Repair Building Exterior
Troop B Headquarters & Crime Lab
Macon, Missouri

Designed By: McClure Engineering
1901 Pennsylvania Drive
Columbia, MO 65202

Date Issued: March 15, 2021

Project No.: R2013-01

STATE of MISSOURI

OFFICE of ADMINISTRATION
Facilities Management, Design & Construction
SECTION 000107 - PROFESSIONAL SEALS AND CERTIFICATIONS

PROJECT NUMBER: R2013-01

THE FOLLOWING DESIGN PROFESSIONALS HAVE SIGNED AND SEALED THE ORIGINAL PLANS AND SPECIFICATIONS FOR THIS PROJECT, WHICH ARE ON FILE WITH THE DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION:

ALL: McClure Engineering Company
Certificate of Authority#:E-2006023253
Exp. 12/31/2021

Michael M. Hall, PE, M.ASCE
Exp. 12/31/2021
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**The following documents may be found on MissouriBUYS at https://missouribuys.mo.gov/**

| 004000    | PROCUREMENT FORMS & SUPPLEMENTS                                       |                 |
| 004113    | Bid Form                                                             | *               |
| 004322    | Unit Prices Form                                                     | *               |
| 004336    | Proposed Subcontractors Form                                         | *               |
| 004337    | MBE/WBE/SDVE Compliance Evaluation Form                              | *               |
| 004338    | MBE/WBE/SDVE Eligibility Determination                               | *               |
| 004339    | MBE/WBE/SDVE Good Faith Effort (GFE) Determination Forms             | *               |
| 004340    | SDVE Business Form                                                   | *               |
| 004541    | Affidavit of Work Authorization                                      | *               |
| 004545    | Anti-Discrimination Against Israel Act Certification form             | *               |

| 005000    | CONTRACTING FORMS AND SUPPLEMENTS                                     |                 |
| 005213    | Construction Contract                                                 | 3               |
| 005414    | Affidavit for Affirmative Action                                      | 1               |
| 006113    | Performance and Payment Bond                                          | 2               |
| 006325    | Product Substitution Request                                          | 2               |
| 006519.16 | Final Receipt of Payment and Release Form                             | 1               |
| 006519.18 | MBE/WBE/SDVE Progress Report                                          | 2               |
| 006519.21 | Affidavit of Compliance with Prevailing Wage Law                      | 1               |

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| 007300    | Supplementary Conditions                                              | 1               |
| 007346    | Wage Rate                                                             | 4               |

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| 012100    | Allowances                                                           | 2               |
| 012200    | Unit Prices                                                          | 2               |
| 012300    | Alternates                                                           | 2               |
| 012600    | Contract Modification Procedures                                     | 2               |
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| 013200    | Schedules - Bar Chart                                                | 4               |
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SECTION 000115 – LIST OF DRAWINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions, Bid Form, and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section provides a comprehensive list of the drawings that comprise the Bid Documents for this project.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.1 LIST OF DRAWINGS

A. The following list of drawings is a part of the Bid Documents:

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<td>1. Cover Sheet</td>
<td>Sheet G-001</td>
<td>03/15/2021</td>
<td>R2013-01-XXX-C2</td>
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<tr>
<td>2. Vicinity Map, Notes &amp; Legend</td>
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<td>03/15/2021</td>
<td>R2013-01-XXX-C2</td>
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<td>4. Survey Control Plan</td>
<td>Sheet G-004</td>
<td>03/15/2021</td>
<td>R2013-01-XXX-C2</td>
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<tr>
<td>5. Demolition Plan Base Bid</td>
<td>Sheet D-100</td>
<td>03/15/2021</td>
<td>R2013-01-XXX-C2</td>
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<tr>
<td>6. Demolition Plan Alternate No. 1</td>
<td>Sheet D-101</td>
<td>03/15/2021</td>
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<td>7. Demolition Plan Alternate No. 2</td>
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<td>8. Demolition Plan Alternate No. 3</td>
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<td>9. Improvement Plan Base Bid</td>
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LIST OF DRAWINGS

END OF SECTION 000115
SECTION 001116 - INVITATION FOR BID

1.0  OWNER:
   A. The State of Missouri
      Office of Administration,
      Division of Facilities Management, Design and Construction
      Jefferson City, Missouri

2.0  PROJECT TITLE AND NUMBER:
   A. Repair Building Exterior
      Troop B Headquarters & Crime Lab
      Macon, Missouri
      Project No.: R2013-01

3.0  BIDS WILL BE RECEIVED:
   A. Until: 1:30 PM, Thursday, June 17, 2021
   B. Only electronic bids on MissouriBUYS shall be accepted: https://missouribuys.mo.gov. Bidder must be registered to bid.

4.0  DESCRIPTION:
   A. Scope: The project includes pavement removal, retaining wall removal, pavement reconstruction, minor grading, lead paint abatement, exterior painting, tuck-pointing, concrete stair removal and replacement, pavement markings, retaining wall installation, sidewalk removal and replacement, final seeding and mulching.
   B. MBE/WBE/SDVE Goals: MBE 10%, WBE 10%, and SDVE 3%. NOTE: Only MBE/WBE firms certified by the State of Missouri Office of Equal Opportunity as of the date of bid opening, or SDVE(s) meeting the requirements of Section 34.074, RSMo and 1 CSR 30-5.010, can be used to satisfy the MBE/WBE/SDVE participation goals for this project.
   C. **NOTE: Bidders are provided new Good Faith Effort (GFE) forms on MissouriBUYS.

5.0  PRE-BID MEETING:
   A. Place/Time: 10:00 AM, Thursday, June, 3, 2021, at 308 Pine Crest Drive, Macon, Missouri 63552
   B. Access to State of Missouri property requires presentation of a photo ID by all persons

6.0  HOW TO GET PLANS & SPECIFICATIONS:
   A. View Only Electronic bid sets are available at no cost or paper bid sets for a deposit of $30.00 from American Document Solutions (ADS). MAKE CHECKS PAYABLE TO: American Document Solutions. Mail to: American Document Solutions, 1400 Forum Blvd., Suite 7A, Columbia, Missouri 65203. Phone 573-446-7768, Fax 573-355-5433, https://www.adsplanroom.net. NOTE: Prime contractors will be allowed a maximum of two bid sets at the deposit rate shown above. Other requesters will be allowed only one bid set at this rate. Additional bid sets or parts thereof may be obtained by any bidder at the cost of printing and shipping by request to American Document Solutions at the address shown above. Bidder must secure at least one bid set to become a planholder.
   B. Refunds: Return plans and specifications in unmarked condition within 15 working days of bid opening to American Document Solutions, 1400 Forum Blvd., Suite 7A, Columbia, Missouri 65203. Phone 573-446-7768, Fax 573-355-5433. Deposits for plans not returned within 15 working days shall be forfeited.
   C. Information for upcoming bids, including downloadable plans, specifications, Invitation for Bid, bid tabulation, award, addenda, and access to the ADS planholders list, is available on the Division of Facilities Management, Design and Construction’s web site: https://oa.mo.gov/facilities/bid-opportunities/bid-listing-electronic-plans.

7.0  POINT OF CONTACT:
   A. Designer: McClure Engineering, Michael Hall, phone (573) 234-2620
   B. Project Manager: Scott Zeller, phone (573) 751-2668

8.0  GENERAL INFORMATION:
   A. The State reserves the right to reject any and all bids and to waive all informalities in bids. No bid may be withdrawn for a period of 20 working days subsequent to the specified bid opening time. The contractor shall pay not less than the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed, as determined by the Missouri Department of Labor and Industrial Relations and as set out in the detailed plans and specifications.
   B. Bid results will be available at https://oa.mo.gov/facilities/bid-opportunities/bid-listing-electronic-plans after it is verified that at least one bid is awardable and affordable.
Very Important MissouriBUYS Instructions to Help Submit a Bid Correctly

A. The bidder shall submit his or her bid and all supporting documentation on MissouriBUYS eProcurement System. No hard copy bids shall be accepted. Go to https://missouribuys.mo.gov and register. The bidder must register before access is granted to the solicitation details and bidding is possible, however, the bidder can review a summary of the project by selecting “Bid Board” and then checking off “Open” under “Status” and “OA-FMDC-Contracts Chapter 8” under “Organization” in the boxes shown on the left margin.

B. Once registered, log in.
   2. Under “Filter by Agency” select “OA-FMDC-Contracts Chapter 8.”
   4. Above the dark blue bar, select “Other Active Opportunities.”
   5. To see the Solicitation Summary, single click the Opp. No. (Project Number) and the summary will open. Single quick click each blue bar to open detailed information.

C. Here are simplified instructions for uploading the bid to MissouriBUYS:
   1. Find the solicitation by completing Steps 1 through 4 above.
   2. Select the three dots under “Actions.” Select “Add New Response.”
   3. When the Quote box opens, give the response a title and select “OK.”
   4. The detailed solicitation will open. Select “Check All” for the Original Solicitation Documents, open each document, and select “Accept.” If this step is not completed, a bid cannot be uploaded. Scroll to the bottom of the page and select “Add Attachments.” If you do not see this command, not all documents have been opened and accepted.
   5. The Supplier Attachments box will open. Select “Add Attachment” again.
   6. The Upload Documents box will open. Read the instructions for uploading. Disregard the “Confidential” check box.
   7. Browse and attach up to 5 files at a time. Scroll to bottom of box and select “Upload.” The Supplier Attachments box will open. Repeat Steps 5 through 7 if more than 5 files are to be uploaded.
   8. When the Supplier Attachments box opens again and uploading is complete, select “Done.” A message should appear that the upload is successful. If it does not, go to the Bidder Response tab and select “Submit.”
   9. The detailed solicitation will open. At the bottom select “Close.”

D. Any time a bidder wants to modify the bid, he or she will have to submit a new one. FMDC will open the last response the bidder submits. The bidder may revise and submit the bid up to the close of the solicitation (bid date and time). Be sure to allow for uploading time so that the bid is successfully uploaded prior to the 1:30 PM deadline; we can only accept the bid if it is uploaded before the deadline.

E. If you want to verify that you are uploading documents correctly, we encourage you to submit a fake bid early. Label the fake bid as such to distinguish it from the real bid. The contracts person you contact will let you know if your “bid” was received successfully. Please contact Paul Girouard: 573-751-4797, paul.girouard@oa.mo.gov OR Mandy Roberson: 573-522-0074.

F. If you are experiencing login issues, please contact Web Procure Support (Proactis) at 866-889-8533 anytime from 7:00 AM to 7:00 PM Central Time, Monday through Friday. If you try using a userid or password several times that is incorrect, the system will lock you out. Web Procure Support is the only option to unlock you! If you forget your userid or password, Web Procure Support will provide a temporary userid or password. Also, if it has been a while since your last successful login and you receive an “inactive” message, contact Web Procure (Proactis). If you are having a registration issue, you may contact Cathy Holliday at 573-751-3491 or by email: cathy.holliday@oa.mo.gov.
IMPORTANT REMINDER REGARDING REQUIREMENT FOR OEO CERTIFICATION

A. SECTION 002113 – INSTRUCTIONS TO BIDDERS: Article 14.0, Section D1:

As of July 1, 2020, all MBE, WBE, and MBE/WBE contractors, subcontractors, and suppliers must be certified by the State of Missouri, Office of Equal Opportunity. No certifications from other Missouri certifying agencies will be accepted.
SECTION 002113 – INSTRUCTIONS TO BIDDERS

1.0 - SPECIAL NOTICE TO BIDDERS
A. If awarded a contract, the Bidder’s employees, and the employees of all subcontractors, who perform the work on the project, will be required to undergo a fingerprint background check and obtain a State of Missouri identification badge prior to beginning work on site. The Bidder should review the information regarding this requirement in Section 013513 – Site Security and Health Requirements prior to submitting a bid.

B. The Bidder’s prices shall include all city, state, and federal sales, excise, and similar taxes that may lawfully be assessed in connection with the performance of work, and the purchased of materials to be incorporated in the work. THIS PROJECT IS NOT TAX EXEMPT.

2.0 - BID DOCUMENTS
A. The number of sets obtainable by any one (1) party may be limited in accordance with available supply.

B. For the convenience of contractors, sub-contractors and suppliers, copies of construction documents are on file at the office of the Director, Division of Facilities Management, Design and Construction and on the Division’s web site - https://oa.mo.gov/facilities/bid-opportunities/bid-listing-electronic-plans.

3.0 - BIDDERS' OBLIGATIONS
A. Bidders must carefully examine the entire site of the work and shall make all reasonable and necessary investigations to inform themselves thoroughly as to the facilities available as well as to all the difficulties involved in the completion of all work in accordance with the specifications and the plans. Bidders are also required to examine all maps, plans and data mentioned in the specifications. No plea of ignorance concerning observable existing conditions or difficulties that may be encountered in the execution of the work under this contract will be accepted as an excuse for any failure or omission on the part of the contractor to fulfill in every detail all of the requirements of the contract, nor accepted as a basis for any claims for extra compensation.

B. Under no circumstances will contractors give their plans and specifications to another contractor. Any bid received from a contractor whose name does not appear on the list of plan holders may be subject to rejection.

4.0 - INTERPRETATIONS
A. No bidder shall be entitled to rely on oral interpretations as to the meaning of the plans and specifications or the acceptability of alternate products, materials, form or type of construction. Every request for interpretation shall be made in writing and submitted with all supporting documents not less than five (5) working days before opening of bids. Every interpretation made to a bidder will be in the form of an addendum and will be sent as promptly as is practicable to all persons to whom plans and specifications have been issued. All such addenda shall become part of the contract documents.

B. Approval for an “acceptable substitution” issued in the form of an addendum as per Paragraph 4A above, and as per Article 3.1 of the General Conditions; ACCEPTABLE SUBSTITUTIONS shall constitute approval for use in the project of the product.

C. An “acceptable substitution” requested after the award of bid shall be approved if proven to the satisfaction of the Owner and the Designer as per Article 3.1, that the product is acceptable in design, strength, durability, usefulness, and convenience for the purpose intended. Approval of the substitution after award is at the sole discretion of the Owner.

D. A request for “Acceptable Substitutions” shall be made on the Section 006325 Substitution Request Form. The request shall be sent directly to the project Designer. A copy of said request should also be mailed to the Owner, Division of Facilities Management, Design and Construction, Post Office Box 809, Jefferson City, Missouri 65102.
5.0 - BIDS AND BIDDING PROCEDURE

A. Bidders shall submit all submission forms and accompanying documents listed in SECTION 004113 – BID FORM, Article 5.0, ATTACHMENTS TO BID by the stated time or their bid will be rejected for being non-responsive.

Depending on the specific project requirements, the following is a GENERIC list of all possible bid forms that may be due with bid submittals and times when they may be due. Please check for specific project requirements on the proposal form (Section 004113). Not all of the following bid forms may be required to be submitted.

Bid Submittal – due before stated date and time of bid opening (see IFB):

- 004113 Bid Form (all pages are always required)
- 004322 Unit Prices Form
- 004336 Proposed Subcontractors Form
- 004337 MBE/WBE/SDVE Compliance Evaluation Form
- 004338 MBE/WBE/SDVE Eligibility Determination for Joint Ventures
- 004339 MBE/WBE/SDVE GFE Determination
- 004340 SDVE Business Form
- 004541 Affidavit of Work Authorization
- 004545 Anti-Discrimination Against Israel Act Certification form

B. All bids shall be submitted without additional terms and conditions, modification or reservation on the bid forms with each space properly filled. Bids not on these forms will be rejected.

C. All bids shall be accompanied by a bid bond executed by the bidder and a duly authorized surety company, certified check, cashier's check or bank draft made payable to the Division of Facilities Management, Design and Construction, State of Missouri, in the amount indicated on the bid form, Section 004113. Failure of the contractor to submit the full amount required shall be sufficient cause to reject his bid. The bidder agrees that the proceeds of the check, draft or bond shall become the property of the State of Missouri, if for any reason the bidder withdraws his bid after closing, or if on notification of award refuses or is unable to execute tendered contract, provide an acceptable performance and payment bond, provide evidence of required insurance coverage and/or provide required copies of affirmative action plans within ten (10) working days after such tender.

D. The check or draft submitted by the successful bidder will be returned after the receipt of an acceptable performance and payment bond and execution of the formal contract. Checks or drafts of all other bidders will be returned within a reasonable time after it is determined that the bid represented by same will receive no further consideration by the State of Missouri. Bid bonds will only be returned upon request.

6.0 - SIGNING OF BIDS

A. A bid from an individual shall be signed as noted on the Bid Form.

B. A bid from a partnership or joint venture shall require only one signature of a partner, an officer of the joint venture authorized to bind the venture or an attorney-in-fact. If the bid is signed by an officer of a joint venture or an attorney-in-fact, a document evidencing the individual's authority to execute contracts should be included with the bid form.

C. A bid from a limited liability company (LLC) shall be signed by a manager or a managing member of the LLC.

D. A bid from a corporation shall have the correct corporate name thereon and the signature of an authorized officer of the corporation manually written. Title of office held by the person signing for the corporation shall appear, along with typed name of said individual. Corporate license number shall be provided and, if a corporation organized in a state other than Missouri, a Certificate of Authority to do business in the State of Missouri shall be attached. In addition, for corporate proposals, the President or Vice-President should sign as the bidder. If the signator is other than the corporate president or vice president, the bidder must provide satisfactory evidence that the signator has the legal authority to bind the corporation.
E. A bid should contain the full and correct legal name of the Bidder. If the Bidder is an entity registered with the Missouri Secretary of State, the Bidder’s name on the bid form should appear as shown in the Secretary of State’s records.

F. The Bidder should include its corporate license number on the Bid Form and, if the corporation is organized in a state other than Missouri, a Certificate of Authority to do business in the State of Missouri shall be attached to the bid form.

7.0 - RECEIVING BID SUBMITTALS

A. It is the bidder’s sole responsibility to assure receipt by Owner of bid submittals by the date and time specified in the Invitation for Bid. Bids received after the date and time specified shall not be considered by the Owner.

B. Bids must be submitted through the MissouriBUYS statewide eProcurement system (https://www.missouribuys.mo.gov/) in accordance with the instructions for that system. The Owner shall only accept bids submitted through MissouriBUYS. Bids received by the Owner through any other means, including hard copies, shall not be considered and will be discarded by the Owner unopened.

C. To respond to an Invitation for Bid, the Bidder must first register with MissouriBUYS by going through the MissouriBUYS Home Page (https://www.missouribuys.mo.gov/), clicking the “Register” button at the top of the page, and completing the Vendor Registration. Once registered, the Bidder accesses its account by clicking the “Login” button at the top of the MissouriBUYS Home Page. Enter your USERID and PASSWORD, which the Bidder will select. Under Solicitations, select “View Current Solicitations.” A new screen will open. Under “Filter by Agency” select “OA-FMDC-Contracts Chapter 8.” Under “Filter by Opp. No.” type in the State Project Number. Select “Submit.” Above the dark blue bar, select “Other Active Opportunities.” To see the Solicitation Summary, single click the Opp. No. (Project Number) and the summary will open. Single quick click each blue bar to open detailed information. The Bidder must read and accept the Original Solicitation Documents and complete all identified requirements. The Bidder should download and save all of the Original Solicitation Documents on its computer so that the Bidder can prepare its response to these documents. The Bidder should upload its completed response to the downloaded documents as an attachment to the electronic solicitation response.

D. Step-by-step instructions for how a registered vendor responds to a solicitation electronically are provided in Section 001116 – Invitation For Bid.

E. The Bidder shall submit its bid on the forms provided by the Owner on MissouriBUYS with each space fully and properly completed, including all amounts required for alternate bids, unit prices, cost accounting data, etc. The Owner may reject bids that are not on the Owner’s forms or that do not contain all requested information.

F. No Contractor shall stipulate in his bid any conditions not contained in the specifications or standard bid form contained in the contract documents. To do so may subject the Contractor’s bid to rejection.

G. The completed forms shall be without interlineations, alterations or erasures.

8.0 - MODIFICATION AND WITHDRAWAL OF BIDS

A. Bidder may withdraw his bid at any time prior to scheduled closing time for receipt of bids, but no bidder may withdraw his bid for a period of twenty (20) working days after the scheduled closing time for receipt of bids.

B. The Bidder shall modify his or her original bid by submitting a revised bid on MissouriBUYS.

9.0 - AWARD OF CONTRACT

A. The Owner reserves the right to reject any and/or all bids and further to waive all informalities in bidding when deemed in the best interest of the State of Missouri.

B. The Owner reserves the right to let other contracts in connection with the work, including but not by way of limitation, contracts for the furnishing and installation of furniture, equipment, machines, appliances and other apparatus.
C. In awarding the contract the Owner may take into consideration the bidder's skill, facilities, capacity, experience, responsibility, previous work record, financial standing and the necessity of prompt and efficient completion of work herein described. Inability of any bidder to meet the requirements mentioned above may be cause for rejection of his bid. However, no contract will be awarded to any individual, partnership or corporation, who has had a contract with the State of Missouri declared in default within the preceding twelve months.

D. Award of alternates, if any, will be made in numerical order unless all bids received are such that the order of acceptance of alternates does not affect the determination of the low bidder.

E. No bid shall be considered binding upon the Owner until the written contract has been properly executed, a satisfactory bond has been furnished, evidence of required insurance coverage, submittal of executed Section 004541, Affidavit of Work Authorization form, documentation evidencing enrollment and participation in a federal work authorization program has been received and an affirmative action plan submitted. Failure to execute and return the contract and associated documents within the prescribed period of time shall be treated, at the option of the Owner, as a breach of bidder's obligation and the Owner shall be under no further obligation to bidder.

F. If the successful bidder is doing business in the State of Missouri under a fictitious name, he shall furnish to Owner, attached to the Bid Form, a properly certified copy of the certificate of Registration of Fictitious Name from the State of Missouri, and such certificate shall remain on file with the Owner.

G. Any successful bidder which is a corporation organized in a state other than Missouri shall furnish to the Owner, attached to the Bid Form, a properly certified copy of its current Certificate of Authority to do business in the State of Missouri, such certificate to remain on file with the Owner. No contract will be awarded by the Owner unless such certificate is furnished by the bidder.

