review all piping and equipment being turned on for proper installation and completed testing.
___ Piping protected from the weather.
___ Insulation installed (preferred but not required).
___ Pressure test completed in piping being turned on.
___ Contractor has method to communicate “Services On” to other contractor personnel and Owner’s personnel.

Electric – turned on to the first breaker past 13.8kV transformer.

___ Review all wiring and equipment being turned on for proper installation and completed testing.
___ GFCI set and tested.
___ Breakers set and tested.
___ All needed permanent grounds are installed.
___ Meter installed, working and in readable location.
___ Main switchgear protected from the weather:
___ Contractor has method to communicate “Services On” to other contractor personnel and Owner’s personnel.

Chilled Water – turned on to the first valve inside of building.

___ Review all piping and equipment being turned on for proper installation and completed testing.
___ Pressure test completed in piping being turned on.
___ Insulation must be installed.
___ Meter installed, working and connected to Metasys.
___ Building pump and automatic isolation/control valve must be installed and under control.
___ If chillers are installed, automatic loop pump isolation must be installed.
___ Control valves must be installed and automatically controlled on all loads.
___ Contractor has method to communicate “Services On” to other contractor personnel and Owner’s personnel.

2/8/2005
Please see following website for suggested commissioning forms:

http://www.cf.missouri.edu/pdc/commissioning-forms.html
PAGE INTENTIONALLY LEFT BLANK
# CP172801 School of Music Utilities Commissioning Check List

<table>
<thead>
<tr>
<th>Commissioning Items by CSI Division</th>
<th>Verified by:</th>
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<th>Coord Initial</th>
<th>Documentation Required</th>
<th>Owner Witness Required</th>
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<td><strong>1</strong> Building System Commissioning</td>
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<td>Commissioning Agent - Conduct pre-installation meetings per specifications.</td>
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<td><strong>15713</strong> Temporary Erosion and Sediment Control</td>
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<td>Perform inspection of installed controls every seven (7) calendar days and within 24 hours of rainfall.</td>
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<td>Meeting Minutes and Sign-up Sheet</td>
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<td>Contact owner’s representative prior to placing backfill. Ensure compliance with lift requirements of specifications</td>
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<td>Hold MEP pre-installation meeting(s).</td>
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<td><strong>220553</strong> Identification for Plumbing Piping and Equipment</td>
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<td>Install valve tags on valves and control devices per specifications</td>
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<td>Valve Schedule framed/posted</td>
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<td><strong>220700</strong> Plumbing Insulation</td>
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<td><strong>221116</strong> Domestic Water Piping</td>
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<td>NFPA 24 underground pipe certification</td>
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<td>Contractor to flush underground domestic water pipe to NFPA standards</td>
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11/6/2017

COM 1 of 9
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<td>221316 Sanitary Waste and Vent Piping</td>
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<td>Test per Field Quality Control section of specifications for 1 hour not 15 minutes</td>
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<td>224500 Emergency Plumbing Fixtures</td>
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<td>230500 Common Work Results for HVAC</td>
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<td>Hold MEP pre-installation meeting(s.)</td>
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<td>Verify calibration, adjustment and cleanliness of specified meters and gauges</td>
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<td>230548 Vibration and Seismic Controls for Piping and Equipment</td>
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<td>Install pipe markers and Valve tags per specifications</td>
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<td>Confirm approved shop drawings, as-buits, O&amp;Ms and change orders have been submitted to the TAB engineer prior to testing and balancing</td>
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<td>Coordinate and cooperate with owner's commissioning efforts</td>
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<td>Ensure pre-test requirements as specified in paragraph 1.2 have been completed</td>
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<td><strong>230700</strong> HVAC Insulation</td>
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| Perform Field Quality Control section of specifications | | | | | | Test Report  
| **230900** Control Systems | | | | | |  
| Ensure shipping material has been removed from thermostats and other control devices | | | | | |  

11/6/2017 COM 3 of 9
<table>
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<th>Commissioning Items by CSI Division</th>
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<td>Post laminated control diagram in mechanical room</td>
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<td>Verify all field devices provided by contractor are terminated</td>
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<td>Provide Extra Material as specified</td>
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<td>Align pumps to conform with manufacturer's published tolerances</td>
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<td>Comply with requirements of &quot;Commissioning&quot; section of specifications</td>
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<td>Steam and Condensate Heating Piping</td>
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<td>Provide factory training</td>
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<td>Sign-up Sheet</td>
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<td><strong>233113</strong></td>
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<td>Metal Ducts</td>
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<td>test for duct leakage per &quot;Field Quality Control&quot; section of spec. Ducts shall meet leakage requirement prior to testing and balancing. Leakage class of 4</td>
<td></td>
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<td>test report</td>
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<td><strong>233423</strong></td>
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<td>HVAC Power Ventilators</td>
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<td>Perform Field Quality Control section of specifications</td>
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<td>Test Report</td>
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<td><strong>Heat Exchangers for HVAC</strong></td>
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<td>Commissioning Report</td>
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<td>Perform Commissioning Section of specifications</td>
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<tr>
<td>Provide factory training per Demonstration Section of specifications</td>
<td></td>
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<td></td>
<td></td>
<td>✓</td>
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</tr>
</tbody>
</table>

| **260500**                        |             |            |               |                       |                        |
| **Common Work Results for Electrical** |             |            |               | | |
| Verify underground splices are performed per NEC article 110-14(b) ensuring connections and insulation are rated for underground use | | | | | |

| **260505**                        |             |            |               |                       |                        |
| **Electrical Testing**            |             |            |               | Test Reports          | ✓                      |
| Perform Wiring Test, Lighting Test, Motor Test, Panelboard Tests, Spot Test, and Control Wiring/Outlet Test sections of specifications | | | | | |

| **260513**                        |             |            |               | Test Reports          | ✓                      |
| **Low-Voltage Electrical Power Conductors and Cables** |             |            |               | | |
| Perform Field Quality Control section of specifications | | | | | |

| **260526**                        |             |            |               | test report           | ✓                      |
| **Grounding and Bonding for Electrical Systems** |             |            |               | | |
| Perform resistance test as described in "Field Quality Control" section of spec | | | | | |

| **260553**                        |             |            |               |                       |                        |
| **Identification for Electrical Systems** |             |            |               | | |
| Verify all equipment, panes, conduits and conductors are correctly labeled. | | | | | |

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<table>
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<tr>
<th>Commissioning Items by CSI Division</th>
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<tr>
<td>Overcurrent Protective Device</td>
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<tr>
<td>Coordination Study and Arc Flash Hazard Analysis</td>
<td></td>
<td></td>
<td></td>
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<td>Factory certified technician to set electronic overcurrent devices to approved coordination study setpoints</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Inspection Report</td>
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<td>Perform 'Testing' section of specifications</td>
<td></td>
<td></td>
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<td></td>
<td>Test Report</td>
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<td>Place arcflash labels on equipment as specified</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
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<tr>
<td>Train owners representatives in setting of overcurrent devices</td>
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<td></td>
<td></td>
<td>Sign-up Sheet</td>
<td>✓</td>
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<td><strong>260923</strong></td>
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<tr>
<td>Lighting Control Devices</td>
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<tr>
<td>Perform tests as noted in &quot;Field Quality Control&quot; section of spec</td>
<td></td>
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<td></td>
<td>field report</td>
<td>✓</td>
</tr>
<tr>
<td>Provide factory training per Demonstration section of specifications</td>
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<td>Sign-up Sheet</td>
<td>✓</td>
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<td><strong>262726</strong></td>
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<tr>
<td>Wiring Devices</td>
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<td>Operate All Devices per &quot;Field Quality Control&quot; section of spec to verify correct operation</td>
<td></td>
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<td></td>
<td></td>
<td>Test Report</td>
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<td><strong>262813</strong></td>
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<td>Fuses</td>
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<td>Provide Extra Material as specified</td>
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<td></td>
<td>Transmittal</td>
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</tr>
<tr>
<td>Test for continuity and short circuits prior to energization</td>
<td></td>
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11/6/2017
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<tr>
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<th>Documentation Required</th>
<th>Owner Witness Required</th>
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<tr>
<td><strong>262816</strong> Enclosed Switches and Circuit Breakers</td>
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<td>Perform tests per &quot;Field Quality Control&quot; section of spec</td>
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<td>Test Report</td>
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<tr>
<td>Provide Extra Material as specified</td>
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<td><strong>262923</strong> Variable-Frequency Motor Controllers</td>
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<tr>
<td>Provide factory trained start-up, per Field Quality Control section of specifications</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>service rep report</td>
<td>✓</td>
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<tr>
<td>Provide factory training</td>
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<td></td>
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<td>Sign up sheet</td>
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<td><strong>265100</strong> Interior Lighting</td>
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<td>Perform lighting tests per Field Quality Control section of specifications</td>
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<td></td>
<td>test reports</td>
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<tr>
<td>Provide Extra Material as specified</td>
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<td></td>
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<td></td>
<td>Transmittal</td>
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<tr>
<td><strong>311000</strong> Site Clearing</td>
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<td></td>
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<td></td>
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<tr>
<td>Provide temporary fencing around drip lines of trees remaining</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
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<tr>
<td><strong>312000</strong> Earth Moving</td>
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<tr>
<td>Hold Pre excavation Conference as specified</td>
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<td></td>
<td></td>
<td></td>
<td>Meeting Minutes</td>
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<tr>
<td>Commissioning Items by CSI Division</td>
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<td>321216 Asphalt Paving</td>
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<td>All proof rolling shall be performed in the presence of the Owner Representative per specifications.</td>
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<tr>
<td>321313 Concrete Paving</td>
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<tr>
<td>Notify Owner's Representative 48 hours prior to placement of concrete.</td>
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<td>321373 Concrete Paving Joint Sealant</td>
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<tr>
<td>Prepare, install and protect per specifications.</td>
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<tr>
<td>321723 Pavement Markings</td>
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<tr>
<td>Assure painting is done immediately after final surfacing as soon as practical</td>
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<tr>
<td>331100 Water Utility Distribution Piping</td>
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<td></td>
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<td></td>
<td>NFPA 24 Certification</td>
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<tr>
<td>Contractor to flush underground Domestic Water Pipe to NFPA 24 standards</td>
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<tr>
<td>Verify Pipe Alignment and Elevation match design documents. Possibly using EMO GPS coordinates and/or Third party Surveying Firm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Survey or GPS points and/or Survey Report</td>
<td>✓</td>
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<tr>
<td>336113 Underground Hydronic Energy Distribution</td>
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<tr>
<td>Perform Field Quality Control section of specifications</td>
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<td></td>
<td>Test Reports</td>
<td>✓</td>
</tr>
</tbody>
</table>
Water – turned on to the first valve past Energy Management’s last valve.

___ Review all piping and equipment being turned on for proper installation and completed testing.
___ Insulation installed (preferred but not required).
___ Meter properly installed, working, and in readable location.
___ Contractor has swabbed out with chlorine all piping from the backflow preventer to the source while installing.
___ All bacteriological tests have been completed and passed.
___ Backflow preventer installed and tested. (will need water pressure to test)
___ Pressure test completed in piping being turned on.
___ Contractor has method to communicate “Services On” to other contractor personnel and Owner’s personnel.

Steam – turned on to the first valve past Energy Management’s last valve.

___ Review all piping, equipment, valves, reducing stations, relief valves, etc. for proper installation and complete testing.
___ Piping protected from the weather.
___ Insulation must be installed.
___ All hangers and bolts have been installed.
___ Meter installed, working and in readable location. (Don’t need metasys to turn on.)
___ All needed traps are installed and able to be tested as they are turned on.
___ Condensate system is installed and operating including the pumping system.
___ Pressure test completed in piping being turned on.
___ Contractor has method to communicate “Services On” to other contractor personnel and Owner’s personnel.

Condensate – turned on to the first valve past Energy Management’s last valve.

___ Review all piping and equipment being turned on for proper installation and completed testing.
___ Piping protected from the weather.
___ Insulation installed (preferred but not required).
___ Pressure test completed in piping being turned on.
___ Contractor has method to communicate “Services On” to other contractor personnel and Owner’s personnel.

Electric – turned on to the first breaker past 13.8kV transformer.

___ Review all wiring and equipment being turned on for proper installation and completed testing
___ GFCI set and tested.
___ Breakers set and tested.
___ All needed permanent grounds are installed.
___ Meter installed, working and in readable location.
___ Main switchgear protected from the weather.
___ Contractor has method to communicate “Services On” to other contractor personnel and Owner’s personnel.

Chilled Water – turned on to the first valve inside of building.

___ Review all piping and equipment being turned on for proper installation and completed testing.
___ Insulation must be installed.
___ Meter installed, working and connected to Metasys.
___ Building pump and automatic isolation/control valve must be installed and under control.
___ Chiller are installed, automatic loop pump isolation must be installed.
___ Control valves must be installed and automatically controlled on all loads.
___ Contractor has method to communicate “Services On” to other contractor personnel and Owner’s personnel.

2/9/2005
Please see following website for suggested commissioning forms:

http://www.cf.missouri.edu/pdc/commissioning-forms.html
University of Missouri
School of Music New Building
CP# 170621
Columbia, Missouri

NPDES Storm Water Pollution Prevention Plan for
Storm Water Discharges Associated with
Construction Activity

SK Design Group, Inc.

November 9, 2017
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1.0 Purpose of Plan

The purpose of this Construction Storm Water Pollution Prevention Plan (Plan) is to demonstrate compliance with the requirements of the National Pollutant Discharge Elimination System (NPDES) for General Permit MOR 100039 for storm water discharges associated with construction activity. The General Permit requires the preparation and implementation of such a plan to prevent, as much as practicable, the release of pollutants in storm water runoff from the construction site to waters of the United States.

This Plan provides information about the University of Missouri School of Music New Building project located in Columbia, Missouri. Administrative requirements and potential storm water and non-storm water pollutant sources are identified. Best management practices to prevent the discharge of non-storm water materials in storm water runoff are also described.

The University of Missouri School of Music New Building project site consists of approximately 1.5 acres of land located north east of the intersection of University Avenue and Hitt Street on the University of Missouri campus in Columbia, Missouri. A project location map follows as Figure 1.

Figure 1:
Site Evaluation

2.0 Project Information

Project Name and Location
School of Music New Building
Columbia, Missouri

Owner Name
University of Missouri Columbia

General Project Description
Construction of a new 42,000 +/- square foot School of Music building with associated sidewalks, pavements, and utilities.

Project Location
Northeast corner of Hitt Street and University Ave. Refer to location maps in Appendix A

General Construction Activity Description
Demolition and removal of existing parking and driveway pavement and the existing Fine Arts Annex building. Excavate/remove or fill/compact site areas for foundation/building construction. Construct all proposed utilities and site improvements.

2.1 Topography and Drainage

The topography of the existing property slopes to the southwest for the southern 2/3 of the site and northwest for the northern third. There is approximately 8 feet of vertical relief between the northeast and southwest corners.

2.2 Soils

The soils on this project site were identified according to the United States Department of Agriculture Natural Resources Conservation Service. The soil in the area consists of Urban Land-Harvester Complex, 2 to 9 percent slopes.

2.3 Runoff Water Quality

No surface water quality data is available for the project site. However, due to the nature of the site runoff could be expected to contain some suspended solids.

2.4 Receiving Waters

The pre-developed site is collected by a drainage system on site and flows above ground and through a pipe system to the west, 0.5 miles from Flat Branch Creek.
3.0 Site Construction Plan

The following sections describe the proposed development and the site construction plan.

3.1 Construction Activities

The project site will consist of construction of the School of Music New Building. The project will require some building demolition, soil removal, and rough grading to support the planned development. Soil disturbing activities will include clearing, grubbing, and final grading. The project will have construction access off of Hitt Street and Paquin Street. The project construction entrance will be constructed as a stabilized construction entrance to reduce tracking soil onto the surrounding roadways.

A record of the project site construction activities must be maintained as a part of this Plan. Appendix A includes a form and instructions to record such information on an ongoing basis.

3.2 Construction Sequence

The project will be constructed generally following the sequence indicated below.

Site Best Management Practices will be installed
The site will be cleared and grubbed.
The site will be rough graded and structures constructed.
Remove BMP’s after site is stabilized and turf established
4.0 Storm Water Management Plan

This storm water management plan was designed following EPA guidelines. Structural sediment control devices will be the main means of storm water management. Storm water sediment controls will be installed before any construction begins.

4.1 General Description of Storm Water Management System

The potential for storm water runoff pollution will be present during construction of the site. This risk will be minimized through the use of several control measures implemented before and during the construction sequence.

The storm water management system was designed in accordance with the EPA’s guidance document entitled *Storm Water Management for Construction Activities- Developing Pollution Prevention Plans And Best Management Practices* (EPA 832-R-92-005, September 1992). Structural measures are the main means of storm water management. Storm water control measures are described and shown on the Erosion Control Plan Drawing. This document is available at the USEPA internet site; and

The latest version of *Protecting Water Quality: A field guide to erosion, sediment and storm water best management practices for development sites in Missouri*, published by the Missouri Department of Natural Resources. This manual is available on the department’s internet site at: http://www.dnr.mo.gov/env/wpp/wpcp-guide.htm.

Embankment slopes will be constructed on a 3 horizontal to 1 vertical slopes. Construction activities will be restricted to within 20’ outside of the farthest toe of slope or disturbed area.

**It will be the responsibility of the Construction Manager to revise the Erosion Control Plan Drawing if the location or types of control measures are changed in the field.**

4.2 Runoff Coefficient

In determining the runoff coefficient for the project site the method described City of Columbia’s Stormwater Management & Water Quality Manual. This method is based on the soils type and vegetative cover of both the existing and proposed conditions.