H. Any successful bidder which is a corporation organized in the State of Missouri shall furnish at its own cost to the Owner, if requested, a Certificate of Good Standing issued by the Secretary of State, such certificate to remain on file with the Owner.

I. Transient employers subject to Sections 285.230 and 285.234, RSMo, (out-of-state employers who temporarily transact any business in the State of Missouri) may be required to file a bond with the Missouri Department of Revenue. No contract will be awarded by the Owner unless the successful bidder certifies that he has complied with all applicable provisions of Section 285.230-234.

J. Sections 285.525 and 285.530, RSMo, require business entities to enroll and participate in a federal work authorization program in order to be eligible to receive award of any state contract in excess of $5,000. Bidders should submit with their bid an Affidavit of Work Authorization (Section 004541) along with appropriate documentation evidencing such enrollment and participation. Section-004541, Affidavit of Work Authorization is located on the MissouriBUYS solicitation for this project. Bidders must also submit an E-Verify Memorandum before the Owner may award a contract to the Bidder. Information regarding a E-Verify is located at https://www.uscis.gov/e-verify/. The contractor shall be responsible for ensuring that all subcontractors and suppliers associated with this contract enroll in E-Verify.

10.0 - CONTRACT SECURITY

A. The successful bidder shall furnish a performance/payment bond as set forth in General Conditions Article 6.1 on a condition prior to the State executing the contract and issuing a notice to proceed.

11.0 - LIST OF SUBCONTRACTORS

A. If required by “Section 004113 – Bid Form,” each bidder must submit as part of their bid a list of subcontractors to be used in performing the work (Section 004336). The list must specify the name of the single designated subcontractor, for each category of work listed in “Section 004336 - Proposed Subcontractors Form.” If work within a category will be performed by more than one subcontractor, the bidder must provide the name of each subcontractor and specify the exact portion of the work to be done by each. Failure to list the Bidder’s firm, or a subcontractor for each category of work identified on the Bid Form or the listing of more than one subcontractor for any category without designating the portion of work to be performed by each shall be cause for rejection of the bid. If the bidder intends to perform any of the designated subcontract work with the use of his own employees, the bidder shall make that fact clear, by listing his own firm for the subject category. If any category of work is left vacant, the bid shall be rejected.
12.0 - WORKING DAYS

A. Contract duration time is stated in working days and will use the following definition in determining the actual calendar date for contract completion:


13.0 - AMERICAN AND MISSOURI - MADE PRODUCTS AND FIRMS

A. By signing the bid form and submitting a bid on this project, the Bidder certifies that it will use American and Missouri products as set forth in Article 1.7 of the General Conditions. Bidders are advised to review those requirements carefully prior to bidding.

B. A preference shall be given to Missouri firms, corporations or individuals, or firms, corporations or individuals that maintain Missouri offices or places of business, when the quality of performance promised is equal or better and the price quoted is the same or less.

C. Pursuant to Section 34.076, RSMo, a contractor or Bidder domiciled outside the boundaries of the State of Missouri shall be required, in order to be successful, to submit a bid the same percent less than the lowest bid submitted by a responsible contractor or Bidder domiciled in Missouri as would be required for such a Missouri domiciled contractor or Bidder to succeed over the bidding contractor or Bidder domiciled outside Missouri on a like contract or bid being let in the person's domiciliary state and, further, the contractor or Bidder domiciled outside the boundaries of Missouri shall be required to submit an audited financial statement as would be required of a Missouri domiciled contractor or Bidder on a like contract or bid being let in the domiciliary state of that contractor or Bidder.

14.0 – ANTI-DISCRIMINATION AGAINST ISRAEL ACT CERTIFICATION:

A. Pursuant to section 34.600, RSMo, if the Bidder meets the section 34.600, RSMo, definition of a “company” and the Bidder has ten or more employees, the Bidder must certify in writing that the Bidder is not currently engaged in a boycott of goods or services from the State of Israel as defined in section 34.600, RSMo, and shall not engage in a boycott of goods or services from the State of Israel, if awarded a contract, for the duration of the contract. The Bidder is requested to complete and submit the applicable portion of Section 004545 - Anti-Discrimination Against Israel Act Certification with their Bid Form. The applicable portion of the exhibit must be submitted prior to execution of a contract by the Owner and issuance of Notice to Proceed. If the exhibit is not submitted, the Owner shall rescind its Intent to Award and move to the next lowest, responsive, responsible bidder.

15.0 - MBE/WBE/SDVE INSTRUCTIONS

A. Definitions:

1. “MBE” means a Minority Business Enterprise.

2. “MINORITY” has the same meaning as set forth in 1 C.S.R. 10-17.010.

3. “MINORITY BUSINESS ENTERPRISE” has the same meaning as set forth in section 37.020, RSMo.


5. “WOMEN’S BUSINESS ENTERPRISE” has the same meaning as set forth in section 37.020, RSMo.


7. “SERVICE-DISABLED VETERAN” has the same meaning as set forth in section 34.074, RSMo.

8. “SERVICE-DISABLED VETERAN ENTERPRISE” has the same meaning as “Service-Disabled Veteran Business” set forth in section 34.074, RSMo.
B. MBE/WBE/SDVE General Requirements:

1. For all bids greater than $100,000, the Bidder shall obtain MBE, WBE and SDVE participation in an amount equal to or greater than the percentage goals set forth in the Invitation for Bid and the Bid Form, unless the Bidder is granted a Good Faith Effort waiver by the Director of the Division, as set forth below. If the Bidder does not meet the MBE, WBE and SDVE goals, or make a good faith effort to do so, the Bidder shall be non-responsive, and its bid shall be rejected.

2. The Bidder should submit with its bid all of the information requested in the MBE/WBE/SDVE Compliance Evaluation Form for every MBE, WBE, or SDVE subcontractor or material supplier the Bidder intends to use for the contract work. The Bidder is required to submit all appropriate MBE/WBE/SDVE documentation before the stated time and date set forth in the Invitation for Bid. If the Bidder fails to provide such information by the specified date and time, the Owner shall reject the bid.

3. The Director reserves the right to request additional information from a Bidder to clarify the Bidder’s proposed MBE, WBE, and/or SDVE participation. The Bidder shall submit the clarifying information requested by the Owner within two (2) Working Days of receiving the request for clarification.

4. Pursuant to section 34.074, RSMo, a Bidder that is a SDVE doing business as Missouri firm, corporation, or individual, or that maintains a Missouri office or place of business, shall receive a three-point bonus preference in the contract award evaluation process. The bonus preference will be calculated and applied by reducing the bid amount of the eligible SDVE by three percent of the apparent low responsive bidder’s bid. Based on this calculation, if the eligible SDVE’s evaluation is less than the apparent low responsive bidder’s bid, the eligible SDVE’s bid becomes the apparent low responsive bid. This reduction is for evaluation purposes only, and will have no impact on the actual amount(s) of the bid or the amount(s) of any contract awarded. In order to be eligible for the SDVE preference, the Bidder must complete and submit with its bid the Missouri Service Disabled Veteran Business Form, and any information required by the form. The form is available on the MissouriBUYS solicitation for this project.

C. Computation of MBE/WBE/SDVE Goal Participation:

1. A Bidder who is a MBE, WBE, or SDVE may count 100% of the contract towards the MBE, WBE or SDVE goal, less any amounts awarded to another MBE, WBE or SDVE. (NOTE: A MBE firm that bids as general contractor must obtain WBE and SDVE participation; a WBE firm that bids as a general contractor must obtain MBE and SDVE participation; and a SDVE firm that bids as general contractor must obtain MBE and WBE participation.) In order for the remaining contract amount to be counted towards the MBE, WBE or SDVE goal, the Bidder must complete the MBE/WBE/SDVE Compliance Evaluation Form (Section 004337) identifying itself as an MBE, WBE or SDVE.

2. The total dollar value of the work granted to a certified MBE, WBE or SDVE by the Bidder shall be counted towards the applicable goal.

3. Expenditures for materials and supplies obtained from a certified MBE, WBE, or SDVE supplier or manufacturer may be counted towards the MBE, WBE and SDVE goals, if the MBE, WBE, or SDVE assumes the actual and contractual responsibility for the provision of the materials and supplies.

4. The total dollar value of the work granted to a second or subsequent tier subcontractor or a supplier may be counted towards a Bidder’s MBE, WBE and SDVE goals, if the MBE, WBE, or SDVE properly assumes the actual and contractual responsibility for the work.

5. The total dollar value of work granted to a certified joint venture equal to the percentage of the ownership and control of the MBE, WBE, or SDVE partner in the joint venture may be counted towards the MBE/WBE/SDVE goals.

6. Only expenditures to a MBE, WBE, or SDVE that performs a commercially useful function in the work may be counted towards the MBE, WBE and SDVE goals. A MBE, WBE, or SDVE performs 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 or providing supplies or manufactured materials.
D. Certification of MBE/WBE/SDVE Subcontractors:

1. In order to be counted towards the goals, an MBE or WBE must be certified by the State of Missouri Office of Equal Opportunity and an SDVE must be certified by the State of Missouri, Office of Administration, Division of Purchasing and Material Management or by the Department of Veterans Affairs.

2. The Bidder may determine the certification status of a proposed MBE or WBE subcontractor or supplier by referring to the Office of Equal Opportunity (OEO)’s online MBE/WBE directory (https://apps1.mo.gov/oeo/). The Bidder may determine the eligibility of a SDVE subcontractor or supplier by referring to the Division of Purchasing and Materials Management’s online SDVE directory (http://oa.mo.gov/purchasing/vendor-information/missouri-service-disabled-veteranbusiness-enterprise-sdve-information) or the Department of Veterans Affairs’ directory (https://www.vip.vetbiz.gov/).

3. Additional information, clarifications, etc., regarding the listings in the directories may be obtained by calling the Division at (573)751-3339 and asking to speak to the Contract Specialist of record as shown in the Supplementary Conditions (Section 007300).

E. Waiver of MBE/WBE/SDVE Participation:

1. If a Bidder has made a good faith effort to secure the required MBE, WBE and/or SDVE participation and has failed, the Bidder shall submit with its bid the information requested in MBE/WBE/SDVE Good Faith Effort (GFE) Determination form. The GFE forms are located on the MissouriBUYS solicitation for this project. The Director will determine if the Bidder made a good faith effort to meet the applicable goals. If the Director determines that the Bidder did not make a good faith effort, the bid shall be rejected as being nonresponsive to the bid requirements. Bidders who demonstrate that they have made a good faith effort to include MBE, WBE, and/or SDVE participation will be determined to be responsive to the applicable participation goals, regardless of the percent of actual participation obtained, if the bid is otherwise acceptable.

2. In determining whether a Bidder has made a good faith effort to obtain MBE, WBE and/or SDVE participation, the Director may evaluate the factors set forth in 1 CSR 30-5.010(6)(C) and the following:
   a. The amount of actual participation obtained;
   b. How and when the Bidder contacted potential MBE, WBE, and SDVE subcontractors and suppliers;
   c. The documentation provided by the Bidder to support its contacts, including whether the Bidder provided the names, addresses, phone numbers, and dates of contact for MBE/WBE/SDVE firms contacted for specific categories of work;
   d. If project information, including plans and specifications, were provided to MBE/WBE/SDVE subcontractors;
   e. Whether the Bidder made any attempts to follow-up with MBE, WBE or SDVE firms prior to bid;
   f. Amount of bids received from any of the subcontractors and/or suppliers that the Bidder contacted;
   g. The Bidder’s stated reasons for rejecting any bids;

3. If no bidder has obtained any participation in a particular category (MBE/WBE/SDVE) or made a good faith effort to do so, the Director may waive that goal rather than rebid.
F. Contractor MBE/WBE/SDVE Obligations

1. If awarded a contract, the Bidder will be contractually required to subcontract with or obtain materials from the MBE, WBE, and SDVE firms listed in its bid, in amounts equal to or greater than the dollar amount bid, unless the amount is modified in writing by the Owner.

2. If the Contractor fails to meet or maintain the participation requirements contained in the Contractor’s bid, the Contractor must satisfactorily explain to the Director why it cannot comply with the requirement and why failing meeting the requirement was beyond the Contractor’s control. If the Director finds the Contractor's explanation unsatisfactory, the Director may take any appropriate action including, but not limited to:
   a. Declaring the Contractor ineligible to participate in any contracts with the Division for up to twelve (12) months (suspension); and/or
   b. Declaring the Contractor be non-responsive to the Invitation for Bid, or in breach of contract and rejecting the bid or terminating the contract.

3. If the Contractor replaces an MBE, WBE, or SDVE during the course of this contract, the Contractor shall replace it with another MBE, WBE, or SDVE or make a good faith effort to do so. All MBE, WBE and SDVE substitutions must be approved by the Director.

4. The Contractor shall provide the Owner with regular reports on its progress in meeting its MBE/WBE/SDVE obligations. At a minimum, the Contractor shall report the dollar-value of work completed by each MBE, WBE, or SDVE during the preceding month and the cumulative total of work completed by each MBE, WBE or SDVE to date with each monthly application for payment. The Contractor shall also make a final report, which shall include the total dollar-value of work completed by each MBE, WBE, and SDVE during the entire contract.
The MBE/WBE Directory for goods and services is maintained by the Office of Equal Opportunity (OEO). The current Directory can be accessed at the following web address:

https://apps1.mo.gov/MWBCertifiedFirms/

Please note that you may search by MBE, WBE, or both as well as by region, location of the business by city or state, as well as by commodity or service.

The SERVICE DISABLED VETERAN ENTERPRISE (SDVE) Directory (s) may be accessed at the following web addresses:

https://oa.mo.gov/sites/default/files/sdvelisting.pdf

https://www.vip.vetbiz.va.gov
THIS AGREEMENT, made (DATE) by and between:

Contractor Name and Address
hereinafter called the "Contractor,"

and the State of Missouri, hereinafter called the "Owner", represented by the Office of Administration, Division of Facilities Management, Design and Construction, on behalf of the Department of Public Safety, Missouri State Highway Patrol.

WITNESSETH, that the Contractor and the Owner, for the consideration stated herein agree as follows:

ARTICLE 1. STATEMENT OF WORK

The Contractor shall furnish all labor and materials and perform all work required for furnishing and installing all labor, materials, equipment and transportation and everything necessarily inferred from the general nature and tendency of the plans and specifications for the proper execution of the work for:

Project Name: Repair Building Exterior
Troop B Headquarters & Crime Lab
Macon, Missouri

Project Number: R2013-01

in strict accordance with the Contract Documents as enumerated in Article 7, all of which are made a part hereof.

ARTICLE 2. TIME OF COMPLETION

The contract performance time is 140 working days from the transmittal date of this agreement. The contract completion date is MONTH, DAY, YEAR. This time includes ten (10) working days for the Contractor to receive, sign and return the contract form along with required bonding and insurance certificates. Failure of the Contractor to provide correct bonding and insurance within the ten (10) working days shall not be grounds for a time extension. Receipt of proper bonding and insurance is a condition precedent to the formation of the contract and if not timely received, may result in forfeiture of the Contractor's bid security. Work may not commence until the Owner issues a written Notice to Proceed and must commence within seven (7) working days thereafter.

ARTICLE 3. LIQUIDATED DAMAGES

Whenever time is mentioned in this contract, time shall be and is of the essence of this contract. The Owner would suffer a loss should the Contractor fail to have the work embraced in this contract fully completed on or before the time above specified. THEREFORE, the parties hereto realize in order to adjust satisfactorily the damages on account of such failure that it might be impossible to compute accurately or estimate the amount of such loss or damages which the Owner would sustain by reason of failure to complete fully said work within the time required by this contract. The Contractor hereby covenants and agrees to pay the Owner, as and for liquidated damages, the sum of $700 per day for each and every day, Sunday and legal holidays excepted, during which the work remains incomplete and unfinished. Any sum which may be due the Owner for such damages shall be deducted and retained by the Owner from any balance which may be due the Contractor when said work shall have been finished and accepted. But such provisions shall not release the Bond of the Contractor from liability according to its terms. In case of failure to complete, the Owner will be under no obligation to show or prove any actual or specific loss or damage.
ARTICLE 4. CONTRACT SUM

The Owner shall pay the Contractor for the prompt, faithful and efficient performance of the conditions and undertakings of this contract, subject to additions, and deductions as provided herein, in current funds the sum of:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Bid</td>
<td>$</td>
</tr>
<tr>
<td>Alternate No. 1</td>
<td>$</td>
</tr>
<tr>
<td>Alternate No. 2</td>
<td>$</td>
</tr>
<tr>
<td>Alternate No. 3</td>
<td>$</td>
</tr>
<tr>
<td>Alternate No. 4</td>
<td>$</td>
</tr>
<tr>
<td><strong>TOTAL CONTRACT AMOUNT:</strong></td>
<td>$(CONTRACT AMOUNT)</td>
</tr>
</tbody>
</table>

UNIT PRICES: The Owner accepts the following Unit Prices:

For changing specified quantities of work from those indicated by the contract drawings and specifications, upon written instructions of Owner, the following unit prices shall prevail. The unit prices include all labor, overhead and profit, materials, equipment, appliances, bailing, shoring, shoring removal, etc., to cover the finished work of the several kinds of work called for. Only a single unit price shall be given and it shall apply for either MORE or LESS work than that shown on the drawings and called for in the specifications or included in the Base Bid. In the event of more or less units than so indicated or included, change orders may be issued for the increased or decreased amount.

ARTICLE 5. PREVAILING WAGE RATE

It is understood and agreed by and between the parties that not less than the prevailing hourly rate of wages shall be paid for work of a similar character in the locality in which the work is performed, and not less than the prevailing hourly rate of wages for legal holiday and overtime work in the locality in which the work is performed, both as determined by the Department of Labor and Industrial Relations or as determined by the court on appeal, to all workmen employed by or on behalf of the Contractor or any subcontractor, exclusive of maintenance work. Only such workmen as are directly employed by the Contractor or his subcontractors, in actual construction work on the site shall be deemed to be employed.

When the hauling of materials or equipment includes some phase of the construction other than the mere transportation to the site of the construction, workmen engaged in this dual capacity shall be deemed to be employed directly on the project and entitled to the prevailing wage.

ARTICLE 6. MINORITY/WOMEN/SERVICE DISABLED VETERAN BUSINESS ENTERPRISE PARTICIPATION

The Contractor has been granted a waiver of the 10% MBE and 10% WBE and 3% SDVE participation goals.

The Contractor agrees to secure the MBE/WBE/SDVE participation amounts for this project as follows: (OR)

The Contractor has met the MBE/WBE/SDVE participation goals and agrees to secure the MBE/WBE/SDVE participation amounts for this project as follows:

<table>
<thead>
<tr>
<th>MBE/WBE/SDVE Firm</th>
<th>Subcontract Amt: $</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBE/WBE/SDVE Firm</td>
<td>Subcontract Amt: $</td>
</tr>
<tr>
<td>MBE/WBE/SDVE Firm</td>
<td>Subcontract Amt: $</td>
</tr>
</tbody>
</table>

                             | Total  $ |
|---------------------------|---------|
MBE/WBE/SDVE assignments identified above shall not be changed without a Contract Change signed by the Owner. The Director of the Division of Facilities Management, Design and Construction or his Designee shall be the final authority to resolve disputes and disagreements between the Contractor and the MBE/WBE/SDVE firms listed above when such disputes impact the subcontract amounts shown above.

ARTICLE 7. CONTRACT DOCUMENTS
Contract documents shall consist of the following component parts:

1. Division 0, with executed forms
2. Division 1
3. Executed Construction Contract Form
4. The Drawings
5. The Technical Specifications
6. Addenda
7. Contractor's Proposal as accepted by the Owner

By signature below, the parties hereby execute this contract document.

APPROVED:

Mark Hill, P.E., Director
Division of Facilities Management, Design and Construction

Contractor’s Authorized Signature

I, Corporate Secretary, certify that I am Secretary of the corporation named above and that (CONTRACTOR NAME), who signed said contract on behalf of the corporation, was then (TITLE) of said corporation and that said contract was duly signed for and in behalf of the corporation by authority of its governing body, and is within the scope of its corporate powers.

Corporate Secretary
STATE OF MISSOURI
OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

AFFIDAVIT FOR AFFIRMATIVE ACTION

NAME

First being duly sworn on oath states: that

he/she is the □ sole proprietor □ partner □ officer or □ manager or managing member of

NAME

□ sole proprietorship □ partnership
□ limited liability company (LLC)

or □ corporation, and as such, said proprietor, partner, or officer is duly authorized to make this

affidavit on behalf of said sole proprietorship, partnership, or corporation; that under the contract known as

PROJECT TITLE

Less than 50 persons in the aggregate will be employed and therefore, the applicable Affirmative Action

requirements as set forth in Article 1.4 of the General Conditions of the State of Missouri have been met.

PRINT NAME & SIGNATURE

DATE

NOTARY INFORMATION

NOTARY PUBLIC EMBOSSER SEAL

STATE OF
COUNTY (OR CITY OF ST. LOUIS)

SUBSCRIBED AND SWORN BEFORE ME, THIS

DAY OF

YEAR

NOTARY PUBLIC SIGNATURE

MY COMMISSION EXPIRES

NOTARY PUBLIC NAME (TYPED OR PRINTED)
SECTION 006113 - PERFORMANCE AND PAYMENT BOND FORM

KNOW ALL MEN BY THESE PRESENTS, THAT we ________________________________________
as principal, and __________________________________________________________________________________
______________________________________________________________________________________________as Surety, are held and firmly bound unto the
STATE OF MISSOURI. in the sum of ________________________________________ Dollars ($                                          )
for payment whereof the Principal and Surety bind themselves, their heirs, executors, administrators and successors, jointly
and severally, firmly by these presents.

WHEREAS, the Principal has, by means of a written agreement dated the ______________________________________
day of_______________________________________, 20_________, enter into a contract with the State of Missouri for
_________________________________________________________________________________________________
____________________________________________________________________________________________
(Insert Project Title and Number)

NOW, THEREFORE, if the Principal shall faithfully perform and fulfill all the undertakings, covenants, terms, conditions and
agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the State of
Missouri, with or without notice to the Surety and during the life of any guaranty required under the contract; and shall also faithfully
perform and fulfill all undertakings, covenants, terms, conditions and agreements of any and all duly authorized modifications of said
contract that may hereafter be made with or without notice to the Surety; and shall also promptly make payment for materials
incorporated, consumed or used in connection with the work set forth in the contract referred to above, and all insurance premiums, both
compensation and all other kinds of insurance, on said work, and for all labor performed on such work, whether by subcontractor or
otherwise, at not less than the prevailing hourly rate of wages for work of a similar character (exclusive of maintenance work) in the
locality in which the work is performed and not less than the prevailing hourly rate of wages for legal holiday and overtime work
(exclusive of maintenance work) in the locality in which the work is performed both as determined by the Department of Labor and
Industrial Relations or determined by the Court of Appeal, as provided for in said contract and in any and all duly authorized
modifications of said contract that may be hereafter made, with or without notice to the Surety; then, this obligation shall be void and
of no effect, but it is expressly understood that if the Principal should make default in or should fail to strictly, faithfully and efficiently
do, perform and comply with any or more of the covenants, agreements, stipulations, conditions, requirements or undertakings, as
specified in or by the terms of said contract, and with the time therein named, then this obligation shall be valid and binding upon each
of the parties hereto and this bond shall remain in full force and effect; and the same may be sued on at the instance of any material man,
laborer, mechanic, subcontractor, individual, or otherwise to whom such payment is due, in the name of the State of Missouri, to the use
of any such person.
AND, IT IS FURTHER specifically provided that any modifications which may hereinafter be made in the terms of the contract or in the work to be done under it or the giving by the Owner of any extension of the time for the performance of the contract or any other forbearance on the part of either the Owner or the Principal to the other, shall not in any way release the Principal and the Surety, or either or any of them, their heirs, executors, administrators and successors, from their liability hereunder, notice to the Surety of any such extension, modifications or forbearance being hereby waived.

IN WITNESS WHEREOF, the above bounden parties have executed the within instrument this ______________ day of _______________________, 20 ___.

AS APPLICABLE:

AN INDIVIDUAL

Name: ______________________________________
Signature: ______________________________________

A PARTNERSHIP

Name of Partner: ______________________________________
Signature of Partner: ______________________________________

Name of Partner: ______________________________________
Signature of Partner: ______________________________________

CORPORATION

Firm Name: ______________________________________
Signature of President: ______________________________________

SURETY

Surety Name: ______________________________________
Attorney-in-Fact: ______________________________________
Address of Attorney-in-Fact: ______________________________________
Telephone Number of Attorney-in-Fact: ______________________
Signature Attorney-in-Fact: ______________________________________

NOTE: Surety shall attach Power of Attorney
STATE OF MISSOURI
OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

PROJECT TITLE AND LOCATION

CHECK APPROPRIATE BOX

☐ SUBSTITUTION PRIOR TO BID OPENING
   (Minimum of (5) working days prior to receipt of Bids as per Article 4 – Instructions to Bidders)

☐ SUBSTITUTION FOLLOWING AWARD
   (Maximum of (20) working days from Notice to Proceed as per Article 3 – General Conditions)

FROM: BIDDER/CONTRACTOR (PRINT COMPANY NAME)

TO: ARCHITECT/ENGINEER (PRINT COMPANY NAME)

Bidder/Contractor hereby requests acceptance of the following product or systems as a substitution in accordance with provisions of Division One of the Bidding Documents:

SPECIFIED PRODUCT OR SYSTEM

SPECIFICATION SECTION NO.

SUPPORTING DATA

☐ Product data for proposed substitution is attached (include description of product, standards, performance, and test data)

☐ Sample

☐ Sample will be sent, if requested

QUALITY COMPARISON

<table>
<thead>
<tr>
<th>SPECIFIED PRODUCT</th>
<th>SUBSTITUTION REQUEST</th>
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<tr>
<td>NAME, BRAND</td>
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<td>CATALOG NO.</td>
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<td>MANUFACTURER</td>
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<td>VENDOR</td>
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PREVIOUS INSTALLATIONS

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<tr>
<th>PROJECT</th>
<th>ARCHITECT/ENGINEER</th>
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<tr>
<td>LOCATION</td>
<td>DATE INSTALLED</td>
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SIGNIFICANT VARIATIONS FROM SPECIFIED PRODUCT

____________________________________________________________________

____________________________________________________________________

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____________________________________________________________________
**REASON FOR SUBSTITUTION**

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**DOES PROPOSED SUBSTITUTION AFFECT OTHER PARTS OF WORK?**

- [ ] YES
- [ ] NO

If YES, explain:

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**SUBSTITUTION REQUIRES DIMENSIONAL REVISION OR REDESIGN OF STRUCTURE OR A/E WORK**

- [ ] YES
- [ ] NO

**BIDDER'S/CONTRACTOR'S STATEMENT OF CONFORMANCE OF PROPOSED SUBSTITUTION TO CONTRACT REQUIREMENT:**

We have investigated the proposed substitution. We believe that it is equal or superior in all respects to specified product, except as stated above; that it will provide the same Warranty as specified product; that we have included complete implications of the substitution; that we will pay redesign and other costs caused by the substitution which subsequently become apparent; and that we will pay costs to modify other parts of the Work as may be needed, to make all parts of the Work complete and functioning as a result of the substitution.

**REVIEW AND ACTION**

- [ ] Resubmit Substitution Request with the following additional information:

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- [ ] Substitution is accepted.

- [ ] Substitution is accepted with the following comments:

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- [ ] Substitution is not accepted.

**SECTION 006325 – SUBSTITUTION REQUEST**

07/16
KNOW ALL MEN BY THESE PRESENT THAT: hereinafter called “Subcontractor” who heretofore entered into an agreement with hereinafter called “Contractor”, for the performance of work and/or furnishing of material for the construction of the project entitled

(PROJECT TITLE, PROJECT LOCATION, AND PROJECT NUMBER)

at

(ADDRESS OF PROJECT)

for the State of Missouri (Owner) which said subcontract is by this reference incorporated herein, in consideration of such final payment by Contractor.

DOES HEREBY:

1. ACKNOWLEDGE that they have been PAID IN FULL all sums due for work and materials contracted or done by their Subcontractors, Material Vendors, Equipment and Fixture Suppliers, Agents and Employees, or otherwise in the performance of the Work called for by the aforesaid Contract and all modifications or extras or additions thereto, for the construction of said project or otherwise.

2. RELEASE and fully, finally, and forever discharge the Owner from any and all suits, actions, claims, and demands for payment for work performed or materials supplied by Subcontractor in accordance with the requirements of the above referenced Contract.

1. REPRESENT that all of their Employees, Subcontractors, Material Vendors, Equipment and Fixture Suppliers, and everyone else has been paid in full all sums due them, or any of them, in connection with performance of said Work, or anything done or omitted by them, or any of them in connection with the construction of said improvements, or otherwise.

DATED this day of , 20 .

NAME OF SUBCONTRACTOR

BY (TYPED OR PRINTED NAME)

SIGNATURE

TITLE

ORIGINAL: FILE/Closeout Documents
The percentage and dollar amount of this project that are to be MBE/WBE/SDVE as indicated in the original contract: % and $.

<table>
<thead>
<tr>
<th>CHECK</th>
<th>MBE</th>
<th>WBE</th>
<th>SDVE</th>
<th>TOTAL AMOUNT OF SUBCONTRACT</th>
<th>$ AMOUNT &amp; % COMPLETE (PAID-TO-DATE)</th>
<th>CONSULTANT/SUBCONSULTANT OR CONTRACTOR/SUBCONTRACTOR/SUPPLIER NAME, ADDRESS, CONTACT, AND PHONE NUMBER</th>
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Revised 02/21

ORIGINAL: Attach to ALL Progress and Final Payments
INSTRUCTIONS FOR MBE/WBE/SDVE PROGRESS REPORT

CONTRACTOR OR CONSULTANT TO FILL OUT AND TURN IN WITH EACH PAY APPLICATION:

The MBE/WBE/SDVE Report for the project should be forwarded to you with the contract. The MBE/WBE/SDVE Progress Report should be partially filled out. If not, or if you have a problem with the information on the form when you receive it, please contact the Contract Specialist assigned to your project.

At Initial Pay Application fill in the following:

1. Fill in "Item of Work" for each MBE, WBE and/or SDVE.
2. Fill in Address (Street, City, State and Zip Code), Contact and Phone Number for each MBE, WBE and/or SDVE.
4. If Final Pay App, check box.
5. Fill in the Date.
6. At each Pay App fill in “Total Contract Amount” to date. Line Item 3. On Form A of the Application for Payment.
7. Fill in "$ Amount & % Complete (Paid-To-Date)” for each MBE, WBE and/or SDVE.

For all other Pay Applications fill in the following:

1. Pay App No.
2. If Final Pay App, check box.
3. Fill in the Date.
4. At each Pay App fill in “Total Contract Amount” to date. Line Item 3. On Form A of the Application for Payment.
5. Fill in "$ Amount & % Complete (Paid-To-Date)” for each MBE, WBE and/or SDVE.

CONTRACTOR REQUIREMENTS:

For contracts where there are MBE/WBE/SDVE participation goals as noted in the “Invitation for Bid,” the following provisions shall apply:

A. The Contractor is bound to subcontracting or obtaining materials in amounts not less than the dollar amount indicated in the awarded contract to MBE/WBE/SDVE (s) unless that amount is revised in writing by the Owner’s representative.

B. If the Contractor fails to meet or maintain the participation requirements contained in the Contractor’s bid, he must satisfactorily explain, in writing, to the Director or his Designee why the requirement cannot be achieved and why meeting the requirement was beyond the Contractor's control.

C. If the Director finds the Contractor's explanation unsatisfactory, the Director may take any appropriate action including, but not limited to:

1. Declaring the Contractor ineligible to participate in any Facilities Management, Design and Construction contracts for a period not to exceed twelve (12) months; and

2. Directing that the Contractor be declared non-responsive to the “Invitation for Bid,” or in breach of this contract.

D. If a MBE, WBE, or SDVE is replaced during the course of this contract, the Contractor shall replace it with a similar MBE, WBE, or SDVE OR make a good faith effort to replace it with another MBE, WBE, or SDVE. All substitutions shall be approved by the Owners Representative.

E. The Contractor shall provide the Owner with regular reports on its progress in meeting its MBE/WBE/SDVE obligations. As a minimum, the dollar-value of work completed by each MBE, WBE, or SDVE subcontractor during the preceding month and as a cumulative total shall be reported with each monthly application for payment. A final report shall include the total dollar-value of work completed by each MBE, WBE, and SDVE subcontractor during the total contract.
STATE OF MISSOURI
OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION
AFFIDAVIT – COMPLIANCE WITH PREVAILING WAGE LAW

Before me, the undersigned Notary Public, in and for the County of __________________________
State of __________________________ personally came and appeared __________________________

(Name)

(Position)  (Name of the company)

(a corporation) (a partnership) (a proprietorship) and after being duly sworn did depose and say that all provisions
and requirements set out in Chapter 290, Sections 290.210 through and including 290.340, Missouri Revised
Statutes, pertaining to the payment of wages to workmen employed on public works project have been fully satisfied
and there has been no exception to the full and completed compliance with said provisions and requirements
and with Wage Determination No: __________________________ issued by the

Department of Labor and Industrial Relations, State of Missouri on the _______ day of _______ 20 __
in carrying out the contract and working in connection with __________________________

(Name of the project)

Located at __________________________ in __________________________ County

(NAME OF THE INSTITUTION)

Missouri, and completed on the _______ day of _______ 20 __

SIGNATURE

NOTARY INFORMATION

NOTARY PUBLIC EMBOSSEOR OR BLACK INK RUBBER STAMP SEAL

STATE

COUNTY (OR CITY OF ST. LOUIS)

SUBSCRIBED AND SWORN BEFORE ME, THIS __________________________ DAY OF __________________________ YEAR

USE RUBBER STAMP IN CLEAR AREA BELOW

NOTARY PUBLIC SIGNATURE  MY COMMISSION EXPIRES

NOTARY PUBLIC NAME (TYPED OR PRINTED)

FILE: Closeout Documents
ARTICLE:

   1.1. Definitions
   1.2. Drawings and Specifications
   1.3. Compliance with Laws, Permits, Regulations and Inspections
   1.4. Nondiscrimination in Employment
   1.5. Anti-Kickback
   1.6. Patents and Royalties
   1.7. Preference for American and Missouri Products and Services
   1.8. Communications
   1.9. Separate Contracts and Cooperation
   1.10. Assignment of Contract
   1.11. Indemnification
   1.12. Disputes and Disagreements

2. Owner/Designer Responsibilities

3. Contractor Responsibilities
   3.1. Acceptable Substitutions
   3.2. Submittals
   3.3. As-Built Drawings
   3.4. Guaranty and Warranties
   3.5. Operation and Maintenance Manuals
   3.6. Other Contractor Responsibilities
   3.7. Subcontracts

4. Changes in the Work
   4.1. Changes in the Work
   4.2. Changes in Completion Time

5. Construction and Completion
   5.1. Construction Commencement
   5.2. Project Construction
   5.3. Project Completion
   5.4. Payments

6. Bond and Insurance

7. Termination or Suspension of Contract
   7.1. For Site Conditions
   7.2. For Cause
   7.3. For Convenience
SECTION 007213 - GENERAL CONDITIONS

A. These General Conditions apply to each section of these specifications. The Contractor is subject to the provisions contained herein.

B. The General Conditions are intended to define the relationship of the Owner, the Designer and the Contractor thereby establishing certain rules and provisions governing the operation and performance of the work so that the work may be performed in a safe, orderly, expeditious and workmanlike manner.

ARTICLE 1 – GENERAL PROVISIONS

ARTICLE 1.1 - DEFINITIONS

As used in these contract documents, the following terms shall have the meanings and refer to the parties designated in these definitions.

1. "COMMISSIONER": The Commissioner of the Office of Administration.


3. "CONSTRUCTION REPRESENTATIVE:" Whenever the term "Construction Representative" is used, it shall mean the Owner’s Representative at the work site.

4. "CONTRACTOR": Party or parties who have entered into a contract with the Owner to furnish work under these specifications and drawings.

5. "DESIGNER": When the term "Designer" is used herein, it shall refer to the Architect, Engineer, or Consultant of Record specified and defined in Paragraph 2.0 of the Supplemental Conditions, or his duly authorized representative. The Designer may be either a consultant or state employee.

6. "DIRECTOR": Whenever the term "Director" is used, it shall mean the Director of the Division of Facilities Management, Design and Construction or his Designee, representing the Office of Administration, State of Missouri. The Director is the agent of the Owner.


8. “INCIDENTAL JOB BURDENS”: Shall mean those expenses relating to the cost of work, incurred either in the home office or on the job-site, which are necessary in the course of doing business but are incidental to the job. Such costs include office supplies and equipment, postage, courier services, telephone expenses including long distance, water and ice and other similar expenses.

9. "JOINT VENTURE": An association of two (2) or more businesses to carry out a single business enterprise for profit for which purpose they combine their property, capital, efforts, skills and knowledge.

10. "OWNER": Whenever the term “Owner” is used, it shall mean the State of Missouri.

11. “PROJECT”: Wherever the term “Project” is used, it shall mean the work required to be completed by the construction contract.


13. "SUBCONTRACTOR": Party or parties who contract under, or for the performance of part or this entire Contract between the Owner and Contractor. The subcontract may or may not be direct with the Contractor.

14. "WORK": Labor, material, supplies, plant and equipment required to perform and complete the service agreed to by the Contractor in a safe, expeditious, orderly and workmanlike manner so that the project shall be complete and finished in the best manner known to each respective trade.


ARTICLE 1.2 DRAWINGS AND SPECIFICATIONS

A. In case of discrepancy between drawings and specifications, specifications shall govern. Should discrepancies in architectural drawings, structural drawings and mechanical drawings occur, architectural drawings shall govern and, in case of
ARTICLE 1.3 - COMPLIANCE WITH LAWS, PERMITS, REGULATIONS AND INSPECTIONS

A. Since the Owner is the State of Missouri, municipal or political subdivisions, zoning ordinances, construction codes (other than licensing of trades), and other like ordinances are not applicable to construction on Owner’s property, and Contractor will not be required to submit drawings and specifications to any municipal or political subdivision, authority, obtain construction permits or any other licenses (other than licensing of trades) or permits from or submit to inspections by any municipality or political subdivision relating to the construction for this project. All permits or licenses required by municipality or political subdivision for operation on property not belonging to Owner shall be obtained by and paid for by Contractor. Each Contractor shall comply with all applicable laws, ordinances, rules and regulations that pertain to the work of this contract.

B. Contractors, subcontractors and their employees engaged in the businesses of electrical, mechanical, plumbing, carpentry, sprinkler system work, and other construction related trades shall be licensed to perform such work by the municipal or political subdivision where the project is located, if such licensure is required by local code. Local codes shall dictate the level (master, journeyman, and apprentice) and the number, type and ratio of licensed tradesmen required for this project within the jurisdiction of such municipal or political subdivision.

C. Equipment and controls manufacturers and their authorized service and installation technicians that do not maintain an office within the jurisdiction of the municipal or political subdivision but are a listed or specified contractor or subcontractor on this project are exempt from Paragraph 1.3 B above.

D. The Contractor shall post a copy of the wage determination issued for the project and included as a part of the contract documents, in a prominent and easily accessible location at the site of construction for the duration of the project.

E. Any contractor or subcontractor to such contractor at any tier signing a contract to work on this project shall provide a ten-hour Occupational Safety and Health Administration (OSHA) construction safety program for their on-site employees which includes a course in construction safety and health approved by OSHA or a similar program approved by the Department of Labor and Industrial Relations which is at least as stringent as an approved OSHA program. The contractor shall forfeit as a penalty to the public body on whose behalf the contract is made or awarded, two thousand five hundred dollars plus one hundred dollars for each employee employed by the contractor or subcontractor, for each calendar day, or portion thereof, such employee is employed without the required training.

ARTICLE 1.4 - NONDISCRIMINATION IN EMPLOYMENT

A. The Contractor and his subcontractors will not discriminate against individuals based on race, color, religion, national origin, sex, disability, or
age, but may use restrictions which relate to bona fide occupational qualifications. Specifically, the Contractor and his subcontractors shall not discriminate:

1. Against recipients of service on the basis of race, color, religion, national origin, sex, disability or age.

2. Against any employee or applicant, for employment on the basis of race, color, religion, national origin, sex or otherwise qualified disability status.

3. Against any applicant for employment or employee on the basis of age, where such applicant or employee is between ages 40 and 70 and where such Contractor employs at least 20 persons.

4. Against any applicant for employment or employee on the basis of that person's status as a disabled or Vietnam-era veteran.

The Contractor and his Subcontractors will take affirmative action to insure applicants for employment and employees are treated equally without regard to race, color, religion, national origin, sex, disability, or age. Such action shall include, but not be limited to, the following: employment, upgrading, demotion and transfer; recruitment or recruitment advertising; and selection for training, including apprenticeship. The Contractor and his Subcontractors will give written notice of their commitments under this clause to any labor union with which they have bargaining or other agreements.

B. The Contractor and his subcontractors shall develop, implement, maintain and submit in writing to the Owner 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 included in the contract specifications. For the purpose of this section, an "affirmative action program" means positive action 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 age 40 and 70), disabled and Vietnam-era veteran status, and disability. 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 all collective bargaining agreements; and

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

In the enforcement of this non-discrimination clause, 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.

C. In the event of the Contractor's or his subcontractor's noncompliance with any provisions of this Article of the Contract, the Owner may cancel this contract in whole or in part or require the Contractor to terminate his contract with the subcontractor.

ARTICLE 1.5 - ANTI-KICKBACK

No employee of the division, shall have or acquire any pecuniary interest, whether direct or indirect, in this contract or in any part hereof. No officer, employee, designer, attorney, or administrator of or for the Owner who is authorized in such capacity and on behalf of the Owner to exercise any legislative, executive, supervisory or other similar functions in connection with the construction of the project, shall have or acquire any pecuniary interest, whether direct or indirect, in this contract, any material supply contract, subcontract, insurance contract, or any other contract pertaining to the project.

ARTICLE 1.6 - PATENTS AND ROYALTIES

A. The Contractor shall hold and save the Owner and its officers, agents, servants and employees harmless from liabilities of any nature or kind, including cost and expenses, for, or on account of, any patented or unpatented invention, process, article or appliance manufactured or used in the performance of this contract, including its use by the Owner, unless otherwise specifically stipulated in the contract documents.

B. If the Contractor uses any design, device or materials covered by letters, patent or copyright,
the Contractor 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 prices shall include all royalties or costs arising from the use of such design, device or materials, in any way involved in the work. The Contractor and/or his sureties shall indemnify and save harmless the Owner of the project from any and all claims for infringement by reason of the use of such patented or copyrighted design, device or materials 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 obliged to pay by reason of such infringement at any time during the prosecution of the work or after completion of the work.

ARTICLE 1.7 - PREFERENCE FOR AMERICAN AND MISSOURI PRODUCTS AND SERVICES

A. By virtue of statutory authority a preference will be given to Missouri labor and to products of mines, forests and quarries of the state of Missouri when they are found in marketable quantities in the state, and all such materials shall be of the best quality and suitable character that can be obtained at reasonable market prices, all as provided for in Section 8.280, Missouri Revised Statutes and Cumulative Supplements.

B. Furthermore, pursuant to Section 34.076 Missouri Revised Statutes and Cumulative Supplements, a preference shall be given to those persons doing business as Missouri firms, corporations, or individuals, or which maintain Missouri offices or places of business, when the quality of performance promised is equal or better and the price quoted is the same or less. In addition, in order for a non-domiciliary bidder to be successful, his bid must be that same percentage lower than a domiciliary Missouri bidder's bid, as would be required for a Missouri bidder to successfully bid in the non-domiciliary state.

C. In accordance with the Missouri Domestic Products Procurement Act Section 34.350 RSMo and Cumulative Supplements any manufactured goods or commodities used or supplied in the performance of this contract or any subcontract thereto shall be manufactured, assembled or produced in the United States, unless the specified products are not manufactured, assembled or produced in the United States in sufficient quantities to meet the agency's requirements or cannot be manufactured, assembled or produced in the United States within the necessary time in sufficient quantities to meet the contract requirements, or if obtaining the specified products manufactured, assembled or produced in the United States would increase the cost of this contract for purchase of the product by more than ten percent.