4.3 Project Site

The surface water management during construction will be through the use of silt fences, erosion control socks and soil stabilization measures. Storm water will be conveyed by overland surface flow to silt fences or erosion control socks. The silt fences or erosion control socks will remove suspended solids before entering the public storm system.

4.3.1 Stabilization Practices

Temporary and permanent stabilization methods will be used on the project site. Two major stabilization methods that will be used on the site are preserving existing vegetation where possible and disturbing only the area needed for project
construction. Disturbed portions of the site will be stabilized within 7 days after
construction activity has temporarily or permanently ceased, with two exceptions
—when snow cover precludes construction or construction will resume within 21
days. Stabilization practices may include temporary or permanent seeding,
mulching, geotextiles, sodding, or aggregate surfacing. Site access facilities
(entrances/exits and parking areas) will be surfaced with aggregate to reduce
sediment tracking.

4.3.2 Structural Practices

Temporary and permanent structural devices to divert, store, or limit runoff from
disturbed areas will be used on the project site. Such devices may include silt
fences, rock check dams, catch basin inlet protection, and storm water detention
basins. Details of the structural control measures are shown on the Grading Plan.
5.0 Potential Storm Water Pollutant Sources and Control Measures

Pollutants from various sources have the potential to enter the storm water system during project construction. A description of these potential pollutants and control measures to reduce the risk of storm water contamination is provided below.

5.1 Construction Silt and Dust

The pre-developed site is collected by a drainage system on site and flows above ground and through a pipe system to the north west, south west, and south east into un-named tributaries, 0.5 miles from Flat Branch Creek. Construction of the project will generate silt and fugitive dust.

Silt barriers (fences/socks) will be installed along perpendicular to the storm runoff on all disturbed slopes as shown on the Erosion Control Plan to control offsite discharges of silt. The silt barrier along the property lines will be installed after the clearing and grubbing necessary for placement of the silt barrier is complete, but before the clearing and grubbing of the remaining work area is started. The silt barrier will remain in place until the up slope surface is permanently stabilized. If construction in a particular area will cease temporarily, temporary soil stabilization will be implemented no more than 7 days after the construction has ceased unless activity will resume in that area within 21 days. Permanent stabilization will take place no later than 7 days after construction activities have permanently ceased in an area.

Fugitive dust may be generated during dry weather conditions. Dust control will be directed by the construction manager. Water sprays will be used for dust control.

5.2 Offsite Sediment Tracking

Contractor is responsible for keeping all public roadways adjacent to the construction site free of dirt and debris resulting from activities related to the construction of this project. The site access drive will be constructed with a stabilized construction entrance to reduce tracking of sediment offsite.

5.3 Petroleum Products

Construction equipment will require diesel fuel and oil on a regular basis so the potential exists for spills or leaks. All onsite vehicles will be monitored for leaks and receive regular preventative maintenance to ensure proper operation and reduce the chance of leaks. No “topping off” of fuel tanks will be allowed to reduce the possibility of spills.

Petroleum products will be stored in clearly labeled and tightly sealed containers or tanks. Any asphalt used onsite will be applied according to the manufacturer’s recommendations. Any soil contaminated by fuel or oil spills will be removed and disposed of at an approved disposal site by the Contractor.

5.4 Sanitary Wastes

A licensed sanitary waste management contractor will collect all construction or temporary sanitary wastes from portable units. The units will be maintained on a regular basis.
5.5 Hazardous Wastes

All hazardous waste materials will be disposed of according to local or state regulation or the manufacturer’s recommendations. The Construction Manager who will also be responsible for their implementation will instruct site personnel of these regulations and recommendations.

5.6 Fertilizers

Fertilizers will be applied as recommended by the manufacturer. After application the fertilizer will be worked into the soil to limit exposure to storm waters. Fertilizers will be stored in a covered area or in watertight containers. Any partially used bags or containers will be properly sealed and stored to avoid spills or leaks.

5.7 Paints

All paint containers will be tightly sealed and properly stored to prevent leaks or spills. Paint will not be discharged to the storm water system. Unused paints will be disposed of according to local and/or state regulations. Spray painting will not occur on windy days and a drop cloth will be used to collect and dispose of drips and over-spray associated with all painting activities.

5.8 Concrete Trucks

Concrete trucks will be allowed to discharge surplus concrete or drum wash water on the site in such a manner that prevents contact with storm waters discharging from the site. Dikes or barriers will be constructed around such an area to contain these materials until stable, at which time the materials will be disposed of in a manner acceptable to the Construction Manager.

5.9 Waste Materials

All construction waste material will be collected, deposited and stored in metal dumpsters from a licensed solid waste management contractor. No construction waste materials will be buried onsite. Any burning will be conducted in accordance with local and state regulations. It is the responsibility of the Construction Manager to obtain any and all permissions and permits for burning if so locally allowed. All site personnel will be instructed of the proper waste disposal procedures by the Construction Manager.

5.10 Allowable Non-Storm Water Discharges

The following sources of non-storm water discharges from project construction activities may be combined with storm water discharges.

- Waters used to wash vehicles or to control dust
- Pavement wash waters not containing toxic or hazardous substances
- Uncontaminated dewatering discharges
- Fire fighting waters
- Vegetation watering
- Potable or spring water discharges
6.0 Best Management Practices

Chemicals, petroleum products and other materials will be used and stored on the project site. Best Management Practices, such as good housekeeping measures, inspections, containment, and spill prevention practices will be used to limit contact between storm water and potential pollutants.

6.1 Good Housekeeping

The good housekeeping practices listed below will be followed to reduce the risk of potential pollutants entering storm water discharges. All construction personnel will be responsible for monitoring and maintaining housekeeping tasks or notifying the appropriate person of a problem.

- Store only enough products to do the job.
- Store all materials in a neat and orderly manner, in the appropriate containers and, if possible, under a roof or within an enclosure.
- Keep products in the original container with original manufactures label.
- Do not mix products unless recommended by the manufacturer.
- Use all of a product before disposing of the container.
- Use and dispose of products according to the manufacture’s recommendations or the Construction Manager’s direction.
- Perform regular inspections of the storm water system and the material storage areas.
- When and where appropriate, use posters, bulletin boards, meetings, etc. to remind and inform construction personnel of required procedures.

6.2 Hazardous Materials

Storage areas for hazardous materials such as oils, greases, paints, fuels, and chemicals must be provided with secondary containment to ensure that spills in these areas do not reach waters of the State. Contingencies for the proper disposal of contaminated soils shall be established (use of licensed hauler and approved landfill, for example) early in the construction period.

6.3 Spill Prevention and Response

In addition to the good housekeeping and hazardous materials storage procedures described above, spill prevention and cleanup practices will be as follows.

- Construction personnel will be informed of the manufacturer’s recommended spill cleanup methods and the location of that information and clean up supplies.
- Materials and equipment for the cleanup of a relatively small spill will be kept in the materials storage area. These facilities may include brooms, rags, gloves, shovels, goggles, sand, sawdust, plastic or metal trash containers, and protective clothing.
- All containers will be labeled, tightly sealed, and stacked or stored neatly and securely.
The spill response procedure will be as follows:

Step 1. Upon discovery of a spill, stop the source of the spill.
Step 2. Cease all spill material transfer until the release is stopped and waste removed from the spill site.
Step 3. Initiate containment to prevent spill from reaching State waters.
Step 4. Notify a Supervisor or the Construction Manager of the spill.
Step 5. The Construction Manager will coordinate further cleanup activities.
Step 6. In case of significant spill of hazardous material, the Construction Manager should call 911 in case of immediate danger to life or health and MU EHS, but MU EHS will decide if a reportable spill has occurred and will make the appropriate notifications to other agencies as necessary.
Step 7. Review the construction storm water pollution prevention plan and amend if needed.
Step 8. Record a description of the spill, cause, and cleanup measures taken.
7.0 Inspection, Maintenance, and Reporting Procedures

Site inspection and facility maintenance are important features of an effective storm water management system. Qualified personnel will inspect disturbed areas of the site not finally stabilized, storage areas exposed to precipitation, all control measures, and site access areas to determine if the control measures and storm water management system are effective in preventing significant impacts to receiving waters.

7.1 Erosion and Sediment Controls

The following procedures will be used to maintain erosion and sedimentation controls.

- The contractor shall perform inspections of erosion and sediment control measures at least once per seven calendar days. If a rainfall causes stormwater runoff to occur onsite, the BMPs must be inspected. These inspections must occur within 48 hours after the rain event has ceased during a normal work day and within 72 hours on the next business day if the rain event ceases during a non-work day such as a weekend or holiday.
- The contractor is responsible for providing erosion and sediment control BMPs to prevent sediment from reaching paved areas, storm sewer systems, drainage courses and adjacent properties. In the event the prevention measures are not effective, the contractor shall remove any debris, silt or mud and restore the right of way, or adjacent properties to original or better condition.
- The contractor shall seed, mulch or otherwise stabilize where soil disturbing activities will cease on any portion of the site and are not planned to resume for a period exceeding 14 calendar days. Temporary stabilization must be initiated immediately upon knowing the duration is more than 14 days. Temporary stabilization must be completed within 7 calendar days.
- The contractor is responsible for providing erosion and sediment control for the duration of the project.
- Temporary and permanent seeding and planting will be inspected for bare spots, washouts and healthy growth.
- Inspect riprap and aggregate covered areas for bare spots and washouts.
- The Construction Manager will select individuals to be responsible for inspections, maintenance, repairs, and reporting. The designated individuals will receive necessary training from the Construction Manager to properly inspect and maintain the controls in good working order.
- Inspection Form 1 will be completed after each inspection.

7.2 Non-Storm Water Controls

The following procedures will be used to maintain the non-storm water controls.

- All control measures will be inspected at least once a week and after each runoff producing rainfall event and daily during prolonged rainfall periods.
- All measures will be maintained in good working order. If a repair is necessary, it will be initiated within 24 hours of the inspection.
The Construction Manager will select individuals to be responsible for inspections, maintenance, repairs, and reporting. The designated individuals will receive the necessary training from the Construction Manager to properly inspect and maintain the controls in good working order.

- Inspection Form 2 will be completed after each inspection.
- The completed Inspection Forms will be kept with this Plan in Appendix B.

**7.3 Reporting**

Two inspection forms are provided on the following pages for recording inspections and maintenance of the control measures: Erosion and Sedimentation Controls (Inspection Form 1), and Non-Storm Water Source Controls (Inspection Form 2). All disturbed areas and materials storage areas require inspection at least once per seven calendar days. If a rainfall causes stormwater runoff to occur onsite, the BMPs must be inspected. These inspections must occur within 48 hours after the rain event has ceased during a normal work day and within 72 hours on the next business day if the rain event ceases during a no-work day such as a weekend or holiday. After each inspection, the inspector completes an inspection report and inserts that report in Appendix B of this Plan. Any required maintenance is initiated within 24 hours of the inspection.

A fully signed copy of this Plan and any support materials must be maintained at the project site from the date of the project initiation to the date of final stabilization. All records and supporting documents will be compiled in an orderly manner and maintained for a period of three years following final stabilization.

The generation of reports, as part of the construction process and inspection or amendment procedures, provides accurate records that can be used to evaluate the effectiveness of this Plan and document the plans compliance. Changes in design or construction of the storm water management system are documented and included with the Plan to facilitate Plan review or evaluation. Four forms have been developed to assist the Construction Manager with record keeping activities.

- Record of Plan Amendments
- Construction Activity Record
- Erosion and Sedimentation Controls Inspection Form 1
- Non-Storm Water Source Controls Inspection Form 2

Plan amendments will be documented on the form in the front of this Plan and on the drawings. A record of construction activities will be maintained in Appendix A of this Plan. Completed inspection and maintenance forms will be kept in Appendix B of this Plan.
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## Inspection Form 1  
### Erosion and Sedimentation Controls

Visually inspect disturbed areas of the construction site that have not been finally stabilized. Inspections to be completed every 7 days and within 24 hours of a rainfall event of ½ inch or more. Maintenance to be performed within 24 hours of inspection.

Inspector: _____________________________

Inspection Date: _____________________________

Date of last rainfall: _____________________________

Amount of last rainfall: ___________ inches

Report on the condition of the erosion and sedimentation controls installed at the construction site. Check for tears in silt barriers, for securely attached fabric to fence posts, and for depth of sediment in front of the silt barriers. The depth of sediment should not exceed one-half of the barrier height. Seeding/planting areas and rip-rap aggregate areas should be inspected for bare spots and washouts.

<table>
<thead>
<tr>
<th>Area</th>
<th>Condition of Control</th>
<th>Maintenance Required/Completion Date</th>
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Inspection Form 2
Non-Storm Water Source Controls

Visually inspect material storage and construction areas. Inspections to be completed every 7 days and within 24 hours of a rainfall event of ½ inch or more. Maintenance to be performed within 24 hours of inspection.

Inspector: ______________________________________________

Inspection Date: _________________________________________

Date of last rainfall: _________________________________

Amount of last rainfall: _____________ inches

Construction Dust- Is there excessive dust at the site that requires watering?

______________________________________________________________________________
______________________________________________________________________________

Sediment Tracking – Is Street mostly free from mud, dirt, or rock?

Is wash down required? ______________________________________________

Are graveled areas adequately covered? _________________________________

Petroleum/Chemical Products – Are spill containment structures secure? Product containers securely sealed? ______________________________________________

Sanitary Waste – Do portable sanitary units need service? _____________

Hazardous waste – Are hazardous wastes stored and disposed of in compliance with state and local regulations? _____________________
Inspection Form 2
Non-Storm Water Source Controls
(Continued)

Construction Waste – Are all construction waste materials collected and stored in approved dumpsters? ____________________________

Material Storage Areas Exposed to precipitation – Are materials handled and stored in a manner to prevent leakage and prevent pollutants from entering the storm water system? ____________________________

Other Non-Storm Water Discharges – Are waters from line flushing, pavement wash down, and dewatering directed to the storm water system prior to discharge?

_____________________

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<th>Maintenance Required</th>
<th>Maintenance Completed Date</th>
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</table>
8.0 Certification of Compliance

This Construction Storm Water Pollution Prevention Plan reflects best management practices and erosion and sedimentation control measures for storm water management as practices and erosion and sedimentation control measures for storm water management as recommended by the Environmental Protection Agency.

8.1 Contractor Certifications

The Contractor Certification forms provided in this section indicate that each contractor or subcontractor working on the project site understands the terms, conditions, and intent of the NPDES General Permit for Construction Storm Water Discharges Associated with Construction Activity and will implement the measures described in this Plan appropriate to his area of work.

If additional sheets are needed due to more subcontractors on site than sheets provided herein, additional sheets may be copied and inserted into booklet at the job site.
9.0 Project Completion

Construction is considered complete when the project is 70% of fully established plant density over 100% of the disturbed area. The Construction Manager may terminate construction erosion and sediment control measures at this time. A Notice of Termination should be submitted to the Missouri Department of Natural Resources (Form H) requesting termination of the Missouri State Operating Permit.

Permanent storm water control measures incorporated into the project site design include vegetated swales, aggregate surfacing of facility areas, culvert inlet/outlet protection and a storm water retention basin.

10.0 References

The references used to develop this plan and provide further details on items mentioned in this plan are as follows:


2) Protecting Water Quality: A field guide to erosion, sediment and storm water best management practices for development sites in Missouri, published by the Missouri Department of Natural Resources. This manual is available on the department’s internet site at: http://www.dnr.mo.gov.env/wpp/wpcp-guide.htm.

3) SECTION 015713 – TEMPORARY EROSION AND SEDIMENT CONTROL AND SWPPP. Available in the set of specifications in the project package.

4) Drawing Sheet C051, EROSION CONTROL PLAN and C060 – EROSION CONTROL DETAILS. Available in the drawing set in the project package.

5) Drawing Sheet C300, SITE GRADING PLAN. Available in the drawing set in the project package.
Appendix A

Location Map
USGS Map
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Section 18, Township 48 North, Range 12 West

Receiving Water: Flat Branch Creek

Project Location

USGS MAP
CP170621 - School of Music New Building
University of Missouri - Columbia, MO

Appendix A
EXHIBIT 2
November 2017
Appendix B

USDA Soil Map
Custom Soil Resource Report
Soil Map

Map projection: Web Mercator  Corner coordinates: WGS84  Edge tics: UTM Zone 15N WGS84

Map Scale: 1:681 if printed on A portrait (8.5" x 11") sheet.

Soil Map may not be valid at this scale.
Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot

Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Boone County, Missouri
Survey Area Data: Version 21, Sep 28, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 8, 2015—Jun 9, 2015

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.
Map Unit Legend

Boone County, Missouri (MO019)

<table>
<thead>
<tr>
<th>Map Unit Symbol</th>
<th>Map Unit Name</th>
<th>Acres in AOI</th>
<th>Percent of AOI</th>
</tr>
</thead>
<tbody>
<tr>
<td>60025</td>
<td>Urban land-Harvester complex, 2 to 9 percent slopes</td>
<td>2.5</td>
<td>100.0%</td>
</tr>
<tr>
<td><strong>Totals for Area of Interest</strong></td>
<td></td>
<td><strong>2.5</strong></td>
<td><strong>100.0%</strong></td>
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</tbody>
</table>

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,
onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a soil series. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into soil phases. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A complex consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An association is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An undifferentiated group is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include miscellaneous areas. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.
Boone County, Missouri

60025—Urban land-Harvester complex, 2 to 9 percent slopes

Map Unit Setting

National map unit symbol: 2qp0t
Mean annual precipitation: 37 to 47 inches
Mean annual air temperature: 52 to 57 degrees F
Frost-free period: 184 to 228 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 50 percent
Harvester and similar soils: 40 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Description of Harvester

Setting

Landform: Interfluvies, hillslopes
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Parent material: Loess

Typical profile

C1 - 0 to 7 inches: silt loam
C2 - 7 to 31 inches: silty clay loam
C3 - 31 to 80 inches: clay loam

Properties and qualities

Slope: 2 to 9 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 30 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: Deep Loess Upland Woodland (F115BY001MO)
Other vegetative classification: Trees/Timber (Woody Vegetation)
Hydric soil rating: No
Appendix C

SWPPP Details
CONCRETE WASHOUT DETAIL

NOT TO SCALE

1. ACTUAL LAYOUT DETERMINED IN FIELD.
2. THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FT. OF THE TEMPORARY CONCRETE WASHOUT FACILITY.
PHYSICAL DESCRIPTION:
Control measures designed to reduce the transport of dust, thereby preventing pollutants from infiltrating into stormwater. Examples for construction activities include vegetative cover, wind barriers, minimization of soil disturbance, spray or adhesives, tilling, chemical treatment and water sprays.