ARTICLE 1.8 - COMMUNICATIONS

A. All notices, requests, instructions, approvals and claims must be in writing and shall be delivered to the Designer and copied to the Construction Representative for the project except as required by Article 1.12 Disputes and Disagreements, or as otherwise specified by the Owner in writing as stated in Section 012600. Any such notice shall be deemed to have been given as of the time of actual receipt.

B. The Contractor shall attend on-site progress and coordination meetings, as scheduled by the Construction Representative, no less than once a month.

C. The Contractor shall ensure that major subcontractors and suppliers shall attend monthly progress meetings as necessary to coordinate the work, and as specifically requested by the Construction Representative.

ARTICLE 1.9 - SEPARATE CONTRACTS AND COOPERATION

A. The Owner reserves the right to let other contracts in connection with this work. The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work and shall properly connect and coordinate his work with theirs.

B. The Contractor shall consult the drawings for all other contractors in connection with this work. Any work conflicting with the above shall be brought to the attention of the Owner’s Representative before the work is performed. If the Contractor fails to do this, and constructs any work which interferes with the work of another contractor, the Contractor shall remove any part so conflicting and rebuild same, as directed by the Owner’s Representative at no additional cost to the Owner.

C. Each contractor shall be required to coordinate his work with other contractors so as to afford others reasonable opportunity for execution of their work. No contractor shall delay any other contractor by neglecting to perform contract work at the proper time. If any contractor causes delay to another, they shall be liable directly to that contractor for such delay in addition to any liquidated damages which might be due the Owner.

D. Should the Contractor or project associated subcontractors refuse to cooperate with the instructions and reasonable requests of other Contractors or other subcontractors in the overall
coordinating of the work, the Owner may take such appropriate action and issue directions, as required, to avoid unnecessary and unwarranted delays.

E. Each Contractor shall be responsible for damage done to Owner's or other Contractor's property by him/her or workers in his employ through their fault or negligence.

F. Should a Contractor sustain any damage through any act or omission of any other Contractor having a contract with the Owner, the Contractor so damaged shall have no claim or cause of action against the Owner for such damage, but shall have a claim or cause of action against the other Contractor to recover any and all damages sustained by reason of the acts or omissions of such Contractor. The phrase "acts or omissions" as used in this section shall be defined to include, but not be limited to, any unreasonable delay on the part of any such contractors.

ARTICLE 1.10 - ASSIGNMENT OF CONTRACT

A. No assignment by Contractor of any amount or any part of this contract or of the funds to be received there under will be recognized unless such assignment has had the written approval of the Director and the surety has been given due notice of such assignment and has furnished written consent thereto. 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 this contract and to claims or 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 1.11 - INDEMNIFICATION

A. Contractor agrees to indemnify and save harmless Owner and its respective commissioners, officers, officials, agents, consultants and employees and Designer, their agents, servants and employees, from and against any and all liability for damage arising from injuries to persons or damage to property occasioned by any acts or omissions of Contractor, any subcontractors, agents, servants or employees, including any and all expense, legal or otherwise, which may be incurred by Owner or Designer, its agents, servants or employees, in defense of any claim, action or suit.

B. The obligations of the Contractor under this paragraph shall not extend to the liability of the Designer, his agents or employees, arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, contract changes, design or specifications, or (2) giving of or the failure to give directions or instructions by the Designer, his agents or employees as required by this contract documents provided such giving or failure to give is the primary cause of the injury or damage.

ARTICLE 1.12 - DISPUTES AND DISAGREEMENTS

It is hereby expressly agreed and understood that in case any controversy or difference of opinion arises during construction, best efforts will be given to resolution at the field level. Should those efforts be unsuccessful, the Contractor has the right to appeal in writing, the decision of the Director’s Designee to the Director at Room 730 Truman Building, P.O. Box 809, Jefferson City, Missouri 65102. The decision of the Director shall be final and binding on all parties.

ARTICLE 2 -- OWNER/DESIGNER RESPONSIBILITIES

A. The Owner shall give all orders and directions contemplated under this contract relative to the execution of the work. During progress of work the Owner will be represented at the project site by the Construction Representative and/or Designer, whose responsibilities are to see that this contract is properly fulfilled.

B. The Owner shall at all times have access to the work whenever it is in preparation or progress. The Contractors shall provide proper facilities for such access and for inspection and supervision.

C. All materials and workmanship used in the work shall be subject to the inspection of the Designer and Construction Representative, and any work which is deemed defective shall be removed, rebuilt or made good immediately upon notice. The cost of such correction shall be borne by the Contractor. Contractor shall not be entitled to an extension of the contract completion date in order to remedy defective work. All rejected materials shall be immediately removed from the site of the work.

D. If the Contractor fails to proceed at once with the correction of rejected defective materials or workmanship, the Owner may, by separate contract or otherwise, have the defects remedied or rejected. Materials removed from the site and charge the cost of the same against any monies which may be due the Contractor, without prejudice to any other rights or remedies of the Owner.

E. Failure or neglect on the part of Owner to observe faulty work, or work done which is not in accordance with the drawings and specifications shall not relieve the Contractor from responsibility.
for correcting such work without additional compensation.

F. The Owner shall have the right to direct the Contractor to uncover any completed work.

1. If the Contractor fails to adequately notify the Construction Representative and/or Designer of an inspection as required by the Contract Documents, the Contractor shall, upon written request, uncover the work. The Contractor shall bear all costs associated with uncovering and again covering the work exposed.

2. If the Contractor is directed to uncover work, which was not otherwise required by the Contract Documents to be inspected, and the work is found to be defective in any respect, no compensation shall be allowed for this work. If, however, such work is found to meet the requirements of this contract, the actual cost of labor and material necessarily involved in the examination and replacement plus 10% shall be allowed the Contractor.

G. The Designer shall give all orders and directions contemplated under this contract relative to the scope of the work and shall give the initial interpretation of the contract documents.

H. The Owner may file a written notice to the Contractor to dismiss immediately any subcontractors, project managers, superintendents, foremen, workers, watchmen or other employees whom the Owner may deem incompetent, careless or a hindrance to proper or timely execution of the work. The Contractor shall comply with such notice as promptly as practicable without detriment to the work or its progress.

I. If in the Owner’s judgment it becomes necessary at any time to accelerate work, when ordered by the Owner in writing, the Contractor shall redirect resources to such work items and execute such portions of the work as may be required to complete the work within the current approved contract schedule.

ARTICLE 3 -- CONTRACTOR RESPONSIBILITIES

The Contractor shall register and utilize the Owner’s eBuilder digital project management system for submission of documents described in the following sections. This includes but is not limited to submittals as required by designer, payment applications, Request for Information (RFI), construction change orders, Request for Proposals (RFP), Designer Supplemental Instructions (DSI), etc.

ARTICLE 3.1 -- ACCEPTABLE SUBSTITUTIONS

A. The Contractor may request use of any article, device, product, material, fixture, form or type of construction which in the judgment of the Owner and Designer is equal in all respects to that named. 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 and Designer that they are equal in design, strength, durability, usefulness and convenience for the purpose intended.

B. Any changes required in the details and dimensions indicated on the drawings for the substitution of products other than those specified shall be properly made at the expense of the Contractor requesting the substitution or change.

C. The Contractor shall submit a request for such substitutions in writing to the Owner and Designer within twenty (20) working days after the date of the "Notice to Proceed." Thereafter no consideration will be given to alternate forms of accomplishing the work. This Article does not preclude the Owner from exercising the provisions of Article 4 hereof.

D. Any request for substitution by the Contractor shall be submitted in accordance with SECTION 002113 - INSTRUCTIONS TO BIDDERS.

E. When a material has been approved, no change in brand or make will be permitted unless:

1. Written verification is received from the manufacturer stating they cannot make delivery on the date previously agreed, or

2. Material delivered fails to comply with contract requirements.

ARTICLE 3.2 -- SUBMITTALS

A. The Contractor’s submittals must be submitted with such promptness as to allow for review and approval so as not to cause delay in the work. The Contractor shall coordinate preparation and processing of submittals with performance of construction activities.

Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

Submit four (4) copies to the Designer and additional copies as required for the subcontractors and material suppliers. Also provide copies to meet the requirements for maintenance manuals.

B. All subcontracts' shop drawings and schedules shall be submitted by the Contractor and shall bear evidence that Contractor has received, reviewed, and approved them. Any shop drawings and
schedules submitted without this evidence will be returned to the Contractor for resubmission.

C. The Contractor shall include with the shop drawing, a letter indicating any and all deviations from the drawings and/or specifications. Failure to notify the Designer of such deviations will be grounds for subsequent rejection of the related work or materials. If, in the opinion of the Designer, the deviations are not acceptable, the Contractor will be required to furnish the item as specified and indicated on the drawings.

D. The Designer shall check shop drawings and schedules with reasonable promptness and approve them only if they conform to the design concept of the project and comply with the information given in the contract documents. The approval shall not relieve the Contractor from the responsibility to comply with the drawings and specifications, unless the Contractor has called the Designer's attention to the deviation, in writing, at the time of submission and the Designer has knowingly approved thereof. An approval of any such modification will be given only under the following conditions:
   1. It is in the best interest of the Owner
   2. It does not increase the contract sum and/or completion time
   3. It does not deviate from the design intent
   4. It is without prejudice to any and all rights under the surety bond.

E. No extension of time will be granted because of the Contractor's failure to submit shop drawings and schedules in ample time to allow for review, possible resubmission, and approval. Fabrication of work shall not commence until the Contractor has received approval. The Contractor shall furnish prints of approved shop drawings and schedules to all subcontractors whose work is in any way related to the work under this contract. Only prints bearing this approval will be allowed on the site of construction.

F. The Contractor shall maintain a complete file on-site of approved shop drawings available for use by the Construction Representative.

ARTICLE 3.3 – AS-BUILT DRAWINGS

A. The Contractor shall update a complete set of the construction drawings, shop drawings and schedules of all work monthly by marking changes, and at the completion of their work (prior to submission of request for final payment) note all changes and turn the set over to the Construction Representative. The updates shall show all addenda, all field changes that were made to adapt to field conditions, changes resulting from contract changes or supplemental instructions, and all locations of structures, buried installations of piping, conduit, and utility services. All buried and concealed items both inside and outside shall be accurately located as to depth and referenced to permanent features such as interior or exterior wall faces and dimensions shall be given in a neat and legible manner in a contrasting colored pencil or ink. If approved by the Designer, an electronic file format may be provided.

ARTICLE 3.4 – GUARANTY AND WARRANTIES

A. General Guaranty
   1. Neither the final certificate of payment nor any provision in the contract documents nor partial use or occupancy of the premises by the Owner shall constitute an acceptance of work not done in accordance with contract requirements.
   2. The Contractor or surety shall remedy any defects in the work and pay for any damage to property resulting there from which shall appear within a period of one (1) year from the date of substantial completion unless a longer period is otherwise specified or a differing guaranty period has been established in the substantial completion certificate. The Owner will give notice of observed defects with reasonable promptness.
   3. In case of default on the part of the Contractor in fulfilling this part of this contract, the Owner may correct the work or repair the damage and the cost and expense incurred in such event shall be paid by or recoverable from the Contractor or surety.
   4. The work will be free from defects not inherent in the quality required or permitted, and that the Work will conform to the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The Contractor's guaranty excludes remedy for damage or defect caused by abuse, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear under normal usage. If required by the Owner, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

B. Extended Warranty
   Manufacturer's certificates of warranty shall be obtained for all major equipment. Warranty shall be obtained for at least one year. Where a longer
period is offered at no additional cost or called for in the specific equipment specifications, the longer period shall govern.

**ARTICLE 3.5 – OPERATION AND MAINTENANCE MANUALS**

A. Immediately after equipment submittals are approved and no later than ten (10) working days prior to the substantial completion inspection, the Contractor shall provide to the Designer three (3) copies of operating instructions and service manuals, containing the following:

1. **Start-up and Shut-down 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 be prepared to include model number, capacities, flow rate, name place data, shop drawings and air and water balance reports.

4. **Service Instructions:** Provide the following information for all pieces of equipment.
   
   a. Recommended spare parts including catalog number and name of local supplier or factory representative.
   
   b. Belt sizes, types, and lengths.
   
   c. Wiring diagrams.

5. **Manufacturer's Certificate of Warranty** as described in Article 3.4.

6. Prior to the final payment, furnish to the Designer three (4) copies of parts catalogs for each piece of equipment furnished by him/her on the project with the components identified by number for replacement ordering.

**B. Submission of operating instructions shall be done** in the following manner.

1. Manuals shall be in quadruplicate, and all materials shall be bound into volumes of standard 8½” x 11” hard binders. Large drawings too bulky to be folded into 8½” x 11” shall be separately bound or folded and in envelopes, cross referenced and indexed with the manuals.

2. The manuals shall identify project name, project number, and include the name and address of the Contractor, subcontractors and manufacturers who were involved with the activity described in that particular manual.

3. Internally subdivide the binder contents with permanent page dividers, logically organized with tab titles clearly printed under reinforced laminated plastic tabs.

4. **Contents:** Prepare a Table of Contents for each volume, with each product or system description identified.

**ARTICLE 3.6 – OTHER CONTRACTOR RESPONSIBILITIES**

A. The Contractor shall keep on site, during progress of the work, a competent superintendent satisfactory to the Construction Representative. The superintendent shall represent the Contractor and all agreements made by the superintendent shall be binding. The superintendent shall carefully study and compare all drawings, specifications and other instructions and shall promptly notify the Construction Representative and Designer, in writing, any error, inconsistency or omission which may be discovered. The superintendent shall coordinate all work on the project. Any change of the superintendent shall be approved by the Construction Representative.

B. Contractor shall, at all times, enforce strict discipline and good order among his employees, and shall not employ on the work any unfit person or anyone not skilled in the work assigned to him/her.

C. The Contractor shall supply sufficient labor, material, plant and equipment and pay when due any laborer, subcontractor or supplier for supplies furnished and otherwise prosecute the work with diligence to prevent work stoppage and insure completion thereof within the time specified.

D. The Contractor and each of his subcontractors shall submit to the Construction Representative, through the Designer such schedules of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data as the Owner may request concerning work performed or to be performed under this contract.

E. The Contractor, subcontractors, and material suppliers shall upon written request, give the Owner access to all time cards, material invoices, payrolls, estimates, profit and loss statements, and all other direct or indirect costs related to this work.

F. The Contractor shall be responsible for laying out all contract work such as layout of architectural, structural, mechanical and electrical work, which shall be coordinated with layouts of subcontractors.
for general construction work. The Contractor is also responsible for unloading, uncrating and handling of all materials and equipment to be erected or placed by him/her, whether furnished by Contractor or others. No extra charges or compensation will be allowed as a result of failure to verify dimensions before ordering materials or fabricating items.

G. The Contractor must notify the Construction Representative at least one working day before placing concrete or burying underground utilities, pipelines, etc.

H. Contractors shall prearrange time with the Construction Representative for the interruption of any facility operation. Unless otherwise specified in these documents, all connections, alterations or relocations as well as all other portions of the work will be performed during normal working hours.

I. The Contractor shall coordinate all work so there will not be prolonged interruptions of existing equipment operation. Any existing plumbing, heating, ventilating, air conditioning or electrical disconnections necessary for the project, which affect portions of this construction or building or any other building must be scheduled with the Construction Representative to minimize or avoid any disruption of facility operations. In no case, unless previously approved in writing by the Construction Representative, 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 responsible for the interruption from the responsibility to repair and restore the utility to normal service. Repairs and restoration shall be made before the workers responsible for the repair and restoration leave the job.

J. Contractors shall limit operations and storage of materials to the area within the project, except as necessary to connect to existing utilities, and shall not encroach on neighboring property. The Contractor shall be responsible for repair of their damage to property on or off the project site occurring during construction of project. All such repairs shall be made to the satisfaction of the property owner.

K. Unless otherwise permitted, all materials shall be new and both workmanship and materials shall be of the best quality.

L. Unless otherwise provided and stipulated within these specifications, the Contractor shall furnish, construct, and/or install and pay for materials, devices, mechanisms, equipment, all necessary personnel, utilities including, but not limited to water, heat, light and electric power, transportation services, applicable taxes of every nature, and all other facilities necessary for the proper execution and completion of the work.

M. Contractor shall carefully examine the plans and drawings and shall be responsible for the proper fitting of his material, equipment and apparatus into the building.

N. The Contractor or subcontractors shall not overload, or permit others to overload, any part of any structure during the performance of this contract.

O. All temporary shoring, bracing, etc., required for the removal of existing work and/or for the installation of new work shall be included in this contract. The Contractor shall make good, at no cost to the Owner, any damage caused by improper support or failure of shoring in any respect. Each Contractor shall be responsible for shoring required to protect his work or adjacent property and improvements of Owner and shall be responsible for shoring or for giving written notice to adjacent property owners. Shoring shall be removed only after completion of permanent supports.

P. The Contractor shall provide at the proper time such material as is required for support of the work. If openings are required, whether shown on drawings or not, the Contractor shall see that they are properly constructed.

Q. During the performance of 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 will give proper and understandable warning to all persons of danger of entry onto land, structure or equipment.

R. The Contractor shall be responsible for protection, including weather protection, and proper maintenance of all equipment and materials.

S. The Contractor shall be responsible for care of the finished work and shall protect same from damage or defacement until substantial completion by the Owner. If the work is damaged by any cause, the Contractor shall immediately begin to make repairs in accordance with the drawings and specifications. Contractor shall be liable for all damage or loss unless attributable to the acts or omissions of the Owner or Designer. Any claim for reimbursement shall be submitted in accordance with Article 4. After substantial completion the Contractor will only be responsible for damage resulting from acts or omissions of the Contractor or subcontractors through final warranty.

T. In the event the Contractor encounters an unforeseen hazardous material, the Contractor
shall immediately stop work in the area affected and report the condition to the Owner and Designer in writing. The Contractor shall not be required, pursuant to Article 4, to perform, any work relating to hazardous materials.

U. In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 4.

V. Before commencing work, Contractors shall confer with the Construction Representative and facility representative and review any facility rules and regulations which may affect the conduct of the work.

W. Project signs will only be erected on major projects and only as described in the specifications. If no sign is specified, none shall be erected.

ARTICLE 3.7 -- SUBCONTRACTS

A. Subcontractor assignments as identified in the bid form shall not be changed without written approval of the Owner. The Owner will not approve changes of a listed subcontractor unless the Contractor documents, to the satisfaction of the Owner that the subcontractor cannot or will not perform the work as specified.

B. The Contractor is fully responsible to the Owner for the acts and omissions of all subcontractors and of persons either directly or indirectly employed by them.

C. Every subcontractor shall be bound by the applicable terms and provisions of these contract documents, but no contractual relationship shall exist between any subcontractor and the Owner unless the right of the Contractor to proceed with the work is suspended or this contract is terminated as herein provided, and the Owner in writing elects to assume the subcontract.

D. The Contractor shall upon receipt of "Notice to Proceed" and prior to submission of the first payment request, notify the Designer and Construction Representative in writing of the names of any subcontractors to be used in addition to those identified in the bid form and all major material suppliers proposed for all parts of the work.

ARTICLE 4 -- CHANGES IN THE WORK

4.1 CHANGES IN THE WORK

A. The Construction Representative, without giving notice to the surety and without invalidating this contract, may order extra work or make changes by altering, adding to or deducting from the work, this contract sum being adjusted accordingly. All such work shall be executed under the conditions of the original contract. A claim for extension of time caused by any change must be adjusted at the time of ordering such change. No future request for time will be considered.

B. Each Contract Change shall include all costs required to perform the work including all labor, material, equipment, overheads and profit, delay, disruptions, or other miscellaneous expenses. No subsequent requests for additional compensation including claims for delay, disruption, or reduced efficiency as a result of each change will be considered. Values from the Schedule of Values will not be binding as a basis for additions to or deductions from the contract price.

C. The amount of any adjustment in this contract price for authorized changes shall be agreed upon before such changes become effective and shall be determined, through submission of a request for proposal, as follows:

1. By an acceptable fixed price proposal from the Contractor. Breakdown shall include all takeoff sheets of each Contractor and subcontractor. Breakdown shall include a listing of each item of material with unit prices and number of hours of labor for each task. Labor costs per hour shall be included with labor burden identified, which shall be not less than the prevailing wage rate, etc. Overhead and profit shall be shown separately for each subcontractor and the Contractor.

2. By a cost-plus-fixed-fee (time and material) basis with maximum price, total cost not to exceed said maximum. Breakdown shall include a listing of each item of material with unit prices and number of hours of labor for each task. Labor costs per hour shall be included with labor burden identified, which shall be not less than the prevailing wage rate, etc. Overhead and profit shall be shown separately for each subcontractor and the Contractor.

3. By unit prices contained in Contractor's original bid form and incorporated in the construction contract.

D. Overhead and Profit on Contract Changes shall be applied as follows:

1. The overhead and profit charge by the Contractor and all subcontractors shall be considered to include, but is not limited to: incidental job burdens, small truck (under 1 ton) expense, mileage, small hand tools,
warranty costs, company benefits and general office overhead. Project supervision including field supervision and job site office expense shall be considered a part of overhead and profit unless a compensable time extension is granted.

2. The percentages for overhead and profit charged on Contract Changes shall be negotiated, and may vary according to the nature, extent, and complexity of the work involved. However, the overhead and profit for the Contractor or subcontractor actually performing the work shall not exceed 14%. When one or more tiers of subcontractors are used, in no event shall any Contractor or subcontractor receive as overhead and profit more than 3% of the cost of the work performed by any of his subcontractors. In no case shall the total overhead and profit paid by the Owner on any Contract Changes exceed twenty percent (20%) of the cost of materials, labor and equipment (exclusive of Contractor or any Subcontractor overhead and profit) necessary to put the contract change work in place.

3. The Contractor will be allowed to add the cost of bonding and insurance to their cost of work. This bonding and insurance cost shall not exceed 2% and shall be allowed on the total cost of the added work, including overhead and profit.

4. On proposals covering both increases and decreases in the amount of this contract, the application of overhead and profit shall be on the net change in the cost of the work.

5. The percentage for overhead and profit to be credited to the Owner on Contract Changes that are solely 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 in no case shall be less than ten percent (10%). If the percentage for overhead and profit charged for work added by Contract Changes for this contract has been negotiated to less than 10%, the negotiated rate shall then apply to credits as well.

E. No claim for an addition to this contract sum shall be valid unless authorized as aforesaid in writing by the Owner. In the event that none of the foregoing methods are agreed upon, the Owner may order the Contractor to perform work on a time and material basis. The cost of such work shall be determined by the Contractor's actual labor and material cost to perform the work plus overhead and profit as outlined herein. The Designer and Construction Representative shall approve the Contractor's daily time and material invoices for the work involved.

F. If the Contractor claims that any instructions involve extra cost under this contract, the Contractor shall give the Owner’s Representative written notice thereof within a reasonable time after the receipt of such instructions, and in any event before proceeding to execute the work. No such claim shall be valid unless so made and authorized by the Owner, in writing.

G. In an emergency affecting the safety of life or of the structure or of adjoining property, the Contractor, without special instruction or authorization from the Construction Representative, is hereby permitted to act at their discretion to prevent such threatened loss or injury. The Contractor shall submit a claim for compensation for such emergency work in writing to the Owner’s Representative.

ARTICLE 4.2 – CHANGES IN COMPLETION TIME

A. Extension of the number of work days stipulated in the Contract for completion of the work with compensation may be made when:

1. The contractor documents that proposed Changes in the work, as provided in Article 4.1, extends construction activities critical to contract completion date, OR

2. The Owner suspends all work for convenience of the Owner as provided in Article 7.3, OR

3. An Owner caused delay extends construction activities critical to contract completion (except as provided elsewhere in these General Conditions). The Contractor is to review the work activities yet to begin and evaluate the possibility of rescheduling the work to minimize the overall project delay.

B. Extension of the number of work days stipulated in the Contract for completion of the work without compensation may be made when:

1. Weather-related delays occur, subject to provisions for the inclusion of a specified number of "bad weather" days when provided for in Section 012100-Allowances, OR

2. Labor strikes or acts of God occur, OR

3. The work of the Contractor is delayed on account of conditions which were beyond the control of the Contractor, subcontractors or suppliers, and were not the result of their fault or negligence.

C. No time extension or compensation will be provided for delays caused by or within the control
D. The Contractor shall notify the Owner promptly of any occurrence or conditions which in the Contractor's opinion results in a need for an extension of time. The notice shall be in writing and shall include all necessary supporting materials with details of any resultant costs and be submitted in time to permit full investigation and evaluation of the Contractor's claim. The Owner shall promptly acknowledge the Contractor's notice and, after recommendation from the Owner's Representative and/or Designer, shall provide a decision to the Contractor. Failure on the part of the Contractor to provide such notice and to detail the costs shall constitute a waiver by the Contractor of any claim. Requests for extensions of time shall be for working days only.

ARTICLE 5 - CONSTRUCTION AND COMPLETION

ARTICLE 5.1 – CONSTRUCTION COMMENCEMENT

A. Upon receipt of the "Intent to Award" letter, the Contractor must submit the following properly executed instruments to the Owner:

1. Contract;
2. Performance/payment bond as described in Article 6.1;
3. Certificates of Insurance, or the actual policies themselves, showing that the Contractor has obtained the insurance coverage required by Article 6.2.

Above referenced items must be received by the Owner within ten (10) working days after the effective date of the contract. If not received, the Owner may treat the failure to timely submit them as a refusal by the Contractor to accept a contract for this work and may retain as liquidated damages the Contractor's bid bond, cashier's check or certified check as provided in the Instructions to Bidders. Upon receipt the Owner will issue a “Notice to Proceed” with the work to the Contractor.

B. Within the time frame noted in Section 013200 - Schedules, following receipt of the "Notice to Proceed", the Contractor shall submit to the Owner a progress schedule and schedule of values, showing activities through the end of the contract period. Should the Contractor not receive written notification from the Owner of the disapproval of the schedule of values within fifteen (15) working days, the Contractor may consider it approved for purpose of determining when the first monthly Application and Certification for Payment may be submitted.

C. The Contractor may commence work upon receipt of the Division of Facilities Management, Design and Construction’s "Notice to Proceed" letter. Contractor shall prosecute the work with faithfulness and energy, and shall complete the entire work on or before the completion time stated in the contract documents or pay to the Owner the damages resulting from the failure to timely complete the work as set out within Article 5.4.

ARTICLE 5.2 -- PROJECT CONSTRUCTION

A. Each Contractor shall submit for the Owner's approval, in reproducible form, a progress schedule showing the rate of progress and the order of the work proposed to carry on various phases of the project. The schedule shall be in conformance with the requirements outlined in Section 013200 – Schedules.

B. Contractor shall employ and supply a sufficient force of workers, material, and equipment and shall pay when due, any worker, subcontractor or supplier and otherwise prosecute the work with such diligence so as to maintain the rate of progress indicated on the progress schedule, prevent work stoppage, and insure completion of the project within the time specified.

ARTICLE 5.3 -- PROJECT COMPLETION

A. Substantial Completion. A Project is substantially complete when construction is essentially complete and work items remaining to be completed can be done without interfering with the Owner’s ability to use the Project for its intended purpose.

1. Once the Contractor has reached what they believe is Substantial Completion, the Contractor shall notify the Designer and the Construction Representative of the following:
   a. That work is essentially complete with the exception of certain listed work items. The list shall be referred to as the “Contractor’s Punch.”
   b. That all Operation and Maintenance Manuals have been assembled and submitted in accordance with Article 3.5A.
   c. That the Work is ready for inspection by the Designer and Construction Representative. The Owner shall be entitled to a minimum of ten working
days notice before the inspection shall be performed.

2. If the work is acceptable, the Owner shall issue a Certificate of Substantial Completion, which shall set forth the responsibilities of the Owner and the Contractor for utilities, security, maintenance, damage to the work and risk of loss. The Certificate shall also identify those remaining items of work to be performed by the Contractor. All such work items shall be complete within 30 working days of the date of the Certificate, unless the Certificate specifies a different time. If the Contractor shall be required to perform tests that must be delayed due to climatic conditions, it is understood that such tests and affected equipment will be identified on the Certificate and shall be accomplished by the Contractor at the earliest possible date. Performance of the tests may not be required before Substantial Completion can be issued. The date of the issuance of the Certificate of Substantial Completion shall determine whether or not the work was completed within the contract time and whether or not Liquidated Damages are due.

3. If the work is not acceptable, and the Owner does not issue a Certificate of Substantial Completion, the Owner shall be entitled to charge the Contractor with the Designer’s and Owner’s costs of re-inspection, including time and travel.

B. Partial Occupancy. Contractor agrees that the Owner shall be permitted to occupy and use any completed or partially completed portions of the Project, when such occupancy and use is in the Owner’s best interest. Owner shall notify Contractor of its desire and intention to take Partial Occupancy as soon as possible but at least ten (10) working days before the Owner intends to occupy. If the Contractor believes that the portion of the work the Owner intends to occupy is not ready for occupancy, the Contractor shall notify the Owner immediately. The Designer shall inspect the work in accordance with the procedures above. If the Contractor claims increased cost of the project or delay in completion as a result of the occupancy, he shall notify the Owner immediately but in all cases before occupancy occurs.

C. Final Completion. The Project is finally complete when the Certificate of Substantial Completion has been issued and all work items identified therein as incomplete have been completed, and when all administrative items required by the contract have been completed. Final Completion entitles the Contractor to payment of the outstanding balance of the contract amount including all change orders and retainage. Within five (5) working days of the date of the Certificate of Substantial Completion, the Contractor shall identify the cost to complete any outstanding items of work. The Designer shall review the Contractor’s estimate and either approve it or provide an independent estimate for all such items. If the Contractor fails to complete the remaining items within the time specified in the Certificate, the Owner may terminate the contract and go to the surety for project completion in accordance with Article 7.2 or release the contract balance to the Contractor less 150% of the approved estimate to complete the outstanding items. Upon completion of the outstanding items, when a final cost has been established, any monies remaining shall be paid to the Contractor. Failure to complete items of work does not relieve the Contractor from the obligation to complete the administrative requirements of the contract, such as the provisions of Article 5.3 FAILURE TO COMPLETE ALL ITEMS OF WORK UNDER THE CONTRACT SHALL BE CONSIDERED A DEFAULT AND BE GROUNDS FOR CONTRACT TERMINATION AND DEBARMENT.

D. Liquidated Damages. Contractor agrees that the Owner may deduct from the contract price and retain as liquidated damages, and not as penalty or forfeiture, the sum stipulated in this contract for each work day after the Contract Completion Date on which work is not Substantially Complete. Assessment of Liquidated Damages shall not relieve the Contractor or the surety of any responsibility or obligation under the Contract. In addition, the Owner may, without prejudice to any other rights, claims, or remedies the Owner may have including the right to Liquidated Damages, charge the Contractor for all additional expenses incurred by the Owner and/or Designer as the result of the extended contract period through Final Completion. Additional Expenses shall include but not be limited to the costs of additional inspections.

E. Early Completion. The Contractor has the right to finish the work before the contract completion date; however, the Owner assumes no liability for any hindrances to the Contractor unless Owner caused delays result in a time extension to the contract completion date. The Contractor shall not be entitled to any claims for lost efficiencies or for delay if a Certificate of Substantial Completion is given on or before the Contract Completion Date.

ARTICLE 5.4 -- PAYMENT TO CONTRACTOR

A. Payments on account of this contract will be made monthly in proportion to the work which has been completed. Request for payment must be submitted on the Owner's forms. No other pay request will
be processed. Supporting breakdowns must be in the same format as Owner’s forms and must provide the same level of detail. The Designer will, within 5 working days from receipt of the contractor’s request for payment either issue a Certificate for Payment to the Owner, for such amount as the Designer determines is properly due, or notify the Contractor in writing of reasons for withholding a Certificate. The Owner shall make payment within 30 calendar days after the "Application and Certification for Payment" has been received and certified by the Designer. The following items are to be attached to the contractor’s pay request:

1. Updated construction schedule
2. Certified payrolls consisting of name, occupation and craft, number of hours worked and actual wages paid for each individual employee, of the Contractor and all subcontractors working on the project

B. The Owner shall retain 5 percent of the amount of each such payment application, except as allowed by Article 5.4, until final completion and acceptance of all work covered by this contract.

C. Each payment made to Contractor shall be on account of the total amount payable to Contractor and all material and work covered by paid partial payment shall thereupon become the sole property of Owner. This provision shall not be construed as relieving Contractor from sole responsibility for care and protection of materials and work upon which payments have been made or restoration of any damaged work or as a waiver of the right of Owner to require fulfillment of all terms of this contract.

D. Materials delivered to the work site and not incorporated in the work will be allowed in the Application and Certification for Payment on the basis of one hundred (100%) percent of value, subject to the 5% retainage providing that they are suitably stored on the site or in an approved warehouse in accordance with the following requirements:

1. Material has previously been approved through submittal and acceptance of shop drawings conforming to requirements of Article 3.2 of General Conditions.
2. Delivery is made in accordance with the time frame on the approved schedule.
3. Materials, equipment, etc., are properly stored and protected from damage and deterioration and remain so - if not, previously approved amounts will be deleted from subsequent pay applications.

4. The payment request is accompanied by a breakdown identifying the material equipment, etc. in sufficient detail to establish quantity and value.

E. The Contractor shall be allowed to include in the Application and Certification for Payment, one hundred (100%) of the value, subject to retainage, of major equipment and material stored off the site if all of the following conditions are met:

1. The request for consideration of payment for materials stored off site is made at least 15 working days prior to submittal of the Application for Payment including such material. Only materials inspected will be considered for inclusion on Application for Payment requests.
2. Materials stored in one location off site are valued in excess of $25,000.
3. That a Certificate of Insurance is provided indicating adequate protection from loss, theft conversion or damage for materials stored off site. This Certificate shall show the State of Missouri as an additional insured for this loss.
4. The materials are stored in a facility approved and inspected, by the Construction Representative.
5. Contractor shall be responsible for, Owner costs to inspect out of state facilities, and any delays in the completion of the work caused by damage to the material or for any other failure of the Contractor to have access to this material for the execution of the work.

F. The Owner shall determine the amount, quality and acceptability of the work and materials which are to be paid for under this contract. In the event any questions shall arise between the parties, relative to this contract or specifications, determination or decision of the Owner or the Construction Representative and the Designer shall be a condition precedent to the right of the Contractor to receive any money or payment for work under this contract affected in any manner or to any extent by such question.

G. Payments Withheld: The Owner may withhold or nullify in whole or part any certificate to such extent as may be necessary to protect the Owner from loss on account of:

1. Defective work not remedied. When a notice of noncompliance is issued on an item or items, corrective action shall be undertaken immediately. Until corrective action is completed, no monies will be paid and no additional time will be allowed for the item or
items. The cost of corrective action(s) shall be borne by the Contractor.

2. A reasonable doubt that this contract can be completed for the unpaid balance.

3. Failure of the Contractor to update as-built drawings monthly for review by the Construction Representative.

4. Failure of the Contractor to update the construction schedule.

When the Construction Representative is satisfied the Contractor has remedied above deficiencies, payment shall be released.

H. Final Payment: Upon receipt of written notice from the Contractor to the Designer and Project Representative that the work is ready for final inspection and acceptance, the Designer and Project Representative, with the Contractor, shall promptly make such inspection. If the work is acceptable and the contract fully performed, the Construction Representative shall complete a final acceptance report and the Contractor will be directed to submit a final Application and Certification for Payment. If the Owner approves the same, the entire balance shall be due and payable, with the exception of deductions as provided for under Article 5.4.

1. Where the specifications provide for the performance by the Contractor of certain tests for the purpose of balancing and checking the air conditioning and heating equipment and the Contractor shall have furnished and installed all such equipment in accordance with the specifications, but said test cannot then be made because of climatic conditions, such test shall may be considered as required under the provisions of the specifications, Section 013300 and this contract may be substantial. Full payment will not be made until the tests have been made and the equipment and system is finally accepted. If the tests are not completed when scheduled, the Owner may deduct 150% of the value of the tests from the final payment.

2. The final payment shall not become due until the Contractor delivers to the Construction Representative:

a) A complete file of releases, on the standard form included in the contract documents as "Final Receipt of Payment and Release Form", from subcontractors and material suppliers evidencing payment in full for services, equipment and materials, as the case may require, if the Owner approves, or a consent from the Surety to final payment accepting liability for any unpaid amounts.

b) An Affidavit of Compliance with Prevailing Wage Law, in the form as included in this contract specifications, properly executed by each subcontractor, and the Contractor.

c) Certified copies of all payrolls

d) As-built drawings

3. If any claim remains unsatisfied after all payments are made, the Contractor shall refund to the Owner all monies that the latter may be compelled to pay in discharging such a claim including all costs and a reasonable attorney's fee.

4. Missouri statute requires prompt payment from the Owner to the Contractor within thirty calendar days and from the Contractor to his subcontractors within fifteen calendar days. Failure to make payments within the required time frame entitles the receiving party to charge interest at the rate of one and one half percent per month calculated from the expiration of the statutory time period until paid.

5. The value of all unused unit price allowances and/or 150% of the value of the outstanding work items, and/or liquidated damages may be deducted from the final pay request without executing a Contract Change. Any unit price items which exceed the number of units in the contract may be added by Contract Change.

ARTICLE 6 -- INSURANCE AND BONDS

ARTICLE 6.1 -- BOND

A. Contractor shall furnish a performance/payment bond in an amount equal to 100% of the contract price to guarantee faithful performance of the contract and 100% of the contract price to guarantee the payment of all persons performing labor on the project and furnishing materials in connection therewith under this contract as set forth in the standard form of performance and payment bond included in the contract documents. The surety on such bond shall be issued by a surety company authorized by the Missouri Department of Insurance to do business in the state of Missouri.

B. All Performance/Payment Bonds furnished in response to this provision shall be provided by a bonding company with a rating of B+ or higher as established by A.M. Best Company, Inc. in their most recent publication.
ARTICLE 6.2 – INSURANCE

A. The successful Contractor shall procure and maintain for the duration of the contract issued a policy or policies of insurance for the protection of both the Contractor and the Owner and their respective officers, officials, agents, consultants and employees. The Owner requires certification of insurance coverage from the Contractor prior to commencing work.

B. Minimum Scope and Extent of Coverage

1. General Liability

Commercial General Liability, ISO coverage form number or equivalent CG 00 01 ("occurrence" basis), or I-SO coverage form number CG 00 02, or ISO equivalent.

If ISO equivalent or manuscript general liability coverage forms are used, minimum coverage will be as follows: Premises/Operations; Independent Contractors; Products/Completed Operations; personal Injury; Broad Form Property Damage including Completed Operations; Broad Form Contractual Liability Coverage to include Contractor's obligations under Article 1.11 Indemnification and any other Special Hazards required by the work of the contract.

2. Automobile Liability

Business Automobile Liability Insurance, ISO Coverage form number or equivalent CA 00 01 covering automobile liability, code 1 "ANY AUTO".

3. Workers' Compensation and Employer's Liability

Statutory Workers' Compensation Insurance for Missouri and standard Employer's Liability Insurance, or the authorization to self-insure for such liability from the Missouri Division of Workers’ Compensation.

4. Builder's Risk or Installation Floater Insurance

Insurance upon the work and all materials, equipment, supplies, temporary structures and similar items which may be incident to the performance of the work and located at or adjacent to the site, against loss or damage from fire and such other casualties as are included in extended coverage in broad "All Risk" form, including coverage for Flood and Earthquake, in an amount not less than the replacement cost of the work or this contact price, whichever is greater, with loss payable to Contractor and Owner as their respective interests may appear.

Contractor shall maintain sufficient insurance to cover the full value of the work and materials as the work progresses, and shall furnish Owner copies of all endorsements. If Builder's Risk Reporting- Form of Endorsement is used, Contractor shall make all reports as required therein so as to keep in force an amount of insurance which will equal the replacement cost of the work, materials, equipment, supplies, temporary structures, and other property covered thereby; and if, as a result of Contractor's failure to make any such report, the amount of insurance so recoverable shall be less than such replacement cost, Contractor's interest in the proceeds of such insurance, if any, shall be subordinated to Owner's interest to the end that Owner may receive full reimbursement for its loss.

C. Minimum Limits of Insurance

1. General Liability

Contractor

$2,000,000 combined single limit per occurrence for bodily injury, personal injury, and property damage

$2,000,000 annual aggregate

2. Automobile Liability

$2,000,000 combined single limit per occurrence for bodily injury and property damage

3. Workers' Compensation and Employers Liability

Workers' Compensation limits as required by applicable State Statutes (generally unlimited) and minimum of $1,000,000 limit per accident for Employer's Liability.

General Liability and Automobile Liability insurance may be arranged under individual policies for the full limits required or by a combination of underlying policies with the balance provided by a form-following Excess or Umbrella Liability policy.

D. Deductibles and Self-Insured Retentions

All deductibles, co-payment clauses, and self-insured retentions must be declared to and approved by the Owner. The Owner reserves the right to request the reduction or elimination of unacceptable deductibles or self-insured retentions, as they would apply to the Owner, and their respective officers, officials, agents, consultants and employees. Alternatively, the Owner may request Contractor to procure a bond guaranteeing
payment of losses and related investigations, claims administration, and defense expenses.

E. Other Insurance Provisions and Requirements

The respective insurance policies and coverage, as specified below, must contain, or be endorsed to contain the following conditions or provisions:

1. General Liability

The Owner, and its respective commissioners, officers, officials, agents, consultants and employees shall be endorsed as additional insured’s by ISO form CG 20 26 Additional Insured - Designated Person or Organization. As additional insured’s, they shall be covered as to work performed by or on behalf of the Contractor or as to liability which arises out of Contractor's activities or resulting from the performance of services or the delivery of goods called for by the Contract.

Contractor's insurance coverage shall be primary with respect to all additional insured’s. Insurance of self-insurance programs maintained by the designated additional insured’s shall be in excess of the Contractor's insurance and shall not contribute with it.

Additionally, the Contractor and Contractor's general liability insurer shall agree to waive all rights of subrogation against the Owner and any of their respective officers, officials, agents, consultants or employees for claims, losses, or expenses which arise out of Contractor's activities or result from the performance of services or the delivery of goods called for by the Contract.

Contractor's failure to comply with the terms and conditions of these insurance policies shall not affect or abridge coverage for the Owner or for any of its officers, officials, agents, consultants or employees.

2. Automobile Insurance

The Owner, and their respective officers, officials, agents, consultants and employees shall be endorsed as additional insured’s by ISO form CG 20 26 - Additional Insured Designated Person or Organization. As additional insured’s, they shall be covered as to work performed by or on behalf of the Contractor or as to liability which arises out of Contractor's activities or resulting from the performance of services or the delivery of goods called for by the Contract.

Contractor's insurance coverage shall be primary with respect to all additional insured’s. Insurance or self-insurance programs maintained by the designated additional insured’s shall be in excess of the Contractor's insurance and shall not contribute with it.

Additionally, the Contractor and Contractor's automobile insurer shall agree to waive all rights of subrogation against the Owner and any of their respective officers, officials, agents, consultants or employees for claims, losses, or expenses which arise out of Contractor's activities or result from the performance of services or the delivery of goods called for by the Contract.

Contractor's failure to comply with the terms and conditions of these insurance policies shall not affect or abridge coverage for the Owner or for any of its officers, officials, agents, consultants or employees.

3. Workers' Compensation/Employer's Liability

Contractor's workers' compensation insurance shall be endorsed with NCCI form WC 00 03 01 A - Alternative Employer Endorsement. The Alternative Employer Endorsement shall designate the Owner as "alternate employers."

4. All Coverages

Each insurance policy required by this section of the Contract shall contain a stipulation, endorsed if necessary, that the Owner will receive a minimum of a thirty (30) calendar day advance notice of any policy cancellation. Ten (10) calendar days advance notice is required for policy cancellation due to non-payment of premium.