WHERE BMP IS TO BE INSTALLED:
Critical in areas of exposed soil.

CONDITIONS FOR EFFECTIVE USE OF BMP:
A combination of the following actions should be used to help reduce dust and air pollution at a construction site.

Minimize Concurrent Areas of Soil Disturbance - Phase work to the extent practical.
Vegetative Cover - For areas not subjected to traffic, vegetation provides the most practical method of dust control and should be established as early as possible. Temporary vegetation should also be used. See Seeding and Sodding BMPs for additional information.
Sprinkling - The site can be sprinkled with water until the surface is moist. This practice is effective for dust control on large areas, haul roads or other traffic routes, but constant repetition is required for effective control.
Tilling - Roughen the surface and bring clods to the surface. This is an emergency measure that should be used before soil blowing starts. Begin tillage on windward side of the site. Chisel plows with shanks spaced about 12 inches to 18 inches apart and spring toothed harrows are examples of equipment that may produce the desired effect. See Surface Roughening BMP for additional information.
Wind Barriers - Solid board fences, snow fences, burlap fences, crate walls and similar materials can be used to control air currents and blowing soil. Barriers placed at right angles to prevailing wind currents at intervals of about 10 times their height are effective in controlling soil blowing.
Street Cleaning - Paved areas that have soil on them from construction sites should be cleaned continuously, at least daily, utilizing a street sweeper or bucket type loader or scraper.
Mulching - This practice offers a fast and effective means of controlling dust when properly applied. Binders and tackifiers should be used on organic mulches. Mulching is not recommended for areas with heavy traffic. See Mulching BMP for additional information.

NOTE: If calcium chloride or spray-on adhesives are used for dust control, a permit may be required from the Missouri Department of Natural Resources.

WHEN BMP IS TO BE INSTALLED:
 Routinely, especially in advance of and during periods of dry weather

INSTALLATION/CONSTRUCTION PROCEDURES: See Conditions for Effective Use above

O&M PROCEDURES:
Inspect daily and renew as needed

SITE CONDITIONS FOR REMOVAL:
Maintain practices until all disturbed areas are vegetated or paved and blowing soil is no longer a concern.
PHYSICAL DESCRIPTION:
A layer of organic material designed to protect exposed soil or freshly seeded areas from erosion by eliminating direct impact of precipitation and slowing overland flow rates. Mulch materials may include, but are not limited to, such things as grass, hay, straw, wood chips, wood fibers, and shredded bark.

WHERE BMP IS TO BE INSTALLED:
Typically installed on seeded areas for temporary use, and in landscaped areas for permanent use.

CONDITIONS FOR EFFECTIVE USE OF BMP:
Type of Flow: Sheet flow only
Slopes: See attached chart for types of mulch acceptable as a function of slope length and steepness
Mulching Rates: See attached table

WHEN BMP IS TO BE INSTALLED:
Immediately after grading landscaped areas or seeding other areas.

INSTALLATION/CONSTRUCTION PROCEDURES:
✓ Install upstream BMPs to protect areas to be mulched
✓ Rough grade area and remove all debris larger than 1 inch if area is to be vegetated and moved in the future, larger than 2 inches if area is to be permanently mulched
✓ If area is to be seeded, follow requirements of Seeding BMP
✓ Spread mulch and anchor by punching it into the ground, using netting, peg and twine, or tacking with liquid binder

O&M PROCEDURES:
✓ Inspect at least every week and after every storm until adequate vegetation is established; annually for permanent mulch
✓ Protect from vehicular and foot traffic
✓ Repair damaged, degraded or eroded areas – reseed as needed and replace mulch

SITE CONDITIONS FOR REMOVAL:
Temporary mulch should be removed when adequate vegetation is established.

TYPICAL DETAILS:
Type of mulch required for various slopes and application rates attached

GENERAL MULCH RECOMMENDATIONS TO PROTECT FROM SPLASH AND SHEET FLOW

<table>
<thead>
<tr>
<th>Material</th>
<th>Rate Per Acre</th>
<th>Requirements</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straw</td>
<td>2 1/2 bns</td>
<td>Dry, unchopped, unweathered</td>
<td>Spread by hand or machine must be ached or fed down</td>
</tr>
<tr>
<td>Wood Fiber or Wood Chip</td>
<td>5 - 10 ft</td>
<td>Air Dry. Add Nitrogen fertilizer at 12 lb/ton</td>
<td>Use with hydroseed, may be used to tack straw. Do not use in hot, dry weather.</td>
</tr>
<tr>
<td>Wood Chips</td>
<td>5 - 8 ft</td>
<td>Air Dry. Add Nitrogen fertilizer at 12 lb/ton</td>
<td>Apply with blower, chip handler, or by hand. Not for fine leaf areas.</td>
</tr>
<tr>
<td>Bark</td>
<td>35 yd²</td>
<td>Air dry, shredded, or hammermilled, or chips</td>
<td>Apply with mulch blower, chip handler, or by hand. Do not use aed tack.</td>
</tr>
</tbody>
</table>

MULCHING
PHYSICAL DESCRIPTION:
Establishment of vegetation by spreading grass seed designed to protect exposed soil from erosion by eliminating direct impact of precipitation and slowing overland flow rates. Once established, the vegetative cover will also filter pollutants from the runoff.

WHERE BMP IS TO BE INSTALLED:
Exposed soil after a phase of rough or finish grading has been completed, or areas where no activity will occur for 30 days.

CONDITIONS FOR EFFECTIVE USE OF BMP:
Type of Flow: Sheet flow
Contributing Slope Length: 3:1 foot maximum for 3:1 slopes
25 foot maximum for slope between 3:1 and 10:1
100 foot maximum for slopes under 10%
Minimum Rates: See attached chart(s)
Acceptable Dates: See attached chart

WHEN BMP IS TO BE INSTALLED:
Immediately after rough or finish grading is completed.

INSTALLATION/CONSTRUCTION PROCEDURES:
- Install upstream BMPs to protect area to be seeded
- Rough grade area and remove all debris larger than 1 inch in diameter and concentrated areas of smaller debris
- Install stabilization grids, if needed
- Mix soil amendments (lime, fertilizer, etc.) into top 3-6" of soil as needed
- Plant seed 1/4-1/2 inch deep
- Roll lightly to firm surface
- Cover seeded area with mulch unless seeding completed during optimum spring and summer dates
- Install additional stabilization (netting, boxed fiber matrix, etc.) as required
- Water immediately - enough to soak 4 inches into soil without causing runoff

CARE PROCEDURES:
- Inspect at least every week and after every storm
- Protect area from vehicular and foot traffic
- Reseed areas that have not sprouted within 21 days of planting.
- Repair damaged or eroded areas and reseed and stabilize as needed
- Do not mow until 4 inches of growth occurs
- During the first four months, mow no more than 1/3 the grass height
- Refertilize during 2nd growing season

SITE CONDITIONS FOR REMOVAL:
Does not require removal, but temporary seeding can be removed immediately prior to work returning to an area

TYPICAL DETAILS:
Minimum seeding rates and acceptable dates for work attached

---

### Dates For Seeding

<table>
<thead>
<tr>
<th>Permanent Seeding</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
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<tbody>
<tr>
<td>Tall Fescue</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
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<td>O</td>
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<td>O</td>
</tr>
<tr>
<td>Smooth Brome</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
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<td>O</td>
</tr>
<tr>
<td>Fescue &amp; Brome</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
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<tr>
<td>Fescue, Rye &amp; Bluegrass</td>
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<td>A</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>P</td>
<td>P</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>P</td>
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<table>
<thead>
<tr>
<th>Temporary Seeding</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
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<th>Jul</th>
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<th>Dec</th>
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<tbody>
<tr>
<td>Rye or Suden</td>
<td>A</td>
<td>A</td>
<td>O</td>
<td>O</td>
<td>O</td>
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<td>O</td>
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<td>O</td>
<td>O</td>
<td>P</td>
<td>P</td>
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</table>

O - Optimum seeding dates
A - Acceptable seeding dates
P - Permitted seeding dates with reseeding 2 months later - Initially use 50% of seed and 75% of fertilizer. Reseed with additional 75% seed and remaining fertilizer.

### Minimum Fertilizer and Seeding Rates

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<th>lb/1000 sq.ft.</th>
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<td>Mixture #1</td>
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<tr>
<td>Mixture #2</td>
<td>210</td>
<td>4.8</td>
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</table>

Mixture #1 - Tall Fescue @ 150 lbs./ac. and Bermuda @ 100 lbs./ac.
Mixture #2 - Tall Fescue @ 100 lbs./ac., Perennial Rye Grass @ 100 lbs./ac. and Kentucky Bluegrass @ 10 lbs./ac.

* Seeding rate for slopes in excess of 20% (8:1) shall be 10 lb./1000 sq.ft.

<table>
<thead>
<tr>
<th></th>
<th>lb/acre</th>
<th>lb/1000 sq.ft.</th>
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</thead>
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<td><strong>Temporary Seeding</strong></td>
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<td>Oats</td>
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### Fertilizer

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<td>30</td>
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<tr>
<td>Potassium</td>
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<td>30</td>
</tr>
<tr>
<td>Lime - ENM</td>
<td>600</td>
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</table>

ENM - effective neutralizing material per State evaluation of quarried rock.
DEFINITION & PURPOSE
Dewatering operations are practices using dewatering bags, filter socks, rock bags or a suction pump with skimmer to manage the discharge of pollutants when stormwater and non-stormwater must be removed from a construction site. Water cannot be directly pumped into storm sewer system, streams, or lakes without first going through a sediment control BMP.

CONDITIONS FOR EFFECTIVE USE
These practices are implemented for removing standing stormwater and allowable non-stormwater discharges from construction sites. Non-stormwater removal includes groundwater, water from cofferdams, water diversions, and waters used during construction activities that must be removed from a work area and are authorized discharges in the state land disturbance permit. Site conditions will dictate the design. A dewatering plan should be submitted as part of the SWPPP detailing the location of dewatering activities, equipment, BMPs and discharge point. Additional permits or special permission from other agencies may be required for some dewatering operations. It is best if stormwater is allowed to settle in the trap or basin for a minimum of 24 hours after the storm event. The intake hose of the dewatering pump should be elevated off the bottom. Dewatering discharges must not cause erosion at the discharge point. See MDNR Guide Section 6-207 for additional guidance.

INSTALLATION/CONSTRUCTION PROCEDURES
Implement the dewatering plan detailed in the SWPPP as needed to dewater work areas.

OPERATION & MAINTENANCE PROCEDURES
Dewatering operations should be closely attended when in use to ensure BMPs are functioning properly. Accumulated sediment removed during the maintenance of a dewatering device can be incorporated into the site.

SITE CONDITIONS FOR REMOVAL
Remove the dewatering operation when dewatering the site is no longer necessary.
CONCRETE WASTE MANAGEMENT

DESCRIPTION – The purpose of this section is to set forth procedures and practices designed to eliminate the discharge of concrete waste materials to storm drainage systems, drainage areas, streets or watercourses, which shall be required of the contractor.

APPROPRIATE APPLICATION OF BMP – Concrete waste management procedures and practices will be implemented on construction projects as follows:

- Where concrete is used as a construction material or where concrete dust and debris result from demolition activities.
- Where slurries containing Portland cement concrete (PCC), asphaltic concrete (AC) or bituminous concrete (BC) are generated, such as from saw cutting, coring, grinding, grooving and hydro-concrete demolition.
- Where concrete trucks and other concrete-coated equipment are washed on-site, when approved by the Resident Engineer or Construction Inspector.
- Where mortar-mixing station exist.

AWARENESS / ENFORCEMENT

- Contractor’s and / or permit holder’s superintendent or representative shall oversee and enforce concrete waste management procedures.
  - Discuss the concrete management techniques described in this BMP (such as handling of concrete waste and washout) with the ready-mix concrete supplier before any deliveries are made.
  - The site superintendent shall make drivers aware of the presence of the concrete waste management facilities. The site superintendent should post signage indicating the location and designated use of the concrete waste management areas, and provide careful oversight to inspect for evidence of improper dumping of concrete waste and wash water.

IMPLEMENTATION

- Contractors, private individuals, public agencies, etc. using concrete material, shall incorporate requirements for concrete waste management into material supplier and subcontractor agreements. Include requirements in contracts with concrete delivery companies that drivers must use designated concrete washout facilities.
- Store dry and wet materials under cover, away from drainage areas.
- Avoid mixing excess amounts of fresh concrete.
- Do not allow excess concrete to be dumped on-site, except in designated areas.
- Cover the structures before predicted rainstorms to prevent overflows.
- Monitor on site concrete waste storage and disposal procedures at least weekly or as directed by the Resident Engineer or Construction Inspector.

WASHOUT AREA PROTOCOL

- Contain concrete washout on site or take it offsite for disposal in designated areas only.
- Do not wash out concrete trucks into storm drains, open ditches, streets, or streams.
- For onsite washout:
  - Locate washout area on-site at least 50 feet from storm drains, open ditches, or water bodies. Do not allow runoff from this area by constructing a temporary pit or bermed area large enough to contain liquid and solid waste. Locate it in a dirt area where the liquid portion of the washout can soak into the ground. They are preferably built below-grade to prevent Breaches and reduce the likelihood of runoff. Discontinue use of the washout once it reaches 75% capacity. Washouts should be sized to handle solids and wash water to prevent overflow. It is estimated that 7 gallons of wash water are used to wash one truck chute and 50 gallons are used to wash out the hopper of a concrete pump. Implement a maintenance schedule for washout areas.
  - Temporary washout facilities should have pit or bermed areas of sufficient volume to completely contain all liquid and waste concrete materials generated during washout procedures.
  - Washout wastes into the pit where the concrete can set, be broken up, and used on site; or buried on site; or disposed of properly.

(continued)

- Do not wash sweepings from exposed aggregate concrete into the street or storm drain. Collect and return sweepings to aggregate base stockpile or dispose of in the trash.
- Do not place concrete wash water in a pit that is connected to the storm drain system or that drains to nearby waterways.
- Locate concrete washout facilities in an area that allows convenient access for concrete trucks, preferably near the area where the concrete is being poured. Appropriate gravel or rock should cover paths to concrete washout facilities if the facilities are located on undeveloped property. These areas should be far enough away from other construction traffic to reduce the likelihood of accidental damage and spills. The number of facilities you install should depend on the expected demand for storage capacity. On large sites with extensive concrete work, place washouts in multiple locations for ease of use. If the dried concrete washout is buried on the site it shall have a 2-foot cover minimum. The 2-foot cover shall match with surrounding finished grade.
- Concrete washed out in areas other than those designated for such activity, shall be cleaned up by the contractor.
- Install signage adjacent to each washout facility to inform concrete equipment operators to utilize the proper facilities.
- Perform washout of concrete mixers, delivery trucks and other delivery systems in designated areas only.
- Wash out concrete from concrete pump bins into concrete pump truck and discharge into designated washout area.
- Equipment that cannot be easily moved, such as concrete pavers, shall only be washed in designated areas that do not drain to waterways or storm drain systems.
- Backfill and repair holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities.
- Wash out concrete on site into a future designated final concrete pour location. This location cannot be within 50 feet of a storm or sanitary sewer; or water course; or where it can drain off site. The washout cannot jeopardize the integrity of the final concrete pour. Concrete to be removed from the site shall be disposed of in conformance with State and Local Requirements.
- A self-contained and watertight container may be used to control, capture, and contain concrete wastewater and washout material. The container must be portable and temporary, damage resistant, protect against spills and leaks, and sized to handle solids and wash water to prevent overflow. The container should be emptied and cleaned when 75% of its capacity is reached. After all liquids evaporate or are pumped or vacuumed, and the remaining slurry solidified, the Contractor may bury the solids on site.
Appendix D

SWPPP Site Plan
1. Refer to Sheet E102. Follow the Sequence of Events.

2. Refer to Sheet E110. Refer to University Project #:

3. Perform clearing, grubbing and rough grading for building, parking lot, sidewalks, and other remaining temporary sediment control devices. Clearing & demolition activities shall not occur to re-disturb the area. This stabilization can be achieved or until further construction activities take place to re-disturb the area. This stabilization, where necessary, shall be prepared in the materials available.

4. The contractor shall clean the street once per day minimum. Sidewalks adjacent to the construction site free of dirt and debris. Stockpile areas shall be graded such that they do not exceed the elevation of the adjacent road. The contractor shall keep the entire project site free of debris.

5. Contractor shall provide temporary seeding, berms, silt fences, and permanent retention pond. One or more construction fencing shall be designated on site effective, the contractor shall remove any debris sediment from reaching the public right-of-way, streams or adjacent body or portion of the stormwater system. One or more locations for concrete wash out will be designated on site. Containment when more than 50 gallons of fuel are stored on site.

6. Stockpile areas shall be graded such that they do not exceed the elevation of the adjacent road. The contractor shall keep the entire project site free of debris.

7. The contractor shall provide temporary seeding, berms, silt fences, and permanent retention pond. One or more construction fencing shall be designated on site effective, the contractor shall remove any debris sediment from reaching the public right-of-way, streams or adjacent body or portion of the stormwater system. One or more locations for concrete wash out will be designated on site. Containment when more than 50 gallons of fuel are stored on site.