F. Insurer Qualifications and Acceptability

Insurance required hereunder shall be issued by an A.M. Best, “B+” rated, Class IX insurance company approved to conduct insurance business in the state of Missouri.

G. Verification of Insurance Coverage

Prior to Owner issuing a Notice to Proceed, the Contractor shall furnish the Owner with Certificate(s) of Insurance and with any applicable original endorsements evidencing the required insurance coverage. The insurance certificates and endorsements are to be signed by a person authorized by that insurer to bind coverage on its behalf. All certificates and endorsements received by the Owner are subject to review and approval by the Owner. The Owner reserves the right to require certified copies of all required policies at any time. If the scope of this contract will exceed one (1) year or, if any of Contractor's applicable insurance coverage expires prior to completion of the work or services required under this contract -
the Contractor will provide a renewal or replacement certificate before continuing work or services hereunder. If the Contractor fails to provide documentation of required insurance coverage, the Owner may issue a stop work order and no additional contract completion time and/or compensation shall be granted as a result thereof.

ARTICLE 7 – SUSPENSION OR TERMINATION OF CONTRACT

ARTICLE 7.1 - FOR SITE CONDITIONS

When conditions at the site of the proposed work are considered by the Owner to be unsatisfactory for prosecution of the work, the Contractor may be ordered in writing to suspend the work or any part thereof until reasonable conditions exist. When such suspension is not due to fault or negligence of the Contractor, time allowed for completion of such suspended work will be extended by a period of time equal to that lost due to delay occasioned by ordered suspension. This will be a no cost time extension.

ARTICLE 7.2 - FOR CAUSE

A. Termination or Suspension for Cause:

1. If the Contractor shall file for bankruptcy, or should make a general assignment for the benefit of the creditors, or if a receiver should be appointed on account of insolvency, or if the contractor should persistently or repeatedly refuse or fail to supply enough properly skilled workers or proper materials, or if the contractor should fail to make prompt payment to subcontractors or for material or labor, or persistently disregard laws, ordinances or the instructions of the Owner, or otherwise be guilty of a substantial violation of any provision of this contract, then the Owner may serve notice on the Contractor and the surety setting forth the violations and demand compliance with this contract. Unless within ten (10) consecutive calendar days after demand therefore, the Owner may take over the work and prosecute the same to completion by bid or negotiated contract, or the Owner may elect to take possession of and utilize in completing the work such materials, supplies, appliances and plant as may be on the site of the work, and all subcontractors, if the Owner elects, shall be bound to perform their contracts.

B. The Contractor and its surety shall be and remain liable to the Owner for any excess cost or damages occasioned to the Owner as a result of the actions above set forth.

C. The Contractor in the event of such suspension or termination shall not be entitled to receive any further payments under this contract until the work is wholly finished. Then if the unpaid balance under this contract shall exceed all expenses of the Owner as certified by the Director, such excess shall be paid to the Contractor; but, if such expenses shall exceed the unpaid balance as certified by the Director, the Contractor and their surety shall be liable for and shall pay the difference and any damages to the Owner.

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

E. The rights of the Owner to suspend or terminate as herein provided shall be cumulative and not exclusive and shall be in addition to any other remedy provided by law.

F. The Contractor in the event of such suspension or termination may be declared ineligible for Owner contracts for a minimal period of twelve (12) months. Further, no contract will be awarded to any Contractor who lists in their bid form any subcontractor whose prior performance has contributed, as determined by the Owner, to a breach of a contract. In order to be considered for state-awarded contracts after this period, the Contractor/subcontractor will be required to forward acceptance reports to the Owner regarding successful completion of non-state projects during the intervening twelve (12) months from the date of default. No contracts will be awarded to a subcontractor/Contractor until the ability to perform responsibly in the private sector has been proven to the Owner.

ARTICLE 7.3 -- FOR CONVENIENCE

A. The Owner may terminate or suspend the Contract or any portion of the Work without cause at any time, and at the Owner's convenience. Notification of a termination or suspension shall be in writing
and shall be given to the Contractor and their surety. If the Contract is suspended, the notice will contain the anticipated duration of the suspension or the conditions under which work will be permitted to resume. If appropriate, the Contractor will be requested to demobilize and re-mobilize and will be reimbursed time and costs associated with the suspension.

B. Upon receipt of notification, the Contractor shall:

1. Cease operations when directed.

2. Take actions to protect the work and any stored materials.

3. Place no further subcontracts or orders for material, supplies, services or facilities except as may be necessary to complete the portion of the Contract that has not been terminated. No claim for payment of materials or supplies ordered after the termination date shall be considered.

4. Terminate all existing subcontracts, rentals, material, and equipment orders.

5. Settle all outstanding liabilities arising from termination with subcontractors and suppliers.

6. Transfer title and deliver to the Owner, work in progress, completed work, supplies and other material produced or acquire for the work terminated, and completed or partially completed plans, drawings information and other property that, if the Contract had been completed, would be required to be furnished to the Owner.

C. For termination without cause and at the Owner's convenience, in addition to payment for work completed prior to date of termination, the Contractor may be entitled to payment of other documented costs directly associated with the early termination of the contract. Payment for anticipated profit and unapplied overhead will not be allowed.
SECTION 007300 - SUPPLEMENTARY CONDITIONS

1.0 GENERAL:
   A. These Supplementary General Conditions clarify, add, delete, or otherwise modify standard terms and conditions of DIVISION 0, BIDDING AND CONTRACTING REQUIREMENTS.

2.0 CONTACTS:
   Designer: Michael Hall, P.E.
   McClure Engineering
   1901 Pennsylvania Drive, Columbia, MO 65202
   Telephone: (573) 234-2620
   Email: mhall@mcclurevision.com

   Construction Representative: Carl Haley
   Division of Facilities Management, Design and Construction
   709 Missouri Boulevard, Jefferson City, Mo 65101
   Telephone: (573) 526-0473
   Email: Carl.Haley@oa.mo.gov

   Project Manager: Scott Zeller
   Division of Facilities Management, Design and Construction
   301 West High Street, Room 730
   Jefferson City, Missouri 65102
   Telephone: (573) 751-2668
   Email: Scott.Zeller@oa.mo.gov

   Contract Specialist: Mandy Roberson
   Division of Facilities Management, Design and Construction
   301 West High Street, Room 730
   Jefferson City, Missouri 65102
   Telephone: (573) 522-0074
   Email: Mandy.Roberson@oa.mo.gov

3.0 NOTICE: ALL BID MATERIALS ARE DUE AT THE TIME OF BID SUBMITTAL. THERE IS NO SECOND SUBMITTAL FOR THIS PROJECT.

4.0 FURNISHING CONSTRUCTION DOCUMENTS:
   A. The Owner will furnish the Contractor with approximately 5 complete sets of drawings and specifications at no charge.
   B. The Owner will furnish the Contractor with approximately 5 sets of explanatory or change drawings at no charge.
   C. The Contractor may make copies of the documents as needed with no additional cost to the Owner.

5.0 SAFETY REQUIREMENTS
   Contractor and subcontractors at any tier shall comply with RSMo 292.675 and Article 1.3, E, of Section 007213, General Conditions.
Missouri
Division of Labor Standards
WAGE AND HOUR SECTION

MICHAEL L. PARSON, Governor

Annual Wage Order No. 27
Section 061
MACON COUNTY

In accordance with Section 290.262 RSMo 2000, within thirty (30) days after a certified copy of this Annual Wage Order has been filed with the Secretary of State as indicated below, any person who may be affected by this Annual Wage Order may object by filing an objection in triplicate with the Labor and Industrial Relations Commission, P.O. Box 599, Jefferson City, MO 65102-0599. Such objections must set forth in writing the specific grounds of objection. Each objection shall certify that a copy has been furnished to the Division of Labor Standards, P.O. Box 449, Jefferson City, MO 65102-0449 pursuant to 8 CSR 20-5.010(1). A certified copy of the Annual Wage Order has been filed with the Secretary of State of Missouri.

Original Signed by
Taylor Burks, Director
Division of Labor Standards

Filed With Secretary of State: ____________________________ March 10, 2020

Last Date Objections May Be Filed: April 9, 2020

Prepared by Missouri Department of Labor and Industrial Relations
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<td>Group IV</td>
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</tr>
</tbody>
</table>

*The Division of Labor Standards received less than 1,000 reportable hours for this occupational title.
Public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center.
**The Prevailing Hourly Rate includes any applicable fringe benefit amounts for each occupational title.

ANNUAL WAGE ORDER NO. 27
<table>
<thead>
<tr>
<th>OCCUPATIONAL TITLE</th>
<th><strong>Prevailing Hourly Rate</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Carpenter</td>
<td>$19.65</td>
</tr>
<tr>
<td>Millwright</td>
<td></td>
</tr>
<tr>
<td>Pile Driver</td>
<td></td>
</tr>
<tr>
<td>Electrician (Outside Lineman)</td>
<td>$19.65</td>
</tr>
<tr>
<td>Lineman Operator</td>
<td></td>
</tr>
<tr>
<td>Lineman - Tree Trimmer</td>
<td></td>
</tr>
<tr>
<td>Groundman</td>
<td></td>
</tr>
<tr>
<td>Groundman - Tree Trimmer</td>
<td></td>
</tr>
<tr>
<td>Laborer</td>
<td>$19.65</td>
</tr>
<tr>
<td>General Laborer</td>
<td></td>
</tr>
<tr>
<td>Skilled Laborer</td>
<td></td>
</tr>
<tr>
<td>Operating Engineer</td>
<td>$19.65</td>
</tr>
<tr>
<td>Group I</td>
<td></td>
</tr>
<tr>
<td>Group II</td>
<td></td>
</tr>
<tr>
<td>Group III</td>
<td></td>
</tr>
<tr>
<td>Group IV</td>
<td></td>
</tr>
<tr>
<td>Truck Driver</td>
<td>$19.65</td>
</tr>
<tr>
<td>Truck Control Service Driver</td>
<td></td>
</tr>
<tr>
<td>Group I</td>
<td></td>
</tr>
<tr>
<td>Group II</td>
<td></td>
</tr>
<tr>
<td>Group III</td>
<td></td>
</tr>
<tr>
<td>Group IV</td>
<td></td>
</tr>
</tbody>
</table>

Use Heavy Construction Rates on Highway and Heavy construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(3).

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

If a worker is performing work on a heavy construction project within an occupational title that is not listed on the Heavy Construction Rate Sheet, use the rate for that occupational title as shown on the Building Construction Rate Sheet.

*The Division of Labor Standards received less than 1,000 reportable hours for this occupational title. Public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center.*

**The Prevailing Hourly Rate includes any applicable fringe benefit amounts for each occupational title.
OVERTIME

and

HOLIDAYS

OVERTIME

For all work performed on a Sunday or a holiday, not less than twice (2x) the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed or the public works contracting minimum wage, whichever is applicable, shall be paid to all workers employed by or on behalf of any public body engaged in the construction of public works, exclusive of maintenance work.

For all overtime work performed, not less than one and one-half (1½) the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed or the public works contracting minimum wage, whichever is applicable, shall be paid to all workers employed by or on behalf of any public body engaged in the construction of public works, exclusive of maintenance work or contractual obligation. For purposes of this subdivision, "overtime work" shall include work that exceeds ten hours in one day and work in excess of forty hours in one calendar week; and

A thirty-minute lunch period on each calendar day shall be allowed for each worker on a public works project, provided that such time shall not be considered as time worked.

HOLIDAYS

January First;
The last Monday in May;
July Fourth;
The first Monday in September;
November Eleventh;
The fourth Thursday in November; and
December Twenty-Fifth;

If any holiday falls on a Sunday, the following Monday shall be considered a holiday.
SECTION 011000 – SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions and Division 1 Specification Sections apply to this Section.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

A. The Project consists of reconstruction of the parking lot; reconstruction of the main entrance steps, exterior painting and lead abatement, and miscellaneous tuckpointing at the Troop B Headquarters in Macon, Missouri.

1. Project Location: Missouri State Highway Patrol Troop B Headquarters, 308 Pine Crest Drive, Macon, MO 63552.

2. Owner: State of Missouri, Office of Administration, Division of Facilities Management, Design and Construction, Harry S Truman State Office Building, Post Office Box 809, 301 West High Street, Jefferson City, Missouri 65102.

B. Contract Documents, dated March 15, 2021 were prepared for the Project by McClure Engineering Company, 1901 Pennsylvania Drive, Columbia Missouri 65202, Phone: 573-814-1568, Email: mhall@mecresults.com.

C. The Work consists of reconstruction of the parking lot; reconstruction of the main entrance steps, exterior painting and lead abatement, and miscellaneous tuckpointing at the Troop B Headquarters in Macon, Missouri.

1. The Work includes pavement removal, retaining wall removal, pavement reconstruction, minor grading, lead paint abatement, exterior painting, tuckpointing, concrete stair removal and replacement, pavement markings, retaining wall installation, sidewalk removal and replacement, final seeding and mulching.

1.3 WORK SEQUENCE

A. The Pavement Work will be conducted in TWO phases.

1. Phase ONE: Reconstruct the west pavement. Work of this phase shall be substantially complete, ready for traffic within 25 WORKING DAYS of commencement of construction.

2. Phase TWO: Reconstruct the east pavement. Work of this phase shall commence once the pavement for Phase One is open and available for traffic. In addition, the contractor shall keep a minimum of ½ of all current available parking in the rear of the facility open at all times throughout construction.
1.4 CONTRACTOR USE OF PREMISES

A. General: During the construction period the Contractor shall have full use of the premises for construction operations, including use of the site. The Contractor’s use of the premises limited only by the Owner’s right to perform work or to retain other contractors on portions of the Project.

B. Use of the Site: Limit use of the premises to work in areas indicated. Confine operations to areas within contract limits indicated. Do not disturb portions of the site beyond the areas in which the Work is indicated.

1. Owner Occupancy: Allow for Owner occupancy and use by the public.

2. Driveways and Entrances: Keep driveways and entrances serving the premises clear and available to the Owner, the Owner’s employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site. **One drive MUST be open at all times.**

C. Use of the Existing Building: Maintain the existing building in a weathertight condition throughout the construction period. Repair damage cause by construction operations. Take all precautions necessary to protect the building and its occupants during the construction period.

1.5 OCCUPANCY REQUIREMENTS

A. Full Owner Occupancy: The Owner will occupy the site and existing building during the entire construction period. Cooperate with the Owner during construction operations to minimize conflicts and facilitate owner usage. Perform the Work so as not to interfere with the Owner’s operations.

B. Partial Owner Occupancy: The Owner reserves the right to occupy and to place and install equipment in completed areas of the building prior to Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placing of equipment and partial occupancy shall not constitute acceptance of the total Work.

1. The Designer will prepare a Certificate of Partial Occupancy for each specific portion of the Work to be occupied prior to substantial completion.

2. Prior to partial Owner occupancy, mechanical and electrical systems shall be fully operational. Required inspections and tests shall have been successfully completed. Upon occupancy, the Owner will operate and maintain mechanical and electrical systems serving occupied portions for the building.

3. Upon occupancy, the Owner will assume responsibility for maintenance and custodial service for occupied portions for the building.
1.6 MISCELLANEOUS PROVISIONS

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 SCHEDULE OF PRODUCTS ORDERED IN ADVANCE

END OF SECTION 011000
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements governing allowances.
   1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. If necessary, additional requirements will be issued by Change Order.

B. Types of allowances include the following:
   1. Weather allowances.

C. Related Sections include the following:
   1. Division 1 Section "Contract Modification Procedures" for procedures for submitting and handling Change Orders for allowances.
   2. Division 1 Section "Unit Prices" for procedures for using unit prices.

1.3 WEATHER ALLOWANCE

A. Included within the completion period for this project are a specified number of “bad weather” days (see Schedule of Allowances).

B. In the event weather conditions preclude performance of critical work activities for 50% or more of the Contractor’s scheduled workday, that day shall be declared unavailable for work due to weather (a “bad weather” day) and charged against the above allowance. Critical work activities will be determined by review of the Contractor’s current progress schedule.

C. The Contractor’s Representative and the Construction Representative shall agree monthly on the number of “bad weather” days to be charged against the allowance. This determination will be documented in writing and be signed by the Contractor and the Construction Representatives. If there is a failure to agree on all or part of the “bad weather” days for a particular month, that disagreement shall be noted on this written document and signed by each party’s representative. Failure of the Contractor’s representative to sign the “bad weather” day documentation after it is presented, with or without the notes of disagreement, shall constitute agreement with the “bad weather” day determination contained in that document.

D. There will be no modification to the time of contract performance due solely to the failure to deplete the “bad weather” day allowance.
PART 2 - EXECUTION

2.1 EXAMINATION
   A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

2.2 PREPARATION
   A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

2.3 SCHEDULE OF ALLOWANCES
   A. Weather Allowance: Included within the completion period (140 working days) for this Project is TWENTY (20) “bad weather” days.

END OF SECTION 012100
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions and other Division 1 Specification Sections apply to this Section.

B. Quantities of Units to be included in the Base Bid are indicated in Section 004322 – Unit Prices.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for Unit Prices.

B. Related Sections include the following:
   1. Division 1 Section "Allowances" for procedures for using Unit Prices to adjust quantity allowances.
   2. Division 1 Section "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
   3. Division 4 Section “Unit Masonry Restoration” for procedures for measurement and payment for “Unit Masonry Restoration”.

1.3 DEFINITIONS

A. Unit Price is **an amount proposed by bidders, stated on the Bid Form Attachment 004322** a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES

A. Unit Prices include all necessary material plus cost for delivery, installation, insurance, **applicable taxes**, overhead, and profit.

B. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of Unit Prices. Methods of measurement and payment for Unit Prices are specified in those Sections.

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

D. List of Unit Prices: A list of Unit Prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each Unit Price.
PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 LIST OF UNIT PRICES

A. Unit Price No. 1 – Unit Masonry Restoration:
   1. Description: Unit Masonry Restoration according to Division 4 Section "Unit Masonry Restoration."
   2. Unit of Measurement: Square Foot (SF)
   3. Base Bid Quantity: 370 SF

B. Unit Price No. 2 – Aggregate Base Course:
   1. Description: Aggregate Base Course according to Division 32 Section “Aggregate Base Course.”
   2. Unit of Measurements: Square Foot (SF)
   3. Base Bid Quantity: 17,352 SF
   4. Alternate No. 1 Quantity: 2,940 SF
   5. Alternate No. 2 Quantity: 3,774 SF
   6. Alternate No. 3 Quantity: 3,647 SF

END OF SECTION 012200
SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
   A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Bid Form and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY
   A. This Section includes administrative and procedural requirements governing Alternates.

1.3 DEFINITIONS
   A. Definition: An alternate is an amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to the Base Bid amount if the Owner decides to accept a corresponding change in either the amount of construction to be completed, or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

      1. The cost for each alternate is the net addition to the Contract Sum to incorporate the Alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES
   A. Coordination: Modify or adjust affected adjacent Work as necessary to completely and fully integrate the Alternate Work into the Project.

      1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not mentioned as part of the Alternate.

   B. Notification: The award of the Contract will indicate whether alternates have been accepted or rejected.

   C. Execute accepted alternates under the same conditions as other Work of this Contract.

   D. Schedule: A “Schedule of Alternates” is included at the end of this Section. Specification Sections referenced in the Schedule contain requirements for materials necessary to achieve the Work described under each alternate.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES
   A. Alternate No. 1: Add additional pavement removal as shown on Sheet D-101 and pavement improvements as shown on Sheet C-101.

   B. Alternate No. 2: Add additional pavement removal as shown on Sheet D-102 and pavement improvements as shown on Sheet C-102.
C. Alternate No. 3: Add additional pavement removal as shown on Sheet D-103 and pavement improvements as shown on Sheet C-103.

D. Alternate No. 4: In lieu of installing the retaining wall with materials shown on Sheet C-501, utilize a segmental retaining wall system as shown on Sheet C-502.

END OF SECTION 012300
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for handling and processing Contract Modifications.

B. Related Sections include the following:
   1. Division 1, Section 012100 "Allowances" for procedural requirements for handling and processing Allowances.
   2. Division 1, Section 012200 "Unit Prices" for administrative requirements for using Unit Prices.
   3. Division 1, Section 013115 “Project Management Communications” for administrative requirements for communications.
   4. Division 0, Section 007213, Article 3.1 "Acceptable Substitutions" for administrative procedures for handling Requests for Substitutions made after Contract award.
   5. Division 0, Section 007213, Article 4.0 "Changes in the Work" for Change Order requirements.

1.3 REQUESTS FOR INFORMATION

A. In the event that the Contractor or Subcontractor, at any tier, determines that some portion of the Drawings, Specifications, or other Contract Documents requires clarification or interpretation, the Contractor shall submit a “Request for Information” (RFI) in writing to the Designer. A RFI may only be submitted by the Contractor and shall only be submitted on the RFI forms provided by the Owner. The Contractor shall clearly and concisely set forth the issue for which clarification or interpretation is sought and why a response is needed. In the RFI, the Contractor shall set forth an interpretation or understanding of the requirement along with reasons why such an understanding was reached.

B. Responses to RFI shall be issued within ten (10) working days of receipt of the Request from the Contractor unless the Designer determines that a longer time is necessary to provide an adequate response. If a longer time is determined necessary by the Designer, the Designer will, within five (5) working days of receipt of the request, notify the Contractor of the anticipated response time. If the Contractor submits a RFI on a time sensitive activity on the current project schedule, the Contractor shall not be entitled to any time extension due to the time it takes the Designer to respond to the request provided that the Designer responds within the ten (10) working days set forth above.

C. Responses from the Designer will not change any requirement of the Contract Documents. In the event the Contractor believes that a response to a RFI will cause a change to the requirements of the Contract Document, the Contractor shall give written
notice to the Designer requesting a Change Order for the work. Failure to give such written notice within ten (10) working days, shall waive the Contractor’s right to seek additional time or cost under Article 4, “Changes in the Work” of the General Conditions.

1.4 MINOR CHANGES IN THE WORK

A. Designer will issue supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Amount or the Contract Time, on ”Designer’s Supplemental Instructions” (DSI).