8. The contractor shall clean the street once per day minimum. Sidewalks adjacent to the construction site free of dirt and debris. Stockpile areas shall be graded such that they do not exceed the elevation of the adjacent road. The contractor shall keep the entire project site free of debris.

9. Refer to University Project #:

10. Perform fine grading.

11. Remove temporary inlet protection.

12. Some of the erosion and sediment control measures, will be included in this construction plan. The contractor shall provide temporary silt fences, berms, and silt traps. The contractor shall keep the entire project site free of debris.

13. Remove temporary inlet protection.

14. The contractor shall provide temporary seeding, berms, silt fences, and permanent retention pond. One or more construction fencing shall be designated on site effective, the contractor shall remove any debris sediment from reaching the public right-of-way, streams or adjacent body or portion of the stormwater system. One or more locations for concrete wash out will be designated on site. Containment when more than 50 gallons of fuel are stored on site.

15. The contractor shall clean the street once per day minimum. Sidewalks adjacent to the construction site free of dirt and debris. Stockpile areas shall be graded such that they do not exceed the elevation of the adjacent road. The contractor shall keep the entire project site free of debris.

16. An inspection log shall be maintained and shall be available for review by the regulatory authority. Effective, the contractor shall remove any debris sediment from reaching the public right-of-way, streams or adjacent body or portion of the stormwater system. One or more locations for concrete wash out will be designated on site. Containment when more than 50 gallons of fuel are stored on site.

17. Concrete wash or rinse water from concrete mixing equipment, and fuel storage containers shall be provided in accordance with the requirements of Article 17.5.2 and associated regulations.

18. Polluton of streams, lakes, wetlands, drainage ways or concrete wash or rinse water from concrete mixing equipment, and fuel storage containers shall be provided in accordance with the requirements of Article 17.5.2 and associated regulations.
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Appendix E

Construction Activity Record
Construction Activity Record

An accurate and up-to-date record of construction activity must be maintained as a part of this plan. Record the information below on an ongoing basis.

- Dates when major soil disturbing activities occur
- Dates when construction activities temporarily cease on a portion of the site
- Dates when construction activities permanently cease on a portion of the site
- Dates when stabilization measures are initiated

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
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</tbody>
</table>
Appendix F

Completed Inspection Forms
SECTION 1.F
INDEX OF DRAWINGS

CP170621 - SCHOOL OF MUSIC NEW BUILDING

Drawings referred to in and accompanying Project Manual consist of following sheets October 4, 2017.

GENERAL:
G000   Cover Sheet
G001   Code Information
G002   Code Plans
G003   Code Variances
G004   Code Variances
G005   Code Variances

SURVEY:
SUR-1 Site Survey -1
SUR-2 Site Survey -2

CIVIL:
C051   Erosion Control Plan
C060   Erosion Control Details
C071   Traffic Control Plan
C100   Site Demolition Plan
C200   Site Dimension Plan
C300   Overall Site Grading Plan
C301   Detailed Site Grading Plan – 1
C302   Detailed Site Grading Plan – 2
C400   Site Utility Plan
C401   Site Utility Profiles -1
C402   Site Utility Profiles – 2
C403   Site Utility Profiles - 3
C501   Site Details -1
C502   Site Details - 2

LANDSCAPE:
L050   Site Plan
L051   Site Plan
L100   Dimension Plan
L110   Dimension Plan
INDEX - 1
| L550 | Site Details |
| L551 | Site Details |
| L552 | Site Details |
| L553 | Site Details |

**ARCHITECTURAL:**
- **A000** Architectural Materials, Graphic Symbols & Abbreviations
- **A001** Installation Standards
- **A010** Door Schedule, Door Types, Frame Types & Frame Profiles
- **A014** Interior Door Details
- **A025** Precast Panel Types
- **A030** Interior Schedules
- **A040** Partition Types
- **A042** Typical Acoustical Details
- **A043** Reference RCP – Level 3 Beam Wrap
- **A045** UL Assemblies & Data
- **A046** UL Assemblies & Data
- **A047** UL Assemblies & Data
- **A048** UL Assemblies & Data
- **A049** UL Assemblies & Data
- **A050** UL Assemblies & Data

- **A101** Floor Plan – Level 1
- **A102** Floor Plan – Level 2
- **A103** Floor Plan – Level 3
- **A104** Floor Plan – Level 4
- **A105** Roof Plan

- **A111** Slab Plan – Level 1
- **A112** Slab Plan – Level 2
- **A113** Slab Plan – Level 3
- **A114** Slab Pan – Level 4

- **A151** Reflected Ceiling Plan – Level 1
- **A152** Reflected Ceiling Plan – Level 2
- **A153** Reflected Ceiling Plan – Level 3
- **A154** Reflected Ceiling Plan – Level 4

- **A200** Exterior Building Elevations
- **A201** Exterior Building Elevations
- **A203** Mock-Up (Addenda 1 issue)
- **A250** Building Sections

- **A300** Exterior Wall Sections
- **A301** Exterior Wall Sections
- **A302** Exterior Wall Sections
- **A303** Exterior Wall Sections
- **A304** Exterior Wall Sections
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CP172801 – GENERAL SITE: SCHOOL OF MUSIC EXTENDED UTILITIES

Drawings referred to in and accompanying Project Manual consist of following sheets October 4, 2017.

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END OF SECTION
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
Tammy Cavender
Acting Department Director
Division of Labor Standards

This Is A True And Accurate Copy Which Was Filed With The Secretary of State: March 10, 2017

Last Date Objections May Be Filed: April 10, 2017

Prepared by Missouri Department of Labor and Industrial Relations
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Fringe Benefit Percentage is of the Basic Hourly Rate

**Annual Incremental Increase
**Welders receive rate prescribed for the occupational title performing operation to which welding is incidental.**

Use Building Construction Rates on Building construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(2).

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).

a - Vacation: Employees over 5 years - 8%; Employees under 5 years - 6%

b - All work over $7 Mil. Total Mech. Contract - $38.00, Fringes - $26.93
  All work under $7 Mil. Total Mech. Contract - $36.66, Fringes - $21.49

c - Vacation: Employees after 1 year - 2%; Employees after 2 years - 4%; Employees after 10 years - 6%
BOONE COUNTY
BUILDING CONSTRUCTION - OVERTIME SCHEDULE

FED: Minimum requirement per Fair Labor Standards Act means time and one-half (1 ½) shall be paid for all work in excess of forty (40) hours per work week.

NO. 9: Means the regular workday starting time of 8:00 a.m. (and resulting quitting time of 4:30 p.m.) may be moved forward to 6:00 a.m. or delayed one hour to 9:00 a.m. All work performed in excess of the regular work day and on Saturday shall be compensated at one and one-half (1½) times the regular pay. In the event time is lost during the week due to weather conditions, the Employer may schedule work on the following Saturday at straight time. All work accomplished on Sunday and holidays shall be compensated for at double the regular rate of wages. The work week shall be Monday through Friday, except for midweek holidays.

NO. 11: Means eight (8) hours shall constitute a day's work, with the starting time to be established between 6:00 a.m. and 8:00 a.m. from Monday to Friday. Time and one-half (1½) shall be paid for first two (2) hours of overtime Monday through Friday and the first eight (8) hours on Saturday. All other overtime hours Monday through Saturday shall be paid at double (2) time rate. Double (2) time shall be paid for all time on Sunday and recognized holidays or the days observed in lieu of these holidays.

NO. 12: Means the work week shall commence on Monday at 12:01 a.m. and shall continue through the following Friday, inclusive of each week. All work performed by employees anywhere in excess of forty (40) hours in one (1) work week, shall be paid for at the rate of one and one-half (1½) times the regular hourly wage scale. All work performed within the regular working hours which shall consist of a ten (10) hour work day except in emergency situations. Overtime work and Saturday work shall be paid at one and one-half (1½) times the regular hourly rate. Work on recognized holidays and Sundays shall be paid at two (2) times the regular hourly rate.

NO. 18: Means the regular work day shall be eight (8) hours. Working hours are from six (6) hours before Noon (12:00) to six (6) hours after Noon (12:00). The regular work week shall be forty (40) hours, beginning between 6:00 a.m. and 12:00 Noon on Monday and ending between 1:00 p.m. and 6:00 p.m. on Friday. Saturday will be paid at time and one-half (1½). Sunday and Holidays shall be paid at double (2) time. Saturday can be a make-up day if the weather has forced a day off, but only in the week of the day being lost. Any time before six (6) hours before Noon or six (6) hours after Noon will be paid at time and one-half (1½).

NO. 22: Means a regular work week of forty (40) hours will start on Monday and end on Friday. The regular work day shall be either eight (8) or ten (10) hours. If a crew is prevented from working forty (40) hours Monday through Friday, or any part thereof by reason of inclement weather, Saturday or any part thereof may be worked as a make-up day at the straight time rate. Employees who are part of a regular crew on a make-up day, notwithstanding the fact that they may not have been employed the entire week, shall work Saturday at the straight time rate. A workday is to begin between 6:00 a.m. and 9:00 a.m. However, the project starting time may be advanced or delayed if mutually agreed to by the interest parties. For all time worked on recognized holidays, or days observed as such, double (2) time shall be paid.
BOONE COUNTY
BUILDING CONSTRUCTION - OVERTIME SCHEDULE

NO. 26: Means that the regular working day shall consist of eight (8) hours worked between 6:00 a.m., and 5:00 p.m., five (5) days per week, Monday to Friday, inclusive. Hours of work at each jobsite shall be those established by the general contractor and worked by the majority of trades. (The above working hours may be changed by mutual agreement). Work performed on Construction Work on Saturdays, Sundays and before and after the regular working day on Monday to Friday, inclusive, shall be classified as overtime, and paid for at double (2) the rate of single time. The employer may establish hours worked on a jobsite for a four (4) ten (10) hour day work week at straight time pay for construction work; the regular working day shall consist of ten (10) hours worked consecutively, between 6:00 a.m. and 6:00 p.m., four (4) days per week, Monday to Thursday, inclusive. Any work performed on Friday, Saturday, Sunday and holidays, and before and after the regular working day on Monday to Thursday where a four (4) ten (10) hour day work week has been established, will be paid at two times (2) the single time rate of pay. The rate of pay for all work performed on holidays shall be at two times (2) the single time rate of pay.

NO. 28: Means a regular workday shall consist of eight (8) hours between 7:00 a.m. and 5:30 p.m., with at least a thirty (30) minute period to be taken for lunch. Five (5) days a week, Monday through Friday inclusive, shall constitute a work week. The Employer has the option for a workday/workweek of four (4) ten (10) hour days (4-10’s) provided:

- The project must be for a minimum of four (4) consecutive days.
- Starting time may be within one (1) hour either side of 8:00 a.m.
- Work week must begin on either a Monday or Tuesday: If a holiday falls within that week it shall be a consecutive work day. (Alternate: If a holiday falls in the middle of a week, then the regular eight (8) hour schedule may be implemented).
- Any time worked in excess of any ten (10) hour work day (in a 4-10 hour work week) shall be at the appropriate overtime rate.

All work outside of the regular working hours as provided, Monday through Saturday, shall be paid at one & one-half (1½) times the employee's regular rate of pay. All work performed from 12:00 a.m. Sunday through 8:00 a.m. Monday and recognized holidays shall be paid at double (2) the straight time hourly rate of pay. Should employees work in excess of twelve (12) consecutive hours they shall be paid double time (2X) for all time after twelve (12) hours. Shift work performed between the hours of 4:30 p.m. and 12:30 a.m. (second shift) shall receive eight (8) hours pay at the regular hourly rate of pay plus ten (10%) percent for seven and one-half (7½) hours work. Shift work performed between the hours of 12:30 a.m. and 8:00 a.m. (third shift) shall receive eight (8) hours pay at the regular hourly rate of pay plus fifteen (15%) percent for seven (7) hours work. A lunch period of thirty (30) minutes shall be allowed on each shift. All overtime work required after the completion of a regular shift shall be paid at one and one-half (1½) times the shift hourly rate.

NO. 33: Means the standard work day and week shall be eight (8) consecutive hours of work between the hours of 6:00 a.m. and 6:00 p.m., excluding the lunch period Monday through Friday, or shall conform to the practice on the job site. Four (4) days at ten (10) hours a day may be worked at straight time, Monday through Friday and need not be consecutive. All overtime, except for Sundays and holidays shall be at the rate of time and one-half (1½). Overtime worked on Sundays and holidays shall be at double (2) time.

NO. 40: Means the regular working week shall consist of five (5) consecutive (8) hour days' labor on the job beginning with Monday and ending with Friday of each week. Four (4) 10-hour days may constitute the regular work week. The regular working day shall consist of eight (8) hours labor on the job beginning as early as 6:00 a.m. and ending as late as 5:30 p.m. All full or part time labor performed during such hours shall be recognized as regular working hours and paid for at the regular hourly rate. All hours worked on Saturday and all hours worked in excess of eight (8) hours but not more than twelve (12) hours during the regular working week shall be paid for at one and one-half (1½) the regular hourly rate. All hours worked on Sundays and holidays and all hours worked in excess of twelve (12) hours during the regular working day shall be paid at two (2) times the regular hourly rate. In the event of rain, snow, cold or excessively windy weather on a regular working day, Saturday may be designated as a "make-up" day. Saturday may also be designated as a "make-up" day, for an employee who has missed a day of work for personal or other reasons. Pay for "make-up" days shall be at regular rates.
NO. 42: Means eight (8) hours between the hours of 8:00 a.m. and 4:30 p.m. shall constitute a work day. The starting time may be advanced one (1) or two (2) hours. Employees shall have a lunch period of thirty (30) minutes. The Employer may provide a lunch period of one (1) hour, and in that event, the workday shall commence at 8:00 a.m. and end at 5:00 p.m. The workweek shall commence at 8:00 a.m. on Monday and shall end at 4:30 p.m. on Friday (or 5:00 p.m. on Friday if the Employer grants a lunch period of one (1) hour), or as adjusted by starting time change as stated above. All work performed before 8:00 a.m. and after 4:30 p.m. (or 5:00 p.m. where one (1) hour lunch is granted for lunch) or as adjusted by starting time change as stated above or on Saturday, except as herein provided, shall be compensated at one and one-half (1½) times the regular hourly rate of pay for the work performed. All work performed on Sunday and recognized holidays shall be compensated at double (2) the regular hourly rate of pay for the work performed. When working a five 8-hour day schedule and an Employer is prevented from working forty (40) hours, Monday through Friday, or any part thereof by reason of inclement weather (rain or mud), Saturday or any part thereof may be worked as a make-up day at the straight time rate. The Employer shall have the option of working five eight (8) hour days or four ten (10) hour days Monday through Friday. If an Employer elects to work five (5) eight (8) hour days during any work week, hours worked more than eight (8) per day or forty (40) hours per week shall be paid at time and one-half (1½) the hourly rate Monday through Friday. If an Employer elects to work four (4) ten (10) hour days in any week, work performed more than ten (10) hours per day or forty (40) hours per week shall be paid at time and one-half (1½) the hourly rate Monday through Friday. If an Employer is working ten (10) hour days and loses a day due to inclement weather, they may work ten (10) hours Friday at straight time. All hours worked over the forty (40) hours Monday through Friday will be paid at time and one-half (1½) overtime rate. Overtime shall be computed at half-hour intervals. Shift Work: Two (2) or three (3) shifts shall be permitted, provided such shifts are scheduled for a minimum of three (3) consecutive days. The second shift shall begin at 4:30 p.m. and end at 12:30 a.m. with one-half (1/2) hour for lunch between 7:30 p.m. and 9:00 p.m. and shall receive eighty (8) hours’ pay. The third shift shall begin at 12:30 a.m. and end at 8:00 a.m. with one-half (1/2) hour for lunch between 3:30 a.m. and 5:00 a.m. and shall receive (8) hours’ pay. There shall be at least one (1) foreman on each shift on jobs where more than one shift is employed, provided that there are two (2) or more employees on second and on the third shifts. All shifts shall arrange to interchanges working hours at the end of each week. When three shifts are used, the applicable rate must be paid from Saturday at 8:00 a.m. until the following Monday at 8:00 a.m. When three shifts are employed, the second and third shifts shall contain at least one-half (1/2) as many employees as the first shift.

NO. 43: Eight (8) hours shall constitute a work day between the hours of 7:00 a.m. and 4:30 p.m. Forty (40) hours within five (5) days, Monday through Friday inclusive, shall constitute the work week. Work performed in the 9th and 10th hour, Monday through Friday, shall be paid at time and one-half (1½) the regular straight time rate of pay. Contractor has the option to pay two (2) hours per day at the time and one-half (1½) the regular straight time rate of pay between the hours of 6:00 a.m. and 5:30 p.m., Monday through Friday. Work performed outside the regularly scheduled working hours and on Saturdays, Sundays and recognized legal holidays, or days celebrated as such, shall be paid for at the rate of double (2) time.

NO. 55: Means the regular work day shall be eight (8) hours between 6:00 a.m. and 4:30 p.m. The first two (2) hours of work performed in excess of the eight (8) hour work day, Monday through Friday, and the first ten (10) hours of work on Saturday, shall be paid at one & one-half (1½) times the straight time rate. All work performed on Sunday, observed holidays and in excess of ten (10) hours a day, Monday through Saturday, shall be paid at double (2) the straight time rate.

NO. 57: Means eight (8) hours per day shall constitute a day's work and forty (40) hours per week, Monday through Friday, shall constitute a week's work. The regular starting time shall be 8:00 a.m. If a second or third shift is used, the regular starting time of the second shift shall be 4:30 p.m. and the regular starting period for the third shift shall be 12:30 a.m. These times may be adjusted by the employer. The day shift shall work a regular eight (8) hours shift as outlined above. Employees working a second shift shall receive an additional $0.25 above the regular hourly rate and perform seven and one-half (7 1/2) hours work for eight (8) hours pay. Third shift employees shall be paid an additional $0.50 above the regular hourly rate and work seven (7) hours for eight (8) hours pay. When circumstances warrant, the Employer may change the regular workweek to four (4) ten-hour days at the regular time rate of pay. All time worked before and after the established workday of eight (8) hours, Monday through Friday, and all time worked on Saturday shall be paid at the rate of time and one-half (1½) except in cases where work is part of an employee's regular Friday shift. All time worked on Sunday and recognized holidays shall be paid at the double (2) time rate of pay except in cases where work is part of an employee's previous day's shift. For all overtime hours worked $27.09 of the fringe benefits portion of the prevailing wage shall be paid at the same overtime rate at which the cash portion of the prevailing wage is to be paid. The remaining $1.24 of the fringe benefit portion of the prevailing wage may be paid at straight time.
NO. 59: Means that except as herein provided, eight (8) hours a day shall constitute a standard work day, and forty (40) hours per week shall constitute a week’s work. All time worked outside of the standard eight (8) hour work day and on Saturday shall be classified as overtime and paid at the rate of time and one-half (1½). All time worked on Sunday and holidays shall be classified as overtime and paid at the rate of double (2) time. The Employer has the option of working either five (5) eight hour days or four (4) ten hour days to constitute a normal forty (40) hour work week. When the four (4) ten-hour work week is in effect, the standard work day shall be consecutive ten (10) hour periods between the hours of 6:30 a.m. and 6:30 p.m. Forty (40) hours per week shall constitute a week’s work, Monday through Thursday, inclusive. In the event the job is down for any reason beyond the Employer's control, then Friday and/or Saturday may, at the option of the Employer, be worked as a make-up day; straight time not to exceed ten (10) hours or forty (40) hours per week. When the five day (8) hour work week is in effect, forty (40) hours per week shall constitute a week's work, Monday through Friday, inclusive. In the event the job is down for any reason beyond the Employer's control, then Saturday may, at the option of the Employer, be worked as a make-up day; straight time not to exceed eight (8) hours or forty (40) hours per week. The regular starting time (and resulting quitting time) may be moved to 6:00 a.m. or delayed to 9:00 a.m. Make-up days shall not be utilized for days lost due to holidays.

NO. 60: Means the Employer shall have the option of working five 8-hour days or four 10-hour days Monday through Friday. If an Employer elects to work five 8-hour days during any work week, hours worked more than eight (8) per day or forty (40) per week shall be paid at time and one-half (1½) the hourly wage rate plus fringe benefits Monday through Friday. SATURDAY MAKE-UP DAY: If an Employer is prevented from working forty (40) hours, Monday through Friday, or any part thereof by reason of inclement weather (rain or mud), Saturday or any part thereof may be worked as a make-up day at the straight time rate. It is agreed by the parties that the make-up day is not to be used to make up time lost due to recognized holidays. If an Employer elects to work four 10-hour days, between the hours of 6:30 a.m. and 6:30 p.m. in any week, work performed more than ten (10) hours per day or forty (40) hours per week shall be paid at time and one half (1½) the hourly wage rate plus fringe benefits Monday through Friday. If an Employer is working 10-hour days and loses a day due to inclement weather, the Employer may work ten (10) hours on Friday at straight time. All hours worked over the forty (40) hours Monday through Friday will be paid at time and one-half (1½) the hourly wage rate plus fringe benefits. All Millwright work performed in excess of the regular work day and on Saturday shall be compensated for at time and one-half (1½) the regular Millwright hourly wage rate plus fringe benefits. The regular work day starting at 8:00 a.m. (and resulting quitting time of 4:30 p.m.) may be moved forward to 6:00 a.m. or delayed one (1) hour to 9:00 a.m. All work accomplished on Sundays and recognized holidays, or days observed as recognized holidays, shall be compensated for at double (2) the regular hourly rate of wages plus fringe benefits. NOTE: All overtime is computed on the hourly wage rate plus an amount equal to the fringe benefits.

NO. 86: The regular workday shall consist of eight (8) consecutive hours, exclusive of a thirty (30) minute lunch period, with pay at the straight time rate with all hours in excess of eight (8) hours in any one day to be paid at the applicable overtime rate at time and one-half (1½). The regular workday shall begin between the hours of 6:00 a.m. and 8:00 a.m. The Employer may have the option to schedule the work week from Monday through Thursday at ten (10) hours per day at the straight time rate of pay with all hours in excess of ten (10) hours in any one day to be paid at the applicable overtime rate at time and one-half (1½). If the Employer elects to work from Monday through Thursday and is stopped due to inclement weather, holiday or other conditions beyond the control of the Employer, they shall have the option to work Friday at the straight time rate of pay to complete the forty (40) hours for the workweek. All overtime work performed on Monday through Saturday shall be paid at time and one-half (1½) the hourly rate. Fringe benefits shall be paid at the one and one half the hourly rate. All work performed on Sundays and recognized holidays shall be paid at double (2) the hourly rate. Fringe benefits shall be paid at double the hourly rate. Shifts may be established when considered necessary by the Employer. Shift hours and rates will be as follows. If shifts are established, work on the First Shift will begin between 6:00 a.m. and 9:00 a.m. and consist of eight (8) hours of work plus one-half hour unpaid lunch. Hours worked during the first shift will be paid at the straight time rate of pay. The second shift shall start eight hours after the start of the first shift and consist of eight (8) hours of work plus one-half hour unpaid lunch. Work on the second shift will begin between 2:00 p.m. and 5:00 p.m. and be paid the straight time rate plus $2.50 per hour. The third shift shall start eight hours after the start of the second shift and consist of eight (8) hours plus one-half hour unpaid lunch. Work on the third shift will begin between 10:00 p.m. and 1:00 a.m. and be paid the straight time rate plus $3.50 per hour. The additional amounts that are to be paid are only applicable when working shifts. Shifts that begin on Saturday morning through those shifts which end on Sunday morning will be paid at time and one-half these rates. Shifts that begin on Sunday morning through those shifts which end on Monday morning will be paid at double time these rates.
NO. 91: Means eight (8) hours shall constitute a day’s work commencing at 7:00 a.m. and ending at 3:30 p.m., allowing one-half (½) hour for lunch. The option exists for the Employer to use a flexible starting time between the hours of 6:00 a.m. and 9:00 a.m. The regular workweek shall consist of forty (40) hours of five (5) workdays, Monday through Friday. The workweek may consist of four (4) ten (10) hour days from Monday through Thursday, with Friday as a make-up day. If the make-up day is a holiday, the employee shall be paid at the double (2) time rate. The employees shall be paid time and one-half (1½) for work performed on Saturdays, before the regular starting time or after the regular quitting time or over eight (8) hours per work day (unless working a 10-hour work day, then time and one-half (1½) is paid for work performed over ten (10) hours a day) or over forty (40) hours per work week. Work performed on Sundays and recognized holidays shall be paid at the double (2) time rate of pay. SHIFT WORK: When it is necessary for the project to operate in shifts, there will be three (3) eight (8) hour shifts commencing at 8:00 a.m. Shift work must continue for a period of not less than three (3) consecutive work days, two (2) days which must be regular work days (Monday through Friday). In the event the second or third shift of any regular work day shall fall into a Saturday or a holiday, such extension into a Saturday or holiday shall be considered as part of the previous workday and employees shall be paid at the regular shift rate. The first day shift shall work a regular eight (8) hour day at regular rates. The second shift shall be eight (8) hours regular time pay plus $2.50 per hour premium for eight (8) hours work. Third shift will be for eight (8) hours regular time pay plus $3.00 per hour premium for eight (8) hours work.

NO. 94: Means eight (8) hours shall constitute a day’s work between the hours of 8:00 a.m. and 5:00 p.m. The regular workday starting time of 8:00 a.m. (and resulting quitting time of 4:30 p.m.) may be moved forward to 6:00 a.m. or delayed one (1) hour to 9:00 a.m. All work performed in excess of the regular work day and on Saturday shall be compensated at one and one-half (1½) times the regular pay. In the event time is lost during the work week due to weather conditions, the Employer may schedule work on the following Saturday at straight time. All work accomplished on Sunday and holidays shall be compensated at double the regular rate of wages.

NO. 101: Means that except as provided below, eight (8) hours a day shall constitute a standard work day, and forty (40) hours per week shall constitute a week’s work, which shall begin on Monday and end on Friday. All time worked outside of the standard work day and on Saturday shall be classified as overtime and paid the rate of time and one-half (1½) (except as herein provided). All time worked on Sunday and recognized holidays shall be classified as overtime and paid at the rate of double (2) time. The regular starting time of 8:00 a.m. (and resulting quitting time of 4:30 p.m.) may be moved forward to 6:00 a.m. or delayed one (1) hour to 9:00 a.m. The Employer has the option of working either five (5) eight-hour days or four (4) ten-hour days to constitute a normal forty (40) hour work week. When a four (4) ten-hour day work week is in effect, the standard work day shall be consecutive ten (10) hour periods between the hours of 6:30 a.m. and 6:30 p.m. Forty (40) hours per week shall constitute a week’s work Monday through Thursday, inclusive. In the event the job is down for any reason beyond the Employer's control, then Friday and/or Saturday may, at the option of the Employer, be worked as a make-up day; straight time not to exceed ten (10) hours per day or forty (40) hours per week. Starting time will be designated by the employer. When the five (5) day eight (8) hour work week is in effect, forty (40) hours per week shall constitute a week's work, Monday through Friday, inclusive. In the event the job is down for any reason beyond the Employer's control, then Saturday may, at the option of the Employer, be worked as a make-up day; straight time not to exceed eight (8) hours per day or forty (40) hours per week. Make-up days shall not be utilized for days lost due to holidays.

NO. 122: Means the regular workday shall be (8) hours. The regular work week shall be forty (40) hours, beginning 6:00 a.m. on Monday and ending 6:00 p.m. on Friday. Saturday will be time and one-half (1½). Sunday and Holidays shall be double (2) time. Saturday can be a make-up day if weather has forced a day off.

NO. 124: Means eight (8) hours shall constitute a day’s work on all classes of work between the hours of 6:00 a.m. and 5:30 p.m., Monday through Friday. The pay for time worked during these hours shall be at the regular wage rate. The regular workweek shall be Monday through Friday. Employment from 4:30 p.m. to 12:00 midnight, Monday through Friday, shall be paid for at one and one-half (1½) times the regular hourly rate. From 12:00 midnight until 8:00 a.m. on any day shall be paid for at twice the regular hourly rate. All time worked on Sundays and the recognized holidays shall be paid at the rate of double (2) time. It is understood that forty (40) hours shall constitute a regular workweek, (5-8's) Sunday Midnight through Friday Midnight, understanding anything over eight (8) hours is one and one-half (1½) times the hourly wage rate.
NO. 3: All work done on New Year's Day, Decoration Day, July 4th, Labor Day, Veteran's Day, Thanksgiving and Christmas shall be compensated at the double (2) time rate of pay. When any of these holidays fall on a Sunday, the following Monday shall be observed.

NO. 4: All work done on New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving and Christmas Day shall be paid at the double time rate of pay. If any of the above holidays fall on Sunday, Monday will be observed as the recognized holiday. If any of the above holidays fall on Saturday, Friday will be observed as the recognized holiday and holidays falling on Sunday will be observed on the following Monday.

NO. 5: All work that shall be done on New Year's Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, and Christmas Day shall be paid twice the amount of his or her regular hourly wage rate for each hour or fraction thereof worked on any such day.

NO. 7: The following days are assigned days and are recognized as holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, and Christmas Day. If a holiday falls on a Sunday, it shall be observed on the following Monday. If a holiday falls on a Saturday, it shall be observed on the preceding Friday. No work shall be performed on Labor Day except in case of jeopardy to work under construction. This is applied to protect Labor Day. When a holiday falls during the normal workweek, Monday through Friday, it shall be counted as eight (8) hours toward the forty (40) hour week. However, no reimbursement for these eight (8) hours is to be paid to the workman unless worked. If workman are required to work the above enumerated holidays or days observed as such, or on Sunday, they shall receive double (2) the regular rate of pay for such work.

NO. 8: All work performed on New Year's Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, and Christmas Day, or the days observed in lieu of these holidays, shall be paid at the double time rate of pay.

NO. 15: All work accomplished on the recognized holidays of New Year's Day, Decoration Day (Memorial Day), Independence Day (Fourth of July), Labor Day, Veteran's Day, Thanksgiving Day and Christmas Day, or days observed as these named holidays, shall be compensated for at double (2) the regular hourly rate of wages plus fringe benefits. If a holiday falls on Saturday, it shall be observed on the preceding Friday. If a holiday falls on a Sunday, it shall be observed on the following Monday. No work shall be performed on Labor Day, Christmas Day, Decoration Day or Independence Day except to preserve life or property.

NO. 19: All work done on New Year's Day, Memorial Day, July 4th, Labor Day, Thanksgiving Day, and Christmas Day shall be paid at the double time rate of pay. The employee may take off Friday following Thanksgiving Day. However, the employee shall notify his or her Foreman, General Foreman or Superintendent on the Wednesday preceding Thanksgiving Day. When one of the above holidays falls on Sunday, the following Monday shall be considered a holiday and all work performed on either day shall be at the double (2) time rate. When one of the holidays falls on Saturday, the preceding Friday shall be considered a holiday and all work performed on either day shall be at the double (2) time rate.

NO. 23: All work done on New Year's Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, Christmas Day and Sundays shall be recognized holidays and shall be paid at the double time rate of pay. When a holiday falls on Sunday, the following Monday shall be considered a holiday. When a holiday falls on Saturday, Friday is recognized as a holiday.

NO. 44: All work done on New Year's Day, Decoration Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, and Christmas Day shall be paid at the double time rate of pay. If a holiday falls on a Sunday, it shall be observed on the Monday following. If a holiday falls on a Saturday, it shall be observed on the proceeding Friday. No work shall be performed on these days except in emergency to protect life or property. All work performed on these holidays shall be compensated at double the regular hourly rate for the work performed. Overtime shall be computed at half-hour intervals.

NO. 45: All work performed on New Year's Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, the day after Thanksgiving, the day before Christmas, and Christmas Day, shall be paid at the double time rate of pay.
NO. 54: All work performed on New Year's Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, the Friday after Thanksgiving Day, and Christmas Day shall be paid at the double (2) time rate of pay. When a holiday falls on Saturday, it shall be observed on Friday. When a holiday falls on Sunday, it shall be observed on Monday.

NO. 55: The following days are recognized as holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day. If a holiday falls on a Sunday, it shall be observed on the following Monday. No work shall be performed on Labor Day except in case of jeopardy to work under construction. This rule is applied to protect Labor Day. When a holiday falls during the normal work week, Monday through Friday, it shall be counted as eight (8) hours toward the forty (40) hour week; however, no reimbursement for this eight (8) hours is to be paid the workmen unless worked. An Employer working a four (4) day, ten (10) hour schedule may use Friday as a make up day when an observed holiday occurs during the work week. Employees have the option to work that make up day. If workmen are required to work the above enumerated holidays, or days observed as such, they shall receive double (2) the regular rate of pay for such work.

NO. 60: All work performed on New Year's Day, Armistice Day (Veteran's Day), Decoration Day (Memorial Day), Independence Day (Fourth of July), Thanksgiving Day and Christmas Day shall be paid at the double time rate of pay. No work shall be performed on Labor Day except when triple (3) time is paid. When a holiday falls on Saturday, Friday will be observed as the holiday. When a holiday falls on Sunday, the following Monday shall be observed as the holiday.

NO. 66: All work performed on Sundays and the following recognized holidays, or the days observed as such, of New Year's Day, Decoration Day, Fourth of July, Labor Day, Veteran's Day, Thanksgiving Day and Christmas Day, shall be paid at double (2) the hourly rate plus an amount equal to the hourly Total Indicated Fringe Benefits. Whenever any such holidays fall on a Sunday, the following Monday shall be observed as a holiday.

NO. 69: All work performed on New Year's Day, Memorial Day, July Fourth, Labor Day, Veteran's Day, Thanksgiving Day or Christmas Day shall be compensated at double (2) their straight-time hourly rate of pay. Friday after Thanksgiving and the day before Christmas are also holidays, however, if the employer chooses to work the normal work hours on these days, the employee will be paid at straight-time rate of pay. If a holiday falls on a Saturday, the holiday will be observed on Saturday; if a holiday falls on a Sunday, the holiday will be observed on the following Monday.

NO. 74: All work performed on New Year's Day, Memorial Day, Fourth of July, Labor Day, Veteran's Day, Thanksgiving Day and Christmas Day, shall be paid at double (2) time of the hourly rate of pay. In the event one of the above holiday's falls on Saturday, the holiday shall be celebrated on Saturday. If the holiday falls on Sunday, the holiday will be celebrated on Monday.

NO. 76: The following days are recognized as holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day, and Christmas. No work of any pretense shall be performed on Christmas Day or Independence Day. Any work performed on the other holidays shall be paid for at least two (2) times the regular rate of pay. If a holiday falls on a Sunday, the following Monday will be observed. If a holiday falls on a Saturday, the preceding Friday will be observed.
### Heavy Construction Rates for BOONE County

#### Section 010

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*Annual Incremental Increase

**ANNUAL WAGE ORDER NO. 24**

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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.
BOONE COUNTY
OVERTIME SCHEDULE - HEAVY CONSTRUCTION

FED: Minimum requirement per Fair Labor Standards Act means time and one-half (1 ½) shall be paid for all work in excess of forty (40) hours per work week.