1.5 PROPOSAL REQUESTS

A. The Designer or Owner Representative will issue a detailed description of proposed Changes in the Work that may require adjustment to the Contract Amount or the Contract Time. The proposed Change Description will be issued using the “Request for Proposal” (RFP) form. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Proposal Requests issued by the Designer or Owner Representative are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.

2. Within ten (10) working days after receipt of Proposal Request, submit a proposal for the cost adjustments to the Contract Amount and the Contract Time necessary to execute the Change. The Contractor shall submit his proposal on the appropriate Change Order Detailed Breakdown form. Subcontractors may use the appropriate Change Order Detailed Breakdown form or submit their proposal on their letterhead provided the same level of detail is included. All proposals shall include:

a. A detailed breakdown of costs per Article 4.1 of the General Conditions.

b. If requesting additional time per Article 4.2 of the General Conditions, include an updated Contractor's Construction Schedule that indicates the effect of the Change including, but not limited to, changes in activity duration, start and finish times, and activity relationship.

1.6 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Proposal Request, the Designer or Owner Representative will issue a Change Order for signatures of Owner and Contractor on the “Change Order” form.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600
SECTION 013100 – COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes administrative provisions for coordinating construction operations on Projects including, but not limited to, the following:
   1. Coordination Drawings.
   2. Administrative and supervisory personnel.
   3. Project meetings.

B. Each Contractor shall participate in coordination requirements. Certain areas of responsibility will be assigned to a specific Contractor.

C. Related Sections include the following:
   1. Division 1, Section 013200 "Schedules" for preparing and submitting Contractor's Construction Schedule.
   3. Article 5.4.H of Section 007213 "General Conditions" for coordinating Closeout of the Contract.

1.3 COORDINATION

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections, which depend on each other for proper installation, connection, and operation.

B. Coordination: Each Contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each Contractor shall coordinate its operations with operations included in different Sections that depend on each other for proper installation, connection, and operation.

   1. Schedule construction operations in 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 with other Contractors to ensure maximum accessibility for required maintenance, service, and repair.
   3. Make adequate provisions to accommodate items scheduled for later installation.
   4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required
maintenance, service, and repair of all components including mechanical and electrical.

C. Prepare memoranda for distribution to each party involved outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate Contractors if coordination of their Work is required.

D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other Contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's Construction Schedule.
2. Preparation of the Schedule of Values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Startup and adjustment of systems.
8. Project Closeout activities.

E. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections for disposition of salvaged materials that are designated as Owner's property.

1.4 SUBMITTALS

A. Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.

B. Key Personnel Names: Within fifteen (15) work days of starting construction operations, submit a list of key personnel assignments including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.

1. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

1.5 PROJECT MEETINGS

A. The Owner’s Construction Representative will schedule a Pre-Construction Meeting prior to beginning of construction. The date, time, and exact place of this meeting will be determined after Contract Award and notification of all interested parties. The
Contractor shall arrange to have the Job Superintendent and all prime Subcontractors present at the meeting. During the Pre-Construction Meeting, the construction procedures and information necessary for submitting payment requests will be discussed and materials distributed along with any other pertinent information.

1. Minutes: Designer will record and distribute meeting minutes.

B. Progress Meetings: The Owner’s Construction Representative will conduct Monthly Progress Meetings as stated in Articles 1.8.B and 1.8.C of Section 007213 “General Conditions”.

1. Minutes: Designer will record and distribute to Contractor the meeting minutes.

C. Preinstallation Conferences: Contractor shall conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.

1. Attendees: Installer and representatives of Manufacturers and Fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Designer and Construction Representative of scheduled meeting dates.

2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration including requirements for the following:
   a. Contract Documents
   b. Options
   c. Related RFIs
   d. Related Change Orders
   e. Purchases
   f. Deliveries
   g. Submittals
   h. Review of mockups
   i. Possible conflicts
   j. Compatibility problems
   k. Time schedules
   l. Weather limitations
   m. Manufacturer's written recommendations
   n. Warranty requirements
   o. Compatibility of materials
   p. Acceptability of substrates
   q. Temporary facilities and controls
   r. Space and access limitations
   s. Regulations of authorities having jurisdiction
   t. Testing and inspecting requirements
u. Installation procedures  
v. Coordination with other Work  
w. Required performance results  
x. Protection of adjacent Work  
y. Protection of construction and personnel  

3. Contractor shall record significant conference discussions, agreements, and disagreements including required corrective measures and actions.

4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.

5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

6. Revise paragraph below if Project requires holding progress meetings at different intervals. Insert special intervals such as "every third Tuesday" to suit special circumstances.

7. Project name & number  
8. Name and address of Contractor  
9. Name and address of Designer  
10. RFI number including RFIs that were dropped and not submitted  
11. RFI description  
12. Date the RFI was submitted  
13. Date Designer's response was received  
14. Identification of related DSI or Proposal Request, as appropriate

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100
SECTION 013115 - PROJECT MANAGEMENT COMMUNICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions, Bid Form, and other Division 1 Specification Sections apply to this Section.

B. Division 1, Section 013300 - Submittals

C. Division 1, Section 012600 – Contract Modification Procedures

1.2 SUMMARY

A. Project Management Communications: The Contractor shall use the Internet web based project management communications tool, E-Builder® ASP software, and protocols included in that software during this project. The use of project management communications as herein described does not replace or change any contractual responsibilities of the participants.

1. Project management communications is available through E-Builder® as provided by "e-Builder®" in the form and manner required by the Owner.

2. The project communications database is on-line and fully functional. User registration, electronic and computer equipment, and Internet connections are the responsibility of each project participant. The sharing of user accounts is prohibited

B. Support: E-Builder® will provide on-going support through on-line help files.

C. Copyrights and Ownership: Nothing in this specification or the subsequent communications supersedes the parties’ obligations and rights for copyright or document ownership as established by the Contract Documents. The use of CAD files, processes or design information distributed in this system is intended only for the project specified herein.

D. Purpose: The intent of using E-Builder® is to improve project work efforts by promoting timely initial communications and responses. Secondly, to reduce the number of paper documents while providing improved record keeping by creation of electronic document files

E. Authorized Users: Access to the web site will be by individuals who are authorized users.

1. Individuals shall complete the E-Builder New Company/User Request Form located at the following web site: https://oa.mo.gov/facilities/vendor-links/contractor-forms. Completed forms shall be emailed to the following email address: OA.FMDCE-BuilderSupport@oa.mo.gov.

2. Authorized users will be contacted directly and assigned a temporary user password.

3. Individuals shall be responsible for the proper use of their passwords and access to data as agents of the company in which they are employed.

F. Administrative Users: Administrative users have access and control of user licenses and all posted items. DO NOT POST PRIVATE OR YOUR COMPANY CONFIDENTIAL ITEMS IN THE DATABASE! Improper or abusive language toward any party or repeated posting of items
intended to deceive or disrupt the work of the project will not be tolerated and will result in deletion of the offensive items and revocation of user license at the sole discretion of the Administrative User(s).

G. Communications: The use of fax, email and courier communication for this project is discouraged in favor of using E-Builder® to send messages. Communication functions are as follows:

1. Document Integrity and Revisions:
   a. Documents, comments, drawings and other records posted to the system shall remain for the project record. The authorship time and date shall be recorded for each document submitted to the system. Submitting a new document or record with a unique ID, authorship, and time stamp shall be the method used to make modifications or corrections.
   b. The system shall make it easy to identify revised or superseded documents and their predecessors.
   c. Server or Client side software enhancements during the life of the project shall not alter or restrict the content of data published by the system. System upgrades shall not affect access to older documents or software.

2. Document Security:
   a. The system shall provide a method for communication of documents. Documents shall allow security group assignment to respect the contractual parties communication except for Administrative Users. DO NOT POST PRIVATE OR YOUR COMPANY CONFIDENTIAL ITEMS IN THE DATABASE!

3. Document Integration:
   a. Documents of various types shall be logically related to one another and discoverable. For example, requests for information, daily field reports, supplemental sketches and photographs shall be capable of reference as related records.

4. Reporting:
   a. The system shall be capable of generating reports for work in progress, and logs for each document type. Summary reports generated by the system shall be available for team members.

5. Notifications and Distribution:
   a. Document distribution to project members shall be accomplished both within the extranet system and via email as appropriate. Project document distribution to parties outside of the project communication system shall be accomplished by secure email of outgoing documents and attachments, readable by a standard email client.

6. Required Document Types:
   a. RFI, Request for Information.
   b. Submittals, including record numbering by drawing and specification section.
   c. Transmittals, including record of documents and materials delivered in hard copy.
   d. Meeting Minutes.
   e. Application for Payments (Draft or Pencil).
   f. Review Comments.
   g. Field Reports.
   h. Construction Photographs.
   i. Drawings.
   j. Supplemental Sketches.
   k. Schedules.
   l. Specifications.
m. Request for Proposals  

n. Designer’s Supplemental Instructions  

o. Punch Lists  

H. Record Keeping: Except for paper documents, which require original signatures and large format documents (greater than 8½ x 11 inches), all other 8½ x 11 inches documents shall be submitted by transmission in electronic form to the E-Builder® web site by licensed users.  

a. The Owner and his representatives, the Designer and his consultants, and the Contractor and his Sub Contractors and suppliers at every tier shall respond to documents received in electronic form on the web site, and consider them as if received in paper document form.  

b. The Owner and his representatives, the Designer and his consultants, and the Contractor and his Sub Contractors and suppliers at every tier reserves the right to and shall reply or respond by transmissions in electronic form on the web site to documents actually received in paper document form.  

c. The Owner and his representatives, the Designer and his consultants, and the Contractor and his Sub Contractors and suppliers at every tier reserves the right to and shall copy any paper document into electronic form and make same available on the web site.  

I. Minimum Equipment and Internet Connection: In addition to other requirements specified in this Section, the Owner and his representatives, the Construction Manager and his representatives, the Architect and his consultants, and the Contractor and his sub-contractors and suppliers at every tier required to have a user license(s) shall be responsible for the following:  

1. Providing suitable computer systems for each licensed user at the users normal work location¹ with high-speed Internet access, i.e. DSL, local cable company's Internet connection, or T1 connection.  

2. Each of the above referenced computer systems shall have the following minimum system² and software requirements:  

   a. Desktop configuration (Laptop configurations are similar and should be equal to or exceed desktop system.)  
      1) Operating System: Windows XP or newer  
      2) Internet Browser: Internet Explorer 6.01SP2+ (Recommend IE7.0+)  
      3) Minimum Recommend Connection Speed: 256K or above  
      4) Processor Speed: 1 Gigahertz and above  
      5) RAM: 512 mb  
      6) Operating system and software shall be properly licensed.  
      7) Internet Explorer version 7 (current version is a free distribution for download). This specification is not intended to restrict the host server or client computers provided that industry standard HTTP clients may access the published content.  
      8) Adobe Acrobat Reader (current version is a free distribution for download).  
      9) Users should have the standard Microsoft Office Suite (current version must be purchased) or the equivalent.  

¹ The normal work location is the place where the user is assigned for more than one-half of his time working on this project.  
² The minimum system herein will not be sufficient for many tasks and may not be able to process all documents and files stored in the E-Builder® Documents area.
PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable.)

END OF SECTION 013115
SECTION 013200 – SCHEDULES – BAR CHART

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions, Bid Form, and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes requirements for a Bar Chart Schedule for the project construction activities, schedule of submittals, and schedule for testing.

PART 2 - PRODUCTS – (Not Applicable)

PART 3 - EXECUTION

3.1 SUBMITTAL PROCEDURES

A. The Contractor shall submit to the Designer, within ten (10) working days following the Notice to Proceed, a Progress Schedule including Schedule of Values showing the rate of progress the Contractor agrees to maintain and the order in which he proposed to carry out the various phases of Work. No payments shall be made to the Contractor until the Progress Schedule has been approved by the Owner.

1. The Schedule of Values must have the following line items included with the value of the item as indicated below:

   a. O&M’s (Owner’s Manual)
      1) $1,000,000.00 (One million) and under – 2% of the total contract amount
      2) Over $1,000,000.00 (One million) – 1% of the total contract amount

   b. Close Out Documents
      1) $1,000,000.00 (One million) and under – 2% of the total contract amount
      2) Over $1,000,000.00 (One million) – 1% of the total contract amount

   c. General Conditions
      1) No more than 10%

B. The Contractor shall submit an updated Schedule for presentation at each Monthly Progress Meeting. The Schedule shall be updated by the Contractor as necessary to reflect the current Schedule and its relationship to the original Schedule. The updated Schedule shall reflect any changes in the logic, sequence, durations, or completion date. Payments to the Contractor shall be suspended if the Progress Schedule is not adequately updated to reflect actual conditions.
C. The Contractor shall submit Progress Schedules to Subcontractors to permit coordinating their Progress Schedules to the general construction Work. The Contractor shall coordinate preparation and processing of Schedules and reports with performance of other construction activities.

3.2 CONSTRUCTION PROGRESS SCHEDULE – BAR CHART SCHEDULE

A. Bar-Chart Schedule: The Contractor shall prepare a comprehensive, fully developed, horizontal bar chart-type Contractor’s Construction Schedule. The Contractor for general construction shall prepare the Construction Schedule for the entire Project. The Schedule shall show the percentage of work to be completed at any time, anticipated monthly payments by Owner, as well as significant dates (such as completion of excavation, concrete foundation work, underground lines, superstructure, rough-ins, enclosure, hanging of fixtures, etc.) which shall serve as check points to determine compliance with the approved Schedule. The Schedule shall also include an activity for the number of “bad” weather days specified in Section 012100 – Allowances.

1. The Contractor shall provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week.
   a. If practical, use the same Schedule of Values breakdown for schedule time bars.

2. The Contractor shall provide a base activity time bar showing duration for each construction activity. Each bar is to indicate start and completion dates for the activity. The Contractor is to place a contrasting bar below each original schedule activity time for indicating actual progress and planned remaining duration for the activity.

3. The Contractor shall prepare the Schedule on a minimal number of separate sheets to readily show the data for the entire construction period.

4. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on schedule with other construction activities. Include minor elements involved in the overall sequence of the Work. Show each activity in proper sequence. Indicate graphically the sequences necessary for completion of related portions of the Work.

5. Coordinate the Contractor’s Construction Schedule with the Schedule of Values, list of subcontracts, Submittal Schedule, progress reports, payment requests, and other required schedules and reports.

6. Indicate the Intent to Award and the Contract Substantial Completion dates on the schedule.

B. Phasing: Provide notations on the schedule to show how the sequence of the Work is affected by the following:

1. Requirement for Phased completion
2. Work by separate Contractors
3. Work by the Owner
4. Pre-purchased materials
5. Coordination with existing construction
6. Limitations of continued occupancies
7. Un-interruptible services
8. Partial Occupancy prior to Substantial Completion
9. Site restrictions
10. Provisions for future construction
11. Seasonal variations
12. Environmental control

C. Work Stages: Use crosshatched bars to indicate important stages of construction for each major portion of the Work. Such stages include, but are not necessarily limited to, the following:

1. Subcontract awards
2. Submittals
3. Purchases
4. Mockups
5. Fabrication
6. Sample testing
7. Deliveries
8. Installation
9. Testing
10. Adjusting
11. Curing
12. Startup and placement into final use and operation

D. Area Separations: Provide a separate time bar 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.

1. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
   a. Structural completion.
   b. Permanent space enclosure
   c. Completion of mechanical installation
   d. Completion of the electrical portion of the Work
   e. Substantial Completion

3.3 SCHEDULE OF SUBMITTALS

A. Upon acceptance of the Construction Progress Schedule, prepare and submit a complete schedule of submittals. Coordinate the submittal schedule with Section 013300 SUBMITTALS, the approved Construction Progress Schedule, list of subcontracts, Schedule of Values and the list of products.

B. Prepare the schedule in chronological order. Provide the following information
1. Scheduled date for the first submittal
2. Related Section number
3. Submittal category
4. Name of the Subcontractor
5. Description of the part of the Work covered
6. Scheduled date for resubmittal
7. Scheduled date for the Designer’s final release or approval

C. Distribution: Following the Designer’s response to the initial submittal schedule, print and distribute copies to the Designer, Owner, subcontractors, and other parties required to comply with submittal dates indicated.
   1. Post copies in the Project meeting room and temporary field office.
   2. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned part of the Work and are no longer involved in construction activities.

D. Schedule Updating: Revise the schedule after each meeting or other activity where revisions have been recognized or made. Issue the updated schedule concurrently with the report of each meeting.

3.4 SCHEDULE OF INSPECTIONS AND TESTS

A. Prepare a schedule of inspections, tests, and similar services required by the Contract Documents. Submit the schedule with (15) days of the date established for commencement of the Contract Work. The Contractor is to notify the testing agency at least (5) working days in advance of the required tests unless otherwise specified.

B. Form: This schedule shall be in tabular form and shall include, but not be limited to, the following:
   1. Specification Section number
   2. Description of the test
   3. Identification of applicable standards
   4. Identification of test methods
   5. Number of tests required
   6. Time schedule or time span for tests
   7. Entity responsible for performing tests
   8. Requirements for taking samples
   9. Unique characteristics of each service

C. Distribution: Distribute the schedule to the Owner, Architect, and each party involved in performance of portions of the Work where inspections and tests are required.

END OF SECTION 013200
SECTION 013300 – SUBMITTALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions, Bid Form, and other Division 1 Specification Sections apply to this Section.

B. Division 1, Section 013115 “Project Management Communications” for administrative requirements for communications.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for submittals required for performance of the Work including the following:

1. Shop Drawings
2. Product Data
3. Samples
4. Quality Assurance Submittals
5. Construction Photographs
6. Operating and Maintenance Manuals
7. Warranties

B. Administrative Submittals: Refer to General and Supplementary Conditions other applicable Division 1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to, the following:

1. Construction Progress Schedule including Schedule of Values
2. Performance and Payment Bonds
3. Insurance Certificates
4. Applications for Payment
5. Certified Payroll Reports
6. Partial and Final Receipt of Payment and Release Forms
7. Affidavit – Compliance with Prevailing Wage Law
8. Record Drawings
9. Notifications, Permits, etc.

C. The Contractor is obliged and responsible to check all shop drawings and schedules to assure compliance with contract plans and specifications. The Contractor is responsible for the content of the shop drawings and coordination with other contract work. Shop drawings and schedules shall indicate, in detail, all parts of an Item or Work including erection and setting instructions and integration with the Work of other trades.

D. The Contractor shall at all times make a copy, of all approved submittals, available on site to the Construction Representative.
1.3 SUBMITTAL PROCEDURES

A. The Contractor shall comply with the General and Supplementary Conditions and other applicable sections of the Contract Documents. The Contractor shall submit, with such promptness as to cause no delay in his work or in that of any other contractors, all required submittals indicated in Part 3.1 of this section and elsewhere in the Contract Documents. Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.

   a. The Designer reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.

B. Each drawing and/or series of drawings submitted must be accompanied by a letter of transmittal giving a list of the titles and numbers of the drawings. Each series shall be numbered consecutively for ready reference and each drawing shall be marked with the following information:

   1. Date of Submission
   2. Name of Project
   3. Location
   4. Section Number of Specification
   5. State Project Number
   6. Name of Submitting Contractor
   7. Name of Subcontractor
   8. Indicate if Item is submitted as specified or as a substitution

1.4 SHOP DRAWINGS

A. Comply with the General Conditions, Article 3.2.

B. The Contractor shall submit newly prepared information drawn accurately to scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not a Shop Drawing.

C. Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates, and similar drawings including the following information:

   1. Dimensions
   2. Identification of products and materials included by sheet and detail number
   3. Compliance with specified standards
   4. Notation of coordination requirements
5. Notation of dimensions established by field measurement
6. Sheet Size: Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets at least 8½”x11” but no larger than 24”x36”.

1.5 PRODUCT DATA

A. The Contractor shall comply with the General Conditions, Article 3.2.

B. The Contractor shall collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information, such as manufacturer’s installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams, and performance curves.

1. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products that are not required, mark copies to indicate the applicable information including the following information:
   a. Manufacturer’s printed recommendations
   b. Compliance with Trade Association standards
   c. Compliance with recognized Testing Agency standards
   d. Application of Testing Agency labels and seals
   e. Notation of dimensions verified by field measurement
   f. Notation of coordination requirements

2. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.

1.6 SAMPLES

A. The Contractor shall comply with the General Conditions, Article 3.2.

B. The Contractor shall submit full-size, fully fabricated samples, cured and finished as specified, and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture, and pattern.

1. The Contractor shall mount or display samples in the manner to facilitate review of qualities indicated. Prepare samples to match the Designer’s sample including the following:
   a. Specification Section number and reference
   b. Generic description of the Sample
   c. Sample source
   d. Product name or name of the Manufacturer
   e. Compliance with recognized standards
   f. Availability and delivery time

2. The Contractor shall submit samples for review of size, kind, color, pattern, and texture. Submit samples for a final check of these characteristics with other elements and a comparison of these characteristics between the final submittal and the actual component as delivered and installed.
a. Where variation in color, pattern, texture, or other characteristic is inherent in the material or product represented, submit at least three (3) multiple units that show approximate limits of the variations.

b. Refer to other Specification Sections for requirements for samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.

c. Refer to other Sections for samples to be returned to the Contractor for incorporation in the Work. Such samples must be undamaged at time of use. On the transmittal, indicate special requests regarding disposition of sample submittals.

d. Samples not incorporated into the Work, or otherwise designated as the Owner’s property, are the property of the Contractor and shall be removed from the site prior to Substantial Completion.

3. Field samples are full-size examples erected onsite to illustrate finishes, coatings, or finish materials and to establish the Project standard.

   a. The Contractor shall comply with submittal requirements to the fullest extent possible. The Contractor shall process transmittal forms to provide a record of activity.

1.7 QUALITY ASSURANCE DOCUMENTS

A. The Contractor shall comply with the General Conditions, Article 3.2

B. The Contractor shall submit quality control submittals including design data, certifications, manufacturer’s instructions, manufacturer’s field reports, and other quality-control submittals as required under other Sections of the Specifications.