NO. 2: Means a regular workweek shall be forty (40) hours and will start on Monday and end on Friday. The Employer shall have the option of working five 8-hour days or four 10-hour days Monday through Friday. If an Employer elects to work five 8-hour days during any workweek, hours worked more than eight (8) per day or 40 per week shall be paid at time and one-half the hourly rate Monday through Friday. If an Employer elects to work four 10-hour days in a week, work performed more than ten (10) hours per day or 40 hours per week shall be paid at time and one-half the hourly rate Monday through Friday. When working a five 8-hour day schedule and an Employer is prevented from working forty (40) hours Monday through Friday, or any part thereof, by reason of inclement weather, Saturday or any part thereof may be worked as a make-up day at the straight time rate. If an Employer is working a four 10-hour day schedule and loses a day due to inclement weather, he may work 10 hours Friday at straight time. All hours worked over the 40 hours Monday through Friday will be paid at 1 ½ overtime rate. A workday shift is to begin at the option of the Employer, between 6:00 a.m. and not later than 9:00 a.m. However, the project starting time may be advanced or delayed if required. If workmen are required to work the enumerated holidays or days observed as such or Sundays, they shall receive double (2) the regular rate of pay for such work. Overtime shall be computed at one-half (1/2) hour intervals. Shift: The Contractor may elect to work one, two or three shifts on any work. When operating on more than one shift, the shifts shall be known as the day shift, swing shift, and graveyard shift as such terms are recognized in the industry. When two shifts are worked on any operation, the shifts will consist of eight (8) or ten (10) hours exclusive of lunchtime. When three shifts are worked the first day or day shift will consist of eight (8) hours exclusive of lunchtime. The second or swing shift shall consist of seven and one-half (7 1/2) hours work for eight hours pay, exclusive of lunchtime, and the third or the graveyard shift shall consist of seven (7) hours work for eight (8) hours pay, exclusive of the lunchtime. All time in excess of normal shifts shall be considered overtime. Multiple shift (the two or three shift) operation will not be construed on the entire project if at anytime it is deemed advisable and necessary for the Employer to multiple shift a specific operation. However, no shift shall be started between midnight and six a.m. except the graveyard shift on a three-shift operation, or except in an unusual or emergency situation. If an Employer starts a shift between midnight and 6 a.m. except the graveyard shift on a three-shift operation, he shall reimburse all employees for the entire shift at the double time rate. Completion of the second shift on a two-shift operation or completion of the graveyard shift on a three-shift operation that carries over into Saturday morning, shall be at the straight time rate. Overtime shall be computed at ½ hour intervals.

NO. 9: Eight (8) hours shall constitute a work day between the hours of 7:00 a.m. and 4:30 p.m. Forty (40) hours within five (5) days, Monday through Friday inclusive, shall constitute the work week. Work performed in the 9th and 10th hour, Monday through Friday, shall be paid at time and one-half (1½) the regular straight time rate of pay. Contractor has the option to pay two (2) hours per day at the time and one-half (1½) the regular straight time rate of pay between the hours of 6:00 a.m. and 5:30 p.m., Monday through Friday. Worked performed in the first eight (8) hours on Saturday shall be paid at the rate of one and one-half (1½) the regular straight time rate. Work performed outside these hours and on Sundays and recognized legal holidays, or days celebrated as such, shall be paid for at the rate of double (2) time.

NO. 21: Means the regular workday for which employees shall be compensated at straight time hourly rate of pay shall, unless otherwise provided for, begin at 8:00 a.m. and end at 4:30 p.m. However, the project starting time may be advanced or delayed at the discretion of the Employer. At the discretion of the Employer, when working a five (5) day eight (8) hour schedule, Saturday may be used for a make-up day. If an Employer is prohibited from working on a holiday, that employer may work the following Saturday at the straight time rate. However, the Employer may have the option to schedule his work from Monday through Thursday at ten (10) hours per day at the straight time rate of pay with all hours in excess of ten (10) hours in any one day to be paid at the applicable overtime rate. If the Employer elects to work from Monday through Thursday and is stopped due to circumstances beyond his control, he shall have the option to work Friday or Saturday at the straight time rate of pay to complete his forty (40) hours. If an Employer is prohibited from working on a holiday, that Employer may work the following Friday or Saturday at the straight time rate. Overtime will be at one and one-half (1½) times the regular rate. If workmen are required to work the enumerated holidays or days observed as such, or Sundays, they shall receive double (2) the regular rate of pay for such work.
NO. 23: Means the regular work week shall start on Monday and end on Friday, except where the Employer elects to work Monday through Thursday, (10) hours per day. All work over ten (10) hours in a day or forty (40) hours in a week shall be at the overtime rate of one and one-half (1½) times the regular hourly rate. The regular workday shall be either eight (8) or ten (10) hours. If a job can’t work forty (40) hours Monday through Friday because of inclement weather or other conditions beyond the control of the Employer, Friday or Saturday may be worked as a make-up day at straight time (if working 4-10’s). Saturday may be worked as a make-up day at straight time (if working 5-8’s). An Employer, who is working a four (4) ten (10) hour day work schedule may use Friday as a make-up day when a workday is lost due to a holiday. A workday is to begin at the option of the Employer but not later than 11:00 a.m. except when inclement weather, requirements of the owner or other conditions beyond the reasonable control of the Employer prevent work. Except as worked as a make-up day, time on Saturday shall be worked at one and one-half (1½) times the regular rate. Work performed on Sunday shall be paid at two (2) times the regular rate. Work performed on recognized holidays or days observed as such, shall also be paid at the double (2) time rate of pay. For all overtime hours worked during the week or on Saturday $15.55 of the fringe benefits portion of the prevailing wage shall be paid at time and one-half (1½). For all overtime hours worked on Sundays or recognized holidays $15.55 of the fringe benefits portion of the prevailing wage shall be paid double time. The remaining $.55 of the fringe benefit portion of the prevailing wage shall be paid at straight time.

NO. 25: Means a regular work week of forty (40) hours, starting on Monday and ending on Friday. The regular work day shall be either eight (8) or ten (10) hours. If a crew is prevented from working forty (40) hours Monday through Friday, or any part thereof by reason of inclement weather, Saturday or any part thereof maybe worked as a make-up day at the straight time rate. Employees who are part of a regular crew on a make-up day, notwithstanding the fact that they may not have been employed the entire week, shall work Saturday at the straight time rate. A work day is to begin between 6:00 a.m. and 9:00 a.m. However, the project starting time maybe advanced or delayed if mutually agreed to by the interest parties. All hours worked on recognized holidays, or days observed as such, double (2) time shall be paid.

NO. 28: Means a regular work week of forty (40) hours will start on Monday and end on Friday. The regular work day shall be either eight (8) or ten (10) hours. If a crew is prevented from working forty (40) hours Monday through Friday, or any part thereof by reason of inclement weather, Saturday or any part thereof maybe worked as a make-up day at the straight time rate. Employees who are part of a regular crew on a make-up day, notwithstanding the fact that they may not have been employed the entire week, shall work Saturday at the straight time rate. A workday is to begin between 6:00 a.m. and 9:00 a.m. However, the project starting time may be advanced or delayed if mutually agreed to by the interest parties. For all time worked on recognized holidays, or days observed as such, double (2) time shall be paid.

NO. 32: Means the overtime rate shall be time and one-half the regular rate for work over forty (40) hours per week. Sundays and Holidays shall be paid at double the straight time rate.
NO. 4: All work performed on New Year’s Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day, or observed as such, shall be paid at the double time rate of pay. When a Holiday falls on a Sunday, Monday shall be observed. No work shall be performed on Labor Day, except in case of jeopardy to life or property. This is applied to protect Labor Day.

NO. 5: The following days are recognized as holidays: New Year’s Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas Day. If a holiday falls on a Sunday, it shall be observed on the following Monday. If a holiday falls on a Saturday, it shall be observed on the preceding Friday. No work shall be performed on Labor Day except in case of jeopardy to work under construction. This rule is applied to protect Labor Day. When a holiday falls during the normal work week, Monday through Friday, it shall be counted as eight (8) hours toward a forty (40) hour week; however, no reimbursement for this eight (8) hours is to be paid the workman unless worked. If workmen are required to work the above recognized holidays or days observed as such, or Sundays, they shall receive double (2) the regular rate of pay for such work. The above shall apply to the four 10’s Monday through Friday work week. The ten (10) hours shall be applied to the forty (40) hour work week.

NO. 12: All work performed on New Year’s Day, Memorial Day, Fourth of July, Labor Day, Veteran’s Day, Thanksgiving Day, Christmas Day, or days celebrated as such, shall be paid at the double time rate of pay. When one of the foregoing holidays falls on Sunday, it shall be observed on the following Monday. When one of the foregoing holidays falls on Saturday, it shall be observed on the Friday before the holiday.

NO. 16: The following days are recognized as holidays: New Year’s Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas Day. If a holiday falls on Sunday, it shall be observed on the following Monday. If a holiday falls on Saturday, it shall be observed on the preceding Friday. No work shall be performed on Labor Day except in case of jeopardy to work under construction. This rule is applied to protect Labor Day. When a holiday falls during the normal work week, Monday through Friday, it shall be counted as eight (8) hours toward the forty (40) hour week; however, no reimbursement for this eight (8) hours is to be paid the worker unless worked. If workers are required to work the above recognized holidays or days observed as such, they shall receive double (2) the regular rate of pay for such work.

NO. 21: The following days are recognized as holidays: New Year’s Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day. If a holiday falls on a Sunday, it shall be observed on the following Monday. No work shall be performed on Labor Day except in case of jeopardy to work under construction. This rule is applied to protect Labor Day. When a holiday falls during the normal work week, Monday through Friday, it shall be counted as eight (8) hours toward the forty (40) hour week; however, no reimbursement for this eight (8) hours is to be paid the worker unless worked. An Employer working a four (4) day, ten (10) hour schedule may use Friday as a make-up day when an observed holiday occurs during the week. Employees have the option to work that make-up day. If workmen are required to work the above enumerated holidays, or days observed as such, they shall receive double (2) the regular rate of pay for such work.

NO. 27: The following days are recognized as holidays: New Year’s Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day. If a holiday falls on a Sunday, it shall be observed on the following Monday. No work shall be performed on Labor Day except in case of jeopardy to work under construction. This rule is applied to protect Labor Day. When a holiday falls during the normal work week, Monday through Friday, it shall be counted as eight (8) hours toward the forty (40) hour week; however, no reimbursement for this eight (8) hours is to be paid the worker unless worked. An Employer working a four (4) day, ten (10) hour schedule may use Friday as a make up day when an observed holiday occurs during the week. Employees have the option to work that make up day. If workmen are required to work the above enumerated holidays, or days observed as such, they shall receive double (2) the regular rate of pay for such work.

SECTION 1.H

ALTERNATES

CP170621 – SCHOOL OF MUSIC NEW BUILDING

Base Bid may be increased in accordance with following Additive Alternate proposal(s) as Owner may elect:

1. Additive Alternate No. 1: Traditional Performance Room Fit-Out
   a) Finishes
   b) Podium
   c) Curtains & Drapes
   d) Fabric-Wrapped Panels
   e) Specialty Acoustic Panels
   f) Visual Display Boards

2. Additive Alternate No. 2: Large IRR FF&E Items
   a) Podium
   b) Curtains & Drapes
   c) Fabric-Wrapped Panels
   d) Specialty Acoustic Panels
   e) Visual Display Boards

3. Additive Alternate No. 3: All other FF&E items in rest of the building (excluding Traditional Performance Room and IRR)

4. Additive Alternate No. 4: Storage Units & Classroom Podiums
   a) Podiums
   b) Instrument Storage Lockers
   c) Resource Library Shelving

END OF SECTION
SECTION 01 57 13 - TEMPORARY EROSION AND SEDIMENT CONTROL AND SWPPP

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:
   1. Silt fence erosion protection.
   2. Hay bale silt fence erosion protection.
   3. Storm Water Pollution Prevention Plan (SWPPP) included in this project manual is part of the contract and Contractor is responsible for all items indicated therein.

B. Related Sections:
   1. Section 311000 – Site Clearing.
   2. Section 312000 – Earth Moving.
   3. Section 329119 – Landscape Grading.

1.2 QUALITY ASSURANCE

A. Regulatory Requirements;
   1. Comply with all requirements, exemptions, regulations and outflow sampling requirements set forth by local and state agencies.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Straw Bale Fence: As indicated on Drawings.

B. Silt Fence Fabric: Synthetic filter fabric or a pervious sheet of polypropylene, nylon, polyester, or polyethylene yard, containing ultraviolet ray inhibitors and stabilizers providing a minimum of six months usable construction life at a temperature range from 0 to 120 degrees F., and meeting the following requirements:
   1. Sediment retention efficiency: Not less than 85 percent.
   2. Grab strength at 20 percent maximum elongation:
      b. Extra strength fabric: 50 pounds per lineal inch.
   3. Flow rate: Not less than 0.30 gallons per square foot per minute.

C. Silt Fence Posts: Contractor has option of the following:
   1. 4 inch diameter pine.
   2. 2 inch diameter pine.
   3. 1.33 pound per lineal foot steel posts a minimum of 4 feet in length.
      a. Steel posts shall have projections for fastening the fabric.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions: Examine areas and conditions under which Work is to be performed and identify conditions detrimental to proper and timely completion:
1. Do not proceed until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Protection:
1. Protect trees, shrubs, lawns, other vegetation and other features indicated on Drawings to remain, or not indicated to be removed.
   a. Provide temporary guards to protect trees and vegetation which is to remain.
   b. Protect roots over 1-1/2 inch diameter which are cut during construction operations.
      1) Coat cut faces with emulsified asphalt or other acceptable coating formulated for use on damaged plan tissues.
      2) Temporarily cover exposed roots with wet burlap to prevent roots from drying out. Cover with earth as soon as possible.
2. Protect bench marks, monuments, existing structures, existing fences, existing roads, existing sidewalks, existing paving, existing curbs and other features indicated on Drawings to remain, or not indicated to be removed, from damage and displacement.
   a. If damaged or displaced, notify Engineer and correct defects as directed by Engineer.
3. Protect above and below grade utilities which are to remain.

B. Preparation:
1. Use all means necessary to control dust on and near the Work, and on and near off-site storage, and spoil areas, if such dust is caused by performance of the Work of this Section, or if resulting from the condition in which Project Site is left by Contractor.
2. Moisten surfaces as required to prevent dust from being a nuisance to the public, neighbors, and concurrent performance of other Work on Project Site.

3.3 INSTALLATION

A. Install erosion control devices at locations indicated on Drawings, and where required to protect adjacent and downstream properties from damage and pollution resulting from erosion caused by the Work of this Contract.
1. Implement erosion control measures indicated on Drawings and additional erosion control measures necessary to prevent damage to adjacent and downstream properties.

B. Install silt fence located along perimeter of Site or grading limits immediately following site clearing operations specified under Section 311000.
1. Install silt fence fabric from a continuous roll for the length of the silt fence whenever possible to minimize the number of joints.
   a. Create joints in fabric by securely fastening fabric at the support post with overlap extending to the next post.
2. Drive support post into ground not less than 18 inches.
3. Excavate a 4 inch wide by 8 inch deep trench on up-slope side of silt fence.
   b. Backfill trench with soil or gravel.

C. Install straw bale fence at completion of grading operations in affected area.
1. Install erosion control devices at storm sewer inlets immediately after completion of the storm sewer.
2. Place straw bales in a single row, lengthwise on the contour, and embedded 4 inches into soil.
3. Secure each individual bale in place by stakes or reinforcement bars driven through bales into the ground to a depth not less than 18 inches.

3.4 MAINTENANCE

A. Check silt fences and straw bale fences after each rainfall event to ensure that they are in proper working order:
1. Check embankments and spillways for erosion, settlement or other damage.
2. Immediately make all necessary repairs.

B. Inspect silt and straw bale fences at least once a week.
   1. Immediately replace damaged portions of the silt fences, including portions which have collapsed, contain tears, have decomposed, or have become ineffective.

C. Remove sediment deposits as necessary to provide adequate sediment storage and to maintain the integrity of fences.

D. Maintain erosion control devices in places as specified until Site is stabilized by pavement, vegetation, or other means.

E. After site is stabilized, remove erosion control devices, sediment, and debris from Site prior to final grading specified under Section 312000 and Section 329119.

3.5 SWPPP

A. A Storm Water Pollution Prevention Plan (SWPPP), follows this section.

B. The General Contractor shall be responsible for meeting the requirements of the SWPPP and the land disturbance plans.

C. SWPPP Coordinator shall be the Contractor or someone hired by the Contractor.

D. The Coordinator shall be responsible for the inspection and maintenance of the erosion control measures in accordance with the SWPPP.

E. Contractor shall be responsible for employee training per the SWPPP.

END OF SECTION
SECTION 01 74 19 – CONSTRUCTION WASTE MANAGEMENT

1. GENERAL

1.1 RELATED DOCUMENTS

A. All of the Contract Documents, including General and Special Conditions and Division 01 General Requirements, apply to the work of this Section.

1.2 SUMMARY

A. This Section specifies requirements for the Contractor's implementation of waste management controls and systems for the duration of the Work.

The intent of this Section is to develop and implement a Construction Waste Management Plan (CWMP) in order to quantify material diverted from Solid Waste Disposal Facility or incineration. At least fifty (75) percent of non-hazardous Demolition and Construction Debris generated by the construction project must be diverted through recycling or salvage. Quantities must be reported by weight and consistent in units reported and calculation method throughout.

Diversion Methods and Materials Eligible for Reporting:

1. Appropriate materials suitably placed in a Clean Fill Site may be reported
2. Appropriate materials diverted for use as Wood Derived Fuel (WDF) may be reported

Diversion Methods and Materials Ineligible for Reporting:

3. Material disposal by incineration
4. Excavated soil and land-clearing debris
5. Material for use as Alternative Daily Cover (ADC)
6. Hazardous waste; should be disposed of according to relevant regulations

B. Contractor may subcontract work of this Section to a sub-contractor specializing in recycling and salvaging of construction waste.

1.3 DEFINITIONS

A. ALTERNATIVE DAILY COVER (ADC): Material (other than earthen material) that is placed on the surface of the active face of a municipal solid waste landfill at the end of each operating day.

B. AVERAGE RECYCLING RATE: The weighted average for the diversion of materials by the commingled (mixed-stream) recycling facility over time.

C. CLEAN FILL SITE: Re-grading fill site for land reclamation or other beneficial use. Typically requiring permits, regular site maintenance and hours of operation. With material consisting of demolition debris and construction waste from buildings, roads and highway pavement, and other structures. Commonly comprised of brick, ceramics, concrete, and asphalt paving fragments that are virtually inert and pose neither a pollution threat to ground or surface waters nor a fire hazard. May contain minimal amounts of wood, metal and inert solids.

D. COMMINGLED WASTE: Waste streams that are combined on the project site and hauled away for sorting into recyclable streams. Also known as mixed or single-stream recycling.
E. DEMOLITION AND CONSTRUCTION DEBRIS: Debris, waste and surplus materials, including recyclables, generated as a result of the Contractor’s onsite activities while executing the requirements of the contract. Also, commonly includes materials from renovation, demolition, or deconstruction activities.

F. RECYCLE: Recovery of materials, otherwise diverted from the solid waste stream for remanufacturing.

G. SALVAGE: Recovery of useful items repurposing without the need for remanufacturing or reducing to raw materials due to their intrinsic value.

H. SOLID WASTE DISPOSAL FACILITY: A managed landfill, regulated at the Federal, State, and/or Local level.

1.4 INTENT

A. The Owner and Architect have established that this Project shall generate the least amount of Demolition and Construction debris as practical. The Contractor shall develop and employ processes that ensure that the amount of demolition and construction debris actually generated during the execution of this project due to error, poor planning, breakage, mishandling, contamination or other factors is minimized.

B. Of the construction and demolition debris generated, as much as is economically feasible shall be reused, salvaged, or recycled. Disposal of construction and demolition debris in solid waste disposal facilities shall be minimized to the greatest extent practical but at a minimum shall be consistent with the percentage goal stated herein.

C. The Contractor shall develop, for the Architect's review, a Construction Waste Management Plan (CWMP) for this Project.

D. Contractor shall be responsible for ensuring that construction and demolition debris, not otherwise salvaged or recycled will be disposed of at appropriately licensed solid waste disposal facilities.

1.5 SUBMITTALS

A. Construction Waste Management Plan (CWMP): Within 21 calendar days after receipt of Notice to Proceed, the Contractor shall provide a plan for review and approval by architect and owner. The Construction Waste Management Plan shall be uploaded in the format provided at the end of this section and shall at a minimum contain the following:

1. Analysis of the proposed jobsite waste to be generated, including types and estimated quantities.
2. Solid Waste Disposal Facility Options: The name of the facilities landfills where construction and demolition debris not otherwise salvaged or recycled will be disposed of, the applicable landfill tipping disposal fees, and the projected cost of such disposal.
3. Solid Waste Disposal Facility Certification: Contractor’s statement of verification that facilities proposed for use are licensed for types of waste to be deposited and have sufficient capacity to receive waste from this project.
4. Recycling Facility Options: Facilities providing commingled or mixed-stream recycling must provide diversion rates either specific to the project, or an average diversion rate that is regulated by the local or state authority. The average recycling rate for the facility
must exclude ADC. Measurements must be based on weight (not volume), using scales. Reporting increments shall be no more than annually, and must use consistent time increments throughout calculations.

5. Alternatives: A list of each material proposed to be salvaged or recycled during the course of the Project and the planned reuse strategy or diversion destination of each. Include the following and any additional items proposed:

a. Cardboard
b. Clean wood
c. Beverage containers
d. Concrete
e. Slurry wall materials
f. Bricks and masonry
g. Asphalt
h. Metals from framing, banding, stud trim, ductwork, piping, rebar, roofing, other trim, steel, iron, galvanized sheet steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze
i. Mechanical and electrical equipment
j. Building components which can be removed relatively intact from existing construction
k. Packaging materials
l. Glass
m. Scraps from new gypsum wall board
n. Carpet and pad
o. Acoustical ceiling panels
p. Plastics

6. Meetings: A description of the regular meetings to be held to ensure proper execution of the construction waste management plan.

7. Debris Handling Procedures: A description of the means by which any construction waste materials identified above will be protected from contamination, and a description of the means to be employed in recycling the above materials consistent with requirements for acceptance by designated facilities.

8. Transportation: A description of the means of transportation of the debris (whether debris will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler and removed from the site).

B. Waste Management Progress Report: Concurrent with each Application for Payment, submit a written Waste Management Progress Report in the same format as required for Final Report. Submission of this report shall be a pre-requisite to the Owner’s approval of the Contractor’s application for Payment. Provide statement indicating original estimated total diversion rate, diversion to date, and expected final diversion rate. Include narrative regarding discrepancies or activity since the previous report.

C. Waste Management Final Report: Within five (5) Calendar Days of Substantial Completion, submit a written Construction Waste Management Final Report summarizing the types and quantities of materials recycled, salvaged and disposed of under the Construction Waste Management Plan. This report shall be in the same format as the monthly reports. Include the name and location of disposal facilities. Quantities must be reported by weight and consistent in units reported and calculation method throughout. The Construction Waste Management Final Report shall be submitted using the Owner’s information sharing website Projex, unless directed otherwise - Waste Management Log and include the following:
1. Material category
2. Generation point
3. Total quantity of waste by category
4. Total quantity of waste reused
5. Total quantity of waste salvaged, both estimated and actual
6. Total quantity of waste recycled, both estimated and actual
7. Total quantity of waste diverted (salvaged and recycled)
8. Total quantity of waste diverted (salvaged and recycled) as a percentage of total waste

D. Other Submittals:

1. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations.
2. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations.
3. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
4. Landfill Disposal Records: Indicate receipt and acceptance of waste by landfills facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
5. Wood Derived Fuel Processing Facility Records: Indicate receipt and acceptance of materials by (WDF) processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
6. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

2. PRODUCTS (NOT USED)

3. EXECUTION

3.1 ON-SITE OPERATIONS

A. Manager: The Contractor shall designate an on-site person responsible for instructing workers and overseeing and documenting results of the Waste Management Plan for the Project.

B. Distribution: The Contractor shall distribute copies of the Waste Management Plan to the Job Site Foreman, each Subcontractor, and the Owner’s Representative.

C. Instruction: The Contractor shall provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the Project.

D. Separation Facilities: The Contractor shall lay out and label a specific area to facilitate separation of materials for recycling, salvage, and return. Recycling and waste bin areas are to be kept neat and clean and clearly marked in order to avoid contamination of materials. Location shall be acceptable to the Owner’s Representative.

1. Commingling Waste: Commingling waste at the job site may be allowed, provided that the following conditions are met:
a. Comminglers shall be included in the Construction Waste Management Plan (CWMP)
b. Additional comminglers must be pre-approved by the Architect via CWMP addenda, prior to tipping on the job site.

E. Hazardous Wastes: Any unforeseen hazardous wastes shall be separated, stored, and disposed of according to local regulations and as directed by the Owner.
Worksheet available for download here: [http://www.cf.missouri.edu/cf/pdc/contractor_information](http://www.cf.missouri.edu/cf/pdc/contractor_information)

### Construction Waste Management Report

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<th>Date</th>
<th>Diversion Method / Location</th>
<th>Receipt #</th>
<th>Notes (Material)</th>
<th>Source</th>
<th>Cubic Feet</th>
<th>Linear Feet</th>
<th>Per Unit (lbs)</th>
<th>Weight (lbs)</th>
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**ACTUAL Total Waste Diverted: 0.00 lbs**

### Landfill Materials Description - ACTUAL

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<th>Receipt #</th>
<th>Notes (Material)</th>
<th>Source</th>
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<th>Linear Feet</th>
<th>Per Unit (lbs)</th>
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</tbody>
</table>

**ACTUAL Total Waste to Landfill: 0.00 lbs**

**Total Construction Waste - ACTUAL: 0.00 lbs**

**Percentage of Waste Diverted From Landfill - ACTUAL: 0.00%**

END OF SECTION 01 74 19
1. GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes general requirements and procedures for compliance with selected credits included in the U.S. Green Building Council's (USGBC) Leadership in Energy & Environmental Design (LEED) 2009 for New Construction Rating System.

B. Sustainable Design Requirements contain Contractor requirements for LEED credits the Contractor is primarily responsible for achieving, including:

2. Materials & Resources Credit 4: Recycled Content.
5. Materials & Resources Credit 7: Certified Wood.
6. Indoor Environmental Quality Prerequisite 1: Minimum Indoor Air Quality Performance.
7. Indoor Environmental Quality Prerequisite 2: Environmental Tobacco Smoke (ETS) Control.
8. Indoor Environmental Quality Credit 1: Outdoor Air Delivery Monitoring
9. Indoor Environmental Quality Credit 2: Increased Ventilation.
10. Indoor Environmental Quality Credit 3.1: Construction Indoor Air Quality Management Plan During Construction.
13. Indoor Environmental Quality Credit 5: Indoor Chemical and Pollutant Source Control.
15. Indoor Environmental Quality Credit 7.1: Thermal Comfort – Design
16. Indoor Environmental Quality Credit 8: Daylight and Views

C. Sustainable Design Requirements contain Contractor requirements for LEED credits the Contractor contributes to, but is not primarily responsible for achieving, including:

1. Sustainable Sites Prerequisite 1: Construction Activity Pollution Prevention.

D. Related Sections

1. Divisions 01 through 33 Sections for LEED requirements specific to the work of each of these Sections. Requirements may or may not include reference to LEED.
1.3 DEFINITIONS

A. LEED: Leadership in Energy & Environmental Design (Green Building Rating System).

B. Regional Materials: Materials that have been extracted, harvested, or recovered, as well as manufactured, within 500 miles (800 km) of Project site. If only a fraction of a product or material is extracted/harvested/recovered and manufactured locally, then only that percentage (by weight) shall contribute to the regional value.

C. Regionally Extracted: Harvested, or Recovered Materials: Materials made from raw materials that are extracted, harvested, or recovered within a radius of 500 miles (800km) from Project site.

D. Regionally Manufactured Materials: Materials that are manufactured within a radius of 500 miles (800 km) from the Project location. Manufacturing refers to the final assembly of components into the building product that is installed at the Project site.

E. Recycled Content:
   1. The percentage by weight of constituents that have been recovered or otherwise diverted from the solid waste stream, either during the manufacturing process (pre-consumer), or after consumer use (post-consumer).
   2. Spills and scraps from the original manufacturing process that are combined with other constituents after a minimal amount of reprocessing for use in further production of the same product are not recycled materials.
   3. Discarded materials from one manufacturing process that are used as constituents in another manufacturing process are pre-consumer recycled materials.
   4. Recycled content shall be defined according to ISO 14021 – Environmental labels and declarations – Self-declared environmental claims (Type II environmental labeling).

F. FSC Certified Wood: Products milled or otherwise altered by manufacturers certified to be in compliance with the standards endorsed by the Forest Stewardship Council. FSC certification requires a chain of custody.

G. Chain of Custody Certificates: Certificates signed by manufacturers certifying that wood used to make products was obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship." Certificates shall include evidence that manufacturer is certified for chain of custody by an FSC accredited certification body.

H. Solar Reflective Index (SRI): A measure of the constructed surface's ability to reflect solar heat, as shown by a small temperature rise. It is defined so that a standard black (reflectance 0.05, emittance 0.90) is 0 and a standard white (reflectance 0.80, emittance 0.90) is 100. To calculate the SRI for a given material, obtain the reflectance value and emittance value for the material. SRI is calculated according to ASTM E 1980. Reflectance is measured according to ASTM E 903, ASTM E 1918, or ASTM C 1549. Emittance is measured according to ASTM E 408 or ASTM C 1371.

I. VOC: Volatile Organic Compounds are emitted as gases from certain solids or liquids. VOCs include a variety of chemicals, some of which may have short- and long-term adverse health effects. Concentrations of many VOCs are consistently higher indoors (up to ten times higher) than outdoors.
J. CRI Green Label Plus: Green Label Plus is a voluntary, industry testing program for carpet and adhesive products that establishes the highest standard for indoor air quality (IAQ) ever set by the carpet industry. The Carpet and Rug Institute (CRI) created Green Label Plus to identify carpets and adhesives that are tested by an independent, certified laboratory and meet stringent criteria for low chemical emissions.

K. FloorScore Certification: Developed by the Resilient Floor Covering Institute (RFCI) in conjunction with Scientific Certification Systems (SCS), FloorScore tests and certifies hard surface flooring and flooring adhesive products for compliance with rigorous indoor air quality emissions requirements. Individual volatile organic compounds (VOCs) are evaluated using health-based specifications.

1.4 GENERAL REQUIREMENTS

A. Contractor LEED Coordinator: The contractor shall assign one person on the team to be the LEED Coordinator. This person must be a LEED BD+C Accredited Professional. The LEED Coordinator will take prime responsibility for LEED.

B. Contractor Primary LEED Credits: Contractor is primarily responsible for achieving LEED and completing the LEED online Letter Templates for the following LEED Credits:

1. Materials & Resources Prerequisite 1: Storage and Collection of Recyclables.

C. Contractor Contributing LEED Credits: Contractor's work contributes to requirements for achieving the following LEED credits. The Contractor is not primarily responsible for achieving the credits nor completing the LEED Online Letter Template.

1. Sustainable Sites Prerequisite 1: Construction Activity Pollution Prevention.

1.5 SUBMITTALS

A. Materials Credit Documentation Sheet: Provide a Materials Credit Documentation Sheet with each product submittal as required by other Specification Sections. Provide, at minimum, the information requested on the Materials Credit Documentation Sheet provided at the end of this Section.

B. Supporting Product Data: With each Materials Credit Documentation Sheet provide supporting documentation for each claim made related to recycled content, regional materials, reused materials, rapidly renewable materials, VOC content, urea formaldehyde, CRI Green Label Plus
and Floorscore Certification. Supporting Documentation may be in the form of a letter from the product manufacturer, product cut-sheet, product material safety data sheet, or print outs from the manufacturer's website attesting to the claim.

C. Provide FSC chain-of-custody certificates for products containing certified wood.

D. Project Materials Cost Data: Provide statement indicating total cost for materials used for Project only in CSI MasterFormat 2004 Edition Divisions 03-10, 31 (Section 316000 Foundations) and 32 (Sections 211000 Paving, 323000 Site Improvements, and 329000 Planting) from the project schedule of values. Materials costs include all expenses to deliver the materials to the project site. Materials costs should account for all taxes and transportation costs incurred by the contractor but exclude any cost for labor and equipment once the material has been delivered to the site. Include breakout of costs for the following categories of items. See Sustainable Materials Worksheet at the end of this section.

E. Contractor LEED Coordinator: Submit a copy of the LEED BD&C AP certificate. To within 14 days of the Notice to Proceed.

F. LEED Action Plans: Provide preliminary submittals within 14 days of date established for the Notice to Proceed. LEED Action Plans identify how the Contractor intends to meet the requirements of the credits the Contractor is primarily responsible for.


2. Construction indoor-air-quality management plan, complying with section 018119 “Indoor Air Quality Management.”

3. LEED Materials Plan: The LEED Materials Plan explains how the contractor intends to meet the requirements of the credits identified in this Section that the Contractor is primarily responsible for achieving. List all products in the project in CSI MasterFormat 2004 Edition Divisions 03-10, 31 (Section 316000 Foundations) and 32 (Sections 321000 Paving, 323000 Site Improvements, and 329000 Planting and additional materials with potential VOC content. List products in order by CSI MasterFormat 2004 Edition. Use the Sustainable Materials Worksheet provided at the end of this section as a template. For each product, provide:

   a. Specification Section.
   b. Product Name
   c. Product Manufacturer
   d. Contractor
   e. Material Cost from schedule of values. If materials cost is not known for the plan, use 45% of the total cost
   f. Percentage of Post-Consumer Recycled Content by weight
   g. Percentage of Pre-consumer Recycled Content by weight
   h. Dollar value of reused or salvaged material by multiplying the percentage reused or salvaged material by the material cost
   i. Dollar value of Recycled Content by multiplying the percentage of post-consumer recycled content plus one-half the percentage of pre-consumer recycled content by the material cost
   j. Distance from extraction, harvest, or recovery location
   k. Distance from manufacturing
   l. Percentage of product that is extracted, harvested, or recovered and manufactured within 500 miles of the project site
   m. Dollar value of Regional material by multiplying the percentage of regional material by the material cost
   n. Dollar value of new wood
o. Percentage of new wood that is FSC certified by weight

p. Dollar value of RSC wood by multiply in the percentage of FSC certified wood by material cost.

q. Provide total projected materials cost all products in the project in CSI MasterFormat 2004 Edition Divisions 03-10, 31 (Section 316000 Foundations) and 32 (Sections 321000 Paving, 323000 Site Improvements, and 329000 Planting

r. Provide total projected percentage of dollar value of materials with:

1) Recycled content
2) Regional content
3) FSC Certified content

s. Allowable VOC content

r. Verify all products with potential to have VOCs are projected to meet the VOC requirements

u. Verify that the product has no added urea-formaldehyde

v. Verify the product is FloorScore or CRI Green Label Plus as applicable

G. LEED Progress Reports: Concurrent with each Application for Payment, submit reports comparing actual construction and purchasing activities with LEED action plans for the following:

1. Credit SS PR1: Erosion and Sedimentation Control Plan
   a. Provide statement regarding activity and any corrective action if necessary
   b. Provide dated images illustrating compliance.

   a. Provide statement indicating original estimated total diversion rate, diversion to date, and expected final diversion rate. Include narrative regarding discrepancies or activity since the previous report. Include copies of any hauling receipts.