C. Certifications: Where other Sections of the Specifications require certification that a product, material, or installation complies with specified requirements, submit a notarized certification from the Manufacturer certifying compliance with specified requirements.

   1. Signature: Certification shall be signed by an officer of the Manufacturer or other individual authorized to contractually bind the Company.

D. Inspection and Test Reports: The Contractor shall submit the required inspection and test reports from independent testing agencies as specified in this Section and in other Sections of the Contract Documents.

E. Construction Photographs: The Contractor shall submit record construction photographs as specified in this Section and in other Sections of the Contract Documents.

   1. The Contractor shall submit digital photographs. The Construction Administrator shall determine the quantity and naming convention at the preconstruction meeting.

   2. The Contractor shall identify each photograph with project name, location, number, date, time, and orientation.

   3. The Contractor shall submit progress photographs monthly unless specified otherwise. Photographs shall be taken one (1) week prior to submitting.

   4. The Contractor shall take four (4) site photographs from differing directions and a minimum of five (5) interior photographs indicating the relative progress of the Work.
1.8 OPERATING AND MAINTENANCE MANUALS AND WARRANTIES

A. The Contractor shall submit all required manufacturer’s operating instructions, maintenance/service manuals, and warranties in accordance with the General Conditions, Article 3.5, and Supplementary Conditions along with this and other Sections of the Contract Documents.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 REQUIRED SUBMITTALS

A. Contractor shall submit the following information for materials and equipment to be provided under this contract as shown on the following page.
<table>
<thead>
<tr>
<th>SECTION</th>
<th>DESCRIPTION</th>
<th>TYPE OF SUBMITTAL</th>
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<tr>
<td>011000</td>
<td>Schedule of Values</td>
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<tr>
<td>013100</td>
<td>Coordination Drawings</td>
<td>X</td>
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<td>013100</td>
<td>Key Personnel Names</td>
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<td>013200</td>
<td>Bar Chart</td>
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<td>022319.13</td>
<td>Lead Paint Abatement Plan</td>
<td>X</td>
</tr>
<tr>
<td>031000</td>
<td>Concrete Forming and Accessories</td>
<td>X</td>
</tr>
<tr>
<td>032000</td>
<td>Concrete Reinforcing</td>
<td>X</td>
</tr>
<tr>
<td>033000</td>
<td>Concrete Mix Design – steps</td>
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</tr>
<tr>
<td>033000</td>
<td>Admixtures, Joint Devices, Attachment Accessories</td>
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<tr>
<td>033500</td>
<td>Hardener, Sealer, Curing Compounds, Slip Resistant Treatment</td>
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<td>040503</td>
<td>Mortar and Grout</td>
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<td>Silicone Masonry Water Repellant</td>
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<td>Fill</td>
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<td>312500</td>
<td>Erosion Control Plan &amp; SWPPP</td>
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<td>Concrete Reinforcing (&amp; Pour Plan)</td>
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<td>Curing Compound</td>
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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions, Bid Form, and other Division 1 Specification Sections apply to this Section.

1.2 SUBMITTALS

A. List of required submittals:

1. Materials Safety Data Sheets for all hazardous materials to be brought onsite.
2. Schedule of proposed shutdowns, if applicable.
3. A list of the names of all employees who will submit fingerprints for a background check, and the signed privacy documents identified below for each employee.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 ACCESS TO THE SITE

A. The Contractor shall arrange with Facility Representatives to establish procedures for the controlled entry of workers and materials into the work areas at the Facility.

B. The Contractor shall establish regular working hours with Facility Representatives. The Contractor must report changes in working hours or overtime to Facility Representatives and obtain approval twenty-four (24) hours ahead of time. The Contractor shall report emergency overtime to Facility Representatives as soon as it is evident that overtime is needed. The Contractor must obtain approval from Facility Representatives for all work performed after dark.

C. The Contractor shall provide the name and phone number of the Contractor’s employee or agent who is in charge onsite; this individual must be able to be contacted in case of emergency. The Contractor must be able to furnish names and address of all employees upon request.

D. All construction personnel shall visibly display issued identification cards.

3.2 FIRE PROTECTION, SAFETY, AND HEALTH CONTROLS

A. The Contractor shall take all necessary precautions to guard against and eliminate possible fire hazards.

1. Onsite burning is prohibited.
2. The Contractor shall store all flammable or hazardous materials in proper containers located outside the buildings or offsite, if possible.
3. The Contractor shall provide and maintain, in good order, during construction fire extinguishers as required by the National Fire Protection Association. In areas of...
flammmable liquids, asphalt, or electrical hazards, 15-pound carbon dioxide or 20-pound dry chemical extinguishers shall be provided.

B. The Contractor shall not obstruct streets or walks without permission from the Owner’s Construction Representative and Facility Representatives.

C. The Contractor’s personnel shall not exceed the speed limit of 15 mph while at the Facility unless otherwise posted.

D. The Contractor shall take all necessary, reasonable measures to reduce air and water pollution by any material or equipment used during construction. The Contractor shall keep volatile wastes in covered containers, and shall not dispose of volatile wastes or oils in storm or sanitary drains.

E. The Contractor shall keep the project site neat, orderly, and in a safe condition at all times. The Contractor shall immediately remove all hazardous waste, and shall not allow rubbish to accumulate. The Contractor shall provide onsite containers for collection of rubbish and shall dispose of it at frequent intervals during the progress of the Work.

F. Fire exits, alarm systems, and sprinkler systems shall remain fully operational at all times, unless written approval is received from the Owner’s Construction Representative and the appropriate Facility Representative at least twenty-four (24) hours in advance. The Contractor shall submit a written time schedule for any proposed shutdowns.

G. For all hazardous materials brought onsite, Material Safety Data Sheets shall be on site and readily available upon request at least a day before delivery.

H. Alcoholic beverages or illegal substances shall not be brought upon the Facility premises. The Contractor’s workers shall not be under the influence of any intoxicating substances while on the Facility premises.

I. Masks shall be worn when the minimum required social distancing (6 feet minimum) is not possible.

3.3 MSHP SECURITY CLEARANCE REQUIREMENTS

A. Contractor Background Screening Policy: As a normal business activity, the Missouri State Highway Patrol (MSHP) may contract with external companies to perform various duties for the Missouri State Highway Patrol. Any personnel working for a contractor, and who has access to criminal justice information is required to pass a background check prior to beginning work on the contract. A contractor’s proposed candidate may also be required to undergo a MSHP approved drug screening. This background check requirement will be included as part of all PAQs or solicitations for bids. The contract/PAQ award is contingent upon the proposed candidate background checks being completed.

B. This background check will include, but not be limited to, state of residency and national fingerprint-based record checks. If the proposed candidate lives outside the United States, the contractor will submit similar documentation from their respective country. Qualification to work on contract will be based upon the following criteria:

1. A felony conviction or guilty plea will be an automatic disapproval of the candidate.
2. Any conviction whether misdemeanor or felony, involving violence, crimes against children, and all sexual crimes regardless of timeframe will be an automatic disapproval of the candidate.

3. Candidates will be disqualified if it is confirmed there are outstanding arrest warrants for the candidate.

4. Any other misdemeanor convictions and guilty pleas may be considered for automatic disapproval. The State CSO (CJIS Security Officer) has final authority regarding if the nature or severity of the misdemeanor offense(s) does or does not warrant a disqualification.

C. For misdemeanors, consideration will be given to the relationship between the information obtained in the background check and the responsibilities of the position. Time and severity of crime may also be considered as factors in a disqualification. Candidates may submit a written request for waiver through their contracting company if they have been disapproved and wish to contest the decision. The request will need to explain the circumstances of the crime and justification for a waiver.

D. Contractors will be required to undergo a background check at a minimum once every five years. If there is a significant gap between contracts, candidates may be required to undergo a background check before working under a new contract.

E. The CSO or their designee will maintain a list of contractors who have been approved to work at the MSHP.

F. If a candidate goes through a background check with one contractor and then goes to work at a different contractor, the candidate will not be required to undergo a separate background check unless the timeframe exceeds five-year limit.

G. The CSO for the MSHP has the right to approve or disapprove any candidate and has the right to revoke a candidate’s approval at any time.

H. The FBI CJIS Security Policy requires the MSHP to conduct background checks on all contractors needing MSHP access.

I. Contractors working on-site and/or need escorted access are required to provide name, date of birth and social security number to enable the MSHP to run a name based background check prior to their arrival on-site.

J. Contractors working on-site with unescorted access and/or need access to our network are required to submit fingerprints. Required fields for print cards are as follows:
   1. ORI: MOMHP0070
   2. OCA: CONTRACTOR
   3. Employer and Address: COMPANY NAME AND ADDRESS
   4. Reason Fingerprinted: CONTRACTOR

K. The FBI CJIS Security Policy requires the Missouri State Highway Patrol to conduct background checks on all contractors needing Patrol access.

Please provide name of your company, mailing address, point of contact with email address and phone number. If possible, include a list of employee names submitting background checks for verification purposes.
Requirements are as follows:

1. **Fingerprint submission** - employees may go online to MACHS.MO.GOV, click on fingerprint portal to register. The SHP-984 MACHS Fingerprint Instruction Form Link is located at:

   https://www.mshp.dps.missouri.gov/MSHPWeb/PatrolDivisions/CRID/documents/SHP-984_MACHS_Fingerprint_Instruction_Form.pdf

   Payment of $33.25 is due at the time of service.

   Instructions for fingerprint submission(s) for applicants residing outside of Missouri may be found at:

   https://www.mshp.dps.missouri.gov/MSHPWeb/PatrolDivisions/CRID/crimRecChk.html

   Required fields for print cards or digital prints:

   **ORI:** MOMHP0070  
   **REGISTRATION NUMBER:** 7965  
   **OCA DESIGNATION:** CONTRACTOR  
   **AGENCY NAME:** CJIS INFO SECURITY UNIT CONTRACTORS

2. **Security Awareness Test** - employees may go online at www.cjisonline.com to take the security awareness test. Please provide a designated employee including their email address and phone number, from your company to be assigned as the CJIS Online Administrator allowing them to oversee all employee certification tests and fingerprint submission profiles.

   **If the online Security Awareness Test is not an option, please contact:** securityaudit@mshp.dps.mo.gov or call 573-526-6153 x2658.

   Once fingerprints, security forms and security awareness tests have been completed, background results with yes/no approved access will be provided via encrypted email.

   Those needing the results may request them from the Security Audit Compliance Unit at securityaudit@mshp.dps.mo.gov and call 573-526-6153 x2658 for the encrypted password and for further questions or assistance.

   L. Once background checks are completed, results will be returned via encrypted email to the requestor. Processing time varies. Please contact the Security Audit and Compliance Unit for questions at 573-526-6153 x2658.

3.4 **DISRUPTION OF UTILITIES**

A. The Contractor shall give a minimum of seventy-two (72) hours written notice to the Construction Representative and the Facility Representative before disconnecting electric, gas, water, fire protection, or sewer service to any building.

B. The Contractor shall give a minimum of seventy-two (72) hours written notice to the Construction Representative and Facility Representative before closing any access drives, and shall make temporary access available, if possible. The Contractor shall not obstruct streets, walks, or parking.
END OF SECTION 013513.25
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions, Bid Form, and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes requirements for construction facilities and temporary controls including temporary utilities, support facilities, security, and protection.

B. Temporary utilities include, but are not limited to, the following:
   1. Storm sewer

C. Support facilities include, but are not limited to, the following:
   1. Dewatering facilities and drains
   2. Temporary enclosures
   3. Temporary project identification signs and bulletin boards
   4. Waste disposal services
   5. Construction aids and miscellaneous services and facilities

D. Security and protection facilities include, but are not limited to, the following:
   1. Barricades, warning signs, and lights
   2. Environmental protection

1.3 SUBMITTALS

A. Not applicable. Contained in other sections.

1.4 QUALITY ASSURANCE

A. Regulations: Comply with industry standards and applicable laws and regulations including, but not limited to, the following:
   1. Building code requirements
   2. Health and safety regulations
   3. Utility company regulations
   4. Police, fire department, and rescue squad rules
   5. Environmental protection regulations

1.5 PROJECT CONDITIONS

A. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Relocate temporary services and facilities as the Work progresses. Do not overload facilities or permit them to interfere with progress.
Take necessary fire-prevention measures. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist onsite.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide new materials. If acceptable to the Designer, the Contractor may use undamaged, previously used materials in serviceable condition. Provide materials suitable for use intended.

B. Paint: Comply with requirements of Division 9 Section “Painting”.
   1. For job-built temporary offices, shops, sheds, fences, and other exposed lumber and plywood, provide exterior-grade acrylic-latex emulsion over exterior primer.
   2. For sign panels and applying graphics, provide exterior-grade alkyd gloss enamel over exterior primer.

C. Tarpaulins: Provide waterproof, fire-resistant, UL-labeled tarpaulins with flame-spread rating of (15) or less. For temporary enclosures, provide translucent, nylon-reinforced laminated polyethylene or polyvinyl chloride, fire-retardant tarpaulins.

D. Open-Mesh Fencing: Provide 0.120” (3mm) thick, galvanized 2” (50mm) chainlink fabric fencing 6’ (2m) high with galvanized steel pipe posts, 1½” (38mm) ID for line posts and 2½” (64mm) ID for corner posts.

2.2 EQUIPMENT

A. General: Provide new equipment. If acceptable to the Designer, the Contractor may use undamaged, previously used equipment in serviceable condition. Provide equipment suitable for use intended.

B. Temporary Toilet Units: Provide self-contained, single-occupant toilet units of the chemical, aerated re-circulation, or combustion type. Provide units properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.

B. Provide each Facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Engage the appropriate local utility company to install temporary service or connect to existing service. Where company provides only part of the service, provide
the remainder with matching, compatible materials and equipment. Comply with company recommendations.

1. Arrange with company and existing users for a time when service can be interrupted, if necessary, to make connections for temporary services.

2. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked-in services.

3. Obtain easements to bring temporary utilities to the site where the Owner’s easements cannot be used for that purpose.

4. Use Charges: Cost or use charges for temporary facilities are not chargeable to the Owner or Designer. Neither the Owner nor Designer will accept cost or use charges as a basis of claims for Change Order.

B. Temporary Toilets: Install self-contained toilet units. Use of pit-type privies will not be permitted. Comply with regulations and health codes for the type, number, location, operation, and maintenance of fixtures and facilities. Install where facilities will best serve the Project’s needs.

1. Shield toilets to ensure privacy.

2. Provide separate facilities for male and female personnel.

3. Provide toilet tissue materials for each facility.

C. Wash Facilities: Install wash facilities supplied with potable water at convenient locations for personnel involved in handling materials that require wash-up for a health and sanitary condition. Dispose of drainage properly. Supply cleaning compounds appropriate for each condition.

1. Provide paper towels or similar disposable materials for each facility.

2. Provide covered waste containers for used material.

D. Provide earthen embankments and similar barriers in and around excavations and subgrade construction, sufficient to prevent flooding by runoff of storm water from heavy rains.

3.3 SUPPORT FACILITIES INSTALLATION

A. General: Locate field offices, storage sheds, and other temporary construction and support facilities for easy access.

1. Maintain support facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.

B. Storage Facilities: Limited areas for storage of building materials are available onsite. Available storage areas are shown on the drawings. The Contractor shall provide his own security. Specific locations for storage will be discussed at the Pre-Bid Meeting and the Pre-Construction Meeting.

C. Construction Parking: Parking at the site will be provided in the areas designated at the Pre-Construction Meeting.
D. Dewatering Facilities and Drains: For temporary drainage and dewatering facilities and operations not directly associated with construction activities included under individual Sections, comply with dewatering requirements of applicable Division 2 Sections. Where feasible, utilize the same facilities. Maintain the site, excavations, and construction free of water.

E. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities.
   1. Install tarpaulins securely with incombustible wood framing and other materials. Close openings of 25SqFt (2.3SqM) or less with plywood or similar materials.

F. Temporary Lifts and Hoists: Provide facilities for hoisting materials and employees. Truck cranes and similar devices used for hoisting materials are considered “tools and equipment” and not temporary facilities.

G. Project Identification and Temporary Signs: Prepare project identification and other signs of size indicated. Install signs where indicated to inform the public and persons seeking entrance to the Project. Support on posts or framing of preservative-treated wood or steel. Do not permit installation of unauthorized signs.
   1. Project Identification Signs: Engage an experienced sign painter to apply graphics. Comply with details indicated.
   2. Temporary Signs: Prepare signs to provide directional information to construction personnel and visitors.

H. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than seven (7) days during normal weather or three (3) days when the temperature is expected to rise above 80°F (27°C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material lawfully.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed, provide lighting including flashing red or amber lights.

B. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.
   1. Storage: Where materials and equipment must be stored and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.

C. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and minimize the possibility that air, waterways, and subsoil might be contaminated or polluted or that other undesirable effects might result. Avoid use of tools and equipment
that produce harmful noise. Restrict use of noisemaking tools and equipment to hours that will minimize complaints from persons or firms near the site.

3.5 OPERATION, TERMINATION AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.

B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
   1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
   2. Protection: Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.

C. Termination and Removal: Unless the Designer requests that it be maintained longer, remove each temporary facility when the need has ended, when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
   1. Materials and facilities that constitute temporary facilities are the Contractor’s property. The Owner reserves the right to take possession of project identification signs.
   2. Remove temporary paving not intended for or acceptable for integration into permanent paving. Where the area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil in the area. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at the temporary entrances as required by the governing authority.

END OF SECTION 015000
SECTION 017400 – CLEANING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. Drawings and general provisions of the Contract including General and Supplementary Conditions, Bid Form, and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY
A. This Section includes administrative and procedural requirements for cleaning during the Project.

B. Environmental Requirements: Conduct cleaning and waste-disposal operations in compliance with local laws and ordinances. Comply fully with federal and local environmental and anti-pollution regulations.
   1. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
   2. Burning or burying of debris, rubbish, or other waste material on the premises is not permitted.

PART 2 - PRODUCTS

2.1 MATERIALS
A. Cleaning Agents: Use cleaning materials and agents recommended by the manufacturer or fabricator for the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 PROGRESS CLEANING
A. General
   1. Retain all stored items in an orderly arrangement allowing maximum access, not impending drainage or traffic, and providing the required protection of materials.
   2. Do not allow the accumulation of scrap, debris, waste material, and other items not required for construction of this Work.
   3. At least twice each month, and more often if necessary, completely remove all scrap, debris, and waste material from the jobsite.
   4. Provide adequate storage for all items awaiting removal from the jobsite, observing all requirements for fire protection and protection of the ecology.

B. Site
   1. Daily, inspect the site and pick up all scrap, debris, and waste material. Remove all such items to the place designated for their storage.
   2. Weekly, inspect all arrangements of materials stored onsite. Re-stack, tidy, or otherwise service all material arrangements.
3. Maintain the site in a neat and orderly condition at all times.

3.2 FINAL CLEANING

A. General: Provide final cleaning operations when indicated. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit of Work to the condition expected from a commercial building cleaning and maintenance program. Comply with manufacturer’s instructions.

B. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for the entire Project or a portion of the Project.
   1. Clean the Project Site, yard and grounds, in areas disturbed by construction activities including landscape development areas, of rubbish, waste material, litter, and foreign substances.
   2. Sweep paved areas broom clean. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
   3. Remove petrochemical spills, stains, and other foreign deposits.
   4. Remove tools, construction equipment, machinery, and surplus material from the site.
   5. Leave the Project clean and ready for occupancy.

C. Removal of Protection: Remove temporary protection and facilities installed during construction to protect previously completed installations during the remainder of the construction period.

D. Compliances: Comply with governing regulations and safety standards for cleaning operations. Remove waste materials from the site and dispose of lawfully.
   1. Where extra materials of value remain after Final Acceptance by the Owner, they become the Owner’s property.

END OF SECTION 017400
SECTION 024113 – SELECTIVE SITE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:
   1. Demolishing designated pavement.
   2. Removing demolished materials.

1.2 SUBMITTALS

A. Section 013300 – Submittals: requirements for submittals

B. Shop Drawings: Indicate demolition and removal sequence and location of salvageable items; location and construction of barricades, fences, and temporary work

C. Design data: Submit calculations for bracing, shoring, and underpinning signed and sealed by professional engineer.

1.3 QUALITY ASSURANCE

A. Conform to applicable code for demolition of structures, safety of adjacent structures, dust control, runoff control, and disposal

B. Conform to applicable code for procedures when hazardous or contaminated materials are discovered

C. Obtain required permits from authorities having jurisdiction.

1.4 SEQUENCING

A. Section 011000 – Summary of Work and Drawings for requirements for sequencing.

1.5 SCHEDULING

A. Section 013200 - Schedules: Requirements for scheduling.

B. Schedule:
   1. Perform demolition and removal work so as not to interfere with Owner’s operations.
   2. Coordinate demolition and removal work so new construction can proceed without undue delay.

1.6 PROJECT CONDITIONS

A. Protection
   1. Do not close or obstruct streets, walks and other public facilities occupied and used by Owner and public without prior written permission from Owner and other authorities having jurisdiction.
   2. Maintain in service and protect from damage existing facilities, utilities, and equipment indicated to remain or adjacent to work areas.
PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 EXAMINATION
A. Examine existing structures and pavements indicated to be demolished before demolition.
B. Determine where removals may result in structural deficiency or unplanned collapse during demolition. Coordinate demolition sequence and procedures to prevent structures from becoming unstable.
C. Determine where demolition may affect structural integrity or weather resistance of adjacent buildings indicated to remain.
D. Identify measures required to protect structures from damage.
E. Verify hazardous material abatement is complete before beginning demolition.

3.2 PREPARATION
A. Provide, erect, and maintain temporary barriers and security devices.
B. Protect existing landscaping materials, appurtenances, structures and utilities which are not to be demolished.
C. Prevent movement or settlement of adjacent structures. Provide bracing and shoring.
D. Mark location of utilities.

3.3 DEMOLITION REQUIREMENTS
A. Conduct demolition to minimize interference with adjacent structures and utilities.
B. Cease operations immediately if adjacent structures appear to be in danger. Notify Engineer. Do not resume operations until directed.
C. Conduct operations with minimum interference to public or private accesses.
D. Obtain written permission from adjacent property owners