3. Credit MR 4: Recycled content
   a. Provide statement indicating original estimated recycled content based on LEED Materials Plan, recycled content to date, and expected final recycled content percentage. Include narrative regarding discrepancies or activity since the previous report.

4. Credit MR 5: Regionally Extracted, Processed and Manufactured Materials
   a. Provide statement indicating original estimated regional content based on LEED Materials Plan, regional content to date, and expected final regional content percentage. Include narrative regarding discrepancies or activity since the previous report.
5. Credit MR 7: FSC Content of New Wood Products
   a. Provide statement indicating original estimated FSC content of new wood products based on LEED Materials Plan, FSC content of new wood products content to date, and expected final FSC content of new wood products percentage. Include narrative regarding discrepancies or activity.

6. Credit IEQ 3.1: Indoor Air Quality Management Plan
   a. Provide statement indicating indoor-air-quality measures employed since the prior report. Include 6 photographs of different IAQ management strategies listed in the IAQ Management Plan. The photos must be dated and include a description of the management measure.

7. Credit IEQ 4.1 – 4.4 Low Emitting Materials
   a. Identify products which products have been purchased or installed since the previous report and verify compliance with VOC limits.
   b. Indicate resilient flooring that has been submitted since the previous report and verify it is FloorScore Certified.
   c. List which products with potential for added urea-formaldehyde have been submitted or installed since the previous report and verify there is no added urea-formaldehyde.
   d. Indicate carpet that has been submitted since the previous report and verify it is CRI Green Label Plus Certified.

8. LEED Materials Plan Update: With LEED progress report provide a LEED Materials Plan Update that has actual values for products already submitted and approved and continues to have estimated values for products yet to be submitted and approved. Clearly indicate which products are actual and which are estimated.

H. LEED Documentation Submittals: Final submission, to be completed/submitted prior to substantial completion.

1. Credit MR 2: Comply with Section 017419 "Construction Waste Management Plan."
2. Credit MR 3, 4, 5, 6, 7 and EQ 4: Final LEED Materials Plan.
3. Credit EQ 3.1: Comply with section 018119 "Indoor Air Quality Management Plan."
4. Credit EQ 3.2: Comply with section 018119 "Indoor Air Quality Management Plan."
   a. Signed statement describing the building air flush-out procedures including the dates when flush-out was begun and completed and statement that filtration media was replaced after flush-out.
   b. Product data for filtration media used during flush-out and during occupancy. Use form at the end of section 018119.
   c. Report from testing and inspecting agency indicating results of indoor-air-quality testing and documentation showing compliance with indoor-air-quality testing procedures and requirements.
5. LEED Online Letter Templates: Submit verification that all LEED online Letter Templates assigned to the contractor as described in this Section have been completed on LEED Online prior to substantial completion.
6. Provide electronic compilation of all material data sheets with supporting documentation in order by CSI format.
2. PRODUCTS

2.1 RECYCLED CONTENT OF MATERIALS

A. Credit MR 4: Provide building materials with recycled content such that post-consumer recycled content plus one-half of pre-consumer recycled content constitutes a minimum of 20 percent, of cost of materials used for project.

1. Cost of post-consumer recycled content of an item shall be determined by dividing weight of post-consumer recycled content in the item by total weight of the item and multiplying by cost of the item.
2. Cost of pre-consumer recycled content of an item shall be determined by dividing weight of pre-consumer recycled content in the item by total weight of the item and multiplying by cost of the item.

2.2 REGIONAL MATERIALS

A. Credit MR 5: Provide building materials with a minimum of 20 percent. Regional Content, by cost, of materials used for the Project in CSI MasterFormat 2004 Edition Divisions 03-10, 31 (Section 316000 Foundations) and 32 (Sections 321000 Paving, 323000 Site Improvements, and 329000 Planting).

2.3 FSC CERTIFIED WOOD

A. Credit MR 7: Use a minimum of 50% (based on cost) of new wood-based materials and products that are certified in accordance with the Forest Stewardship Council principles and criteria, for wood building components. Include only materials permanently installed on the project.

2.4 LOW-EMITTING MATERIALS

A. Credit EO 4.1: For field applications that are inside the weatherproofing system, use adhesives and sealants that comply with the following limits for VOC content when calculated according to South Coast Air Quality Management District (SCAQMD) Rule #1168, requirements in effect on July 1, 2005, and rule amendment date January 7, 2005:

1. Wood Glues: 30 g/L.
2. Metal to Metal Adhesives: 30 g/L.
3. Adhesives for Porous Materials (Except Wood): 50 g/L.
4. Subfloor Adhesives: 50 g/L.
5. Plastic Foam Adhesives: 50 g/L.
6. Carpet Adhesives: 50 g/L.
7. Carpet Pad Adhesives: 50 g/L.
8. VCT and Asphalt Tile Adhesives: 50 g/L.
9. Cove Base Adhesives: 50 g/L.
10. Gypsum Board and Panel Adhesives: 50 g/L.
11. Rubber Floor Adhesives: 60 g/L.
12. Ceramic Tile Adhesives: 65 g/L.
13. Multipurpose Construction Adhesives: 70 g/L.
14. Fiberglass Adhesives: 80 g/L.
15. Contact Adhesive: 80 g/L.
16. Structural Glazing Adhesives: 100 g/L.
17. Wood Flooring Adhesive: 100 g/L.
18. Structural Wood Member Adhesive: 140 g/L.
19. Special Purpose Contact Adhesive (contact adhesive that is used to bond melamine covered board, metal, unsupported vinyl, Teflon, ultra-high molecular weight polyethylene, rubber or wood veneer 1/16 inch or less in thickness to any surface): 250 g/L.
20. Top and Trim Adhesive: 250 g/L.
21. Plastic Cement Welding Compounds: 250 g/L.
22. ABS Welding Compounds: 325 g/L.
23. CPVC Welding Compounds: 490 g/L.
24. PVC Welding Compounds: 510 g/L.
25. Adhesive Primer for Plastic: 550 g/L.
27. ABS Welding Compounds: 400 g/L.
28. CPVC Welding Compounds: 490 g/L.
29. PVC Welding Compounds: 510 g/L.
30. Adhesive Primer for Plastic: 650 g/L.
31. Sheet Applied Rubber Lining Adhesive: 850 g/L.
32. Aerosol Adhesive, General Purpose Mist Spray: 65 percent by weight.
33. Aerosol Adhesive, General PurposeWeb Spray: 55 percent by weight.
34. Special Purpose Aerosol Adhesive (All Types): 70 percent by weight.
35. Other Adhesives: 250 g/L.
36. Architectural Sealants: 250 g/L.
37. Nonmembrane Roof Sealants: 300 g/L.
38. Single-Ply Roof Membrane Sealants: 450 g/L.
39. Other Sealants: 420 g/L.
40. Sealant Primers for Nonporous Substrates: 250 g/L.
41. Sealant Primers for Porous Substrates: 775 g/L.
42. Modified Bituminous Sealant Primers: 500 g/L.
43. Other Sealant Primers: 750 g/L.

B. Credit EQ 4.2: For field applications that are inside the weatherproofing system, use paints and coatings that comply with the following limits for VOC content when calculated according to Green Seal Standard GS-11, Paints, 1st Edition, May 20, 1993, South Coast Air Quality Management District (SCAQMD) Rule #1113, “Architectural Coatings”, rules in effect on January 1, 2004, and the following chemical restrictions:

1. Flat Paints, Coatings, and Primers: VOC not more than 50 g/L.
2. Nonflat Paints, Coatings, and Primers: VOC not more than 150 g/L.
3. Anticorrosive and Antirust Paints Applied to Ferrous Metals: VOC not more than 250 g/L.
4. Clear Wood Finishes, Varnishes: VOC not more than 350 g/L.
5. Clear Wood Finishes, Lacquers: VOC not more than 550 g/L.
6. Floor Coatings: VOC not more than 100 g/L.
7. Shellacs, Clear: VOC not more than 730 g/L.
8. Shellacs, Pigmented: VOC not more than 550 g/L.
9. Stains: VOC not more than 250 g/L.
10. Flat Interior Topcoat Paints: VOC not more than 50 g/L.
11. Nonflat Interior Topcoat Paints: VOC not more than 150 g/L.
12. Anticorrosive and Antirust Paints Applied to Ferrous Metals: VOC not more than 250 g/L.
13. Clear Wood Finishes, Varnishes and Sanding Sealers: VOC not more than 350 g/L.
14. Clear Wood Finishes, Lacquers: VOC not more than 550 g/L.
15. Floor Coatings: VOC not more than 100 g/L.
16. Shellacs, Clear: VOC not more than 730 g/L.
17. Shellacs, Pigmented: VOC not more than 550 g/L.
18. Stains: VOC not more than 250 g/L.
19. Primers, Sealers, and Undercoaters: VOC not more than 200 g/L.
20. Dry-Fog Coatings: VOC not more than 400 g/L.
SECTION 01 33 29 – INDOOR AIR QUALITY

1. GENERAL

1.1 SECTION INCLUDES

A. Construction procedures to promote adequate indoor air quality after construction.
B. Building flush-out after construction and before occupancy.
C. Testing indoor air quality before commencement of construction; existing building areas only.
D. Testing indoor air quality after completion of construction.

1.2 PROJECT GOALS

A. See Section 013323 – Sustainable Design Requirements, for overall project goals relating to environment and energy.
B. Dust and Airborne Particulates: Prevent deposition of dust and other particulates in HVAC ducts and equipment.
   1. Cleaning of ductwork is not contemplated under this Contract.
   2. Contractor shall bear the cost of cleaning required due to failure to protect ducts and equipment from construction dust.
   3. Establish condition of existing ducts and equipment prior to start of alterations.
C. Airborne Contaminants: Procedures and products have been specified to minimize indoor air pollutants.
   1. Furnish products meeting the specifications.
   2. Avoid construction practices that could result in contamination of installed products leading to indoor air pollution.

1.3 RELATED REQUIREMENTS

A. Section 013323 - Sustainable Design Requirements: LEED credits relating to indoor air quality.

1.4 REFERENCE STANDARDS


1.5 DEFINITIONS

A. Adsorptive Materials: Gypsum board, acoustical ceiling tile and panels, carpet and carpet tile, fabrics, fibrous insulation, and other similar products.
B. Contaminants: Gases, vapors, regulated pollutants, airborne mold and mildew, and the like, as specified.
C. Particulates: Dust, dirt, and other airborne solid matter.
D. **Wet Work:** Concrete, plaster, coatings, and other products that emit water vapor or volatile organic compounds during installation, drying, or curing.

1.6 **SUBMITTALS**

A. See General Conditions Article 6.10 - Shop Drawings, Product Data & Samples.

B. Credit EQ 3.2:
   1. Signed statement describing the building air flush-out procedures including the dates when flush-out was begun and completed and statement that filtration media was replaced after flush-out.
   2. Product data for filtration media used during flush-out and during occupancy. Use form 013330.
   3. Report from testing and inspection agency indicating results of indoor-air-quality testing and documentation showing compliance with indoor-air-quality procedures and requirements.

C. Indoor Air Quality Management Plan: Describe in detail measures to be taken to promote adequate indoor air quality upon completion; use SMACNA IAQ Guidelines for Occupied Buildings Under Construction as a guide.
   1. Submit not less than 60 days before enclosure of building.
   2. Identify potential sources of odor and dust.
   3. Identify construction activities likely to produce odor or dust.
   4. Identify areas of project potentially affected, especially occupied areas.
   5. Evaluate potential problems by severity and describe methods of control.
   6. Describe construction ventilation to be provided, including type and duration of ventilation, use of permanent HVAC systems, types of filters and schedule for replacement of filters.
   7. Describe cleaning and dust control procedures.

D. Interior Finishes Installation Schedule: Identify each interior finish that either generates odors, moisture, or vapors or is susceptible to adsorption of odors and vapors, and indicate air handling zone, sequence of application, and curing times.

E. Duct and Terminal Unit Inspection Report.

2. **PRODUCTS**

2.1 **MATERIALS**

   A. Low VOC Materials: See other sections for specific requirements for materials with low VOC content.

   B. Auxiliary Air Filters: MERV of 8, minimum, when tested in accordance with ASHRAE 52.2.

3. **EXECUTION**

3.1 **CONSTRUCTION PROCEDURES**

   A. Prevent the absorption of moisture and humidity by adsorptive materials by:
      1. Sequencing the delivery of such materials so that they are not present in the building until wet work is completed and dry.
2. Delivery and storage of such materials in fully sealed moisture-impermeable packaging.

3. Provide sufficient ventilation for drying within reasonable time frame.

B. Begin construction ventilation when building is substantially enclosed.

C. If extremely dusty or dirty work must be conducted inside the building, shut down HVAC systems for the duration; remove dust and dirt completely before restarting systems.

D. When working in a portion of an occupied building, prevent movement of air from construction area to occupied area.

E. Owner authorizes use of permanent heating, cooling, and ventilating systems during construction period as specified in Division 01 Section "Temporary Facilities and Controls," contractor shall install filter media having a MERV 8 according to ASHRAE 52.2 at each return air inlet for the air-handling system used during construction.

1. Replace all air filters immediately prior to occupancy.

F. Do not store construction materials or waste in mechanical or electrical rooms.

G. Prior to use of return air ductwork without intake filters clean up and remove dust and debris generated by construction activities.

1. Inspect duct intakes, return air grilles, and terminal units for dust.
2. Clean plenum spaces, including top sides of lay-in ceilings, outsides of ducts, tops of pipes and conduit.
3. Clean tops of doors and frames.
4. Clean mechanical and electrical rooms, including tops of pipes, ducts, and conduit, equipment, and supports.
5. Clean return plenums of air handling units.
6. Remove intake filters last, after cleaning is complete.

H. Do not perform dusty or dirty work after starting use of return air ducts without intake filters.

I. Use other relevant recommendations of SMACNA IAQ Guideline for Occupied Buildings Under Construction for avoiding unnecessary contamination due to construction procedures.

3.2 BUILDING FLUSH-OUT

A. Contractor's Option: Either full continuous flush-out OR satisfactory air contaminant testing is required, not both.

B. Perform building flush-out before occupancy.

C. Do not start flush-out until:

1. All construction is complete.
2. HVAC systems have been tested, adjusted, and balanced for proper operation.
3. Inspection of inside of return air ducts and terminal units confirms that cleaning is not necessary.
4. New HVAC filtration media have been installed.

D. Building Flush-Out: Operate all ventilation systems at normal flow rates with 100 percent outside air until a total air volume of 14,000 cubic feet per square foot of floor area has been supplied.
1. Obtain Owner’s concurrence that construction is complete enough before beginning flush-out.
2. Maintain interior temperature of at least 60 degrees F and interior relative humidity no higher than 60 percent.
3. If additional construction involving materials that produce particulates or any of the specified contaminants is conducted during flush-out, start flush-out over.

If interior spaces must be occupied prior to completion of the flush-out, supply a minimum of 25 percent of the total air volume prior to occupancy, and:
   a. Begin ventilation at least three hours prior to daily occupancy.
   b. Continue ventilation during all occupied periods.
   d. Provide minimum outside air volume of 0.30 cfm per square foot or design minimum outside air rate, whichever is greater.

E. Install new HVAC filtration media after completion of flush-out and before occupancy or further testing.

3.3 AIR CONTAMINANT TESTING

A. Contractor's Option: Either full continuous flush-out OR satisfactory air contaminant testing is required, not both.

B. Perform air contaminant testing before starting construction, as base line for evaluation of post-construction testing.

C. Perform air contaminant testing before occupancy.

D. Do not start air contaminant testing until:
   1. All construction is complete, including interior finishes.
   2. HVAC systems have been tested, adjusted, and balanced for proper operation.
   3. New HVAC filtration media have been installed.

E. Indoor Air Samples: Collect from spaces representative of occupied areas:
   1. Collect samples while operable windows and exterior doors are closed, HVAC system is running normally as if occupied, with design minimum outdoor air, but with the building unoccupied.
   2. Collect samples from spaces in each contiguous floor area in each air handler zone, but not less than one sample per 25,000 square feet; take samples from areas having the least ventilation and those having the greatest presumed source strength.
   3. Collect samples from height from 36 inches to 72 inches above floor.
   4. Collect samples from same locations on 3 consecutive days during normal business hours; average the results of each set of 3 samples.
   5. Exception: Areas with normal very high outside air ventilation rates, such as laboratories, do not need to be tested.
   6. When retesting the same building areas, take samples from at least the same locations as in first test.

F. Outdoor Air Samples: Collect samples at outside air intake of each air handler at the same time as indoor samples are taken.

G. Analyze air samples and submit report.
H. Air Contaminant Concentration Determination and Limits:

1. Carbon Monoxide: Not more than 9 parts per million and not more than 2 parts per million higher than outdoor air.
2. Airborne Mold and Mildew: Measure in relation to outside air; not higher than outside air.
3. Formaldehyde: Not more than 50 parts per billion.
4. Formaldehyde: Measure in micrograms per cubic meter, in relation to outside air; not more than 20 micrograms per cubic meter higher than outside air.
5. Total Volatile Organic Compounds (TVOC): Not more than 500 micrograms per cubic meter.
6. Total Volatile Organic Compounds (TVOC): Measure in micrograms per cubic meter, in relation to outside air; not more than 200 micrograms per cubic meter higher than outside air.
7. Particulates (PM10): Not more than 50 micrograms per cubic meter.
8. Total Particulates (PM): Measure in micrograms per cubic meter, in relation to outside air; not more than 20 micrograms per cubic meter higher than outside air.

END OF SECTION 01 33 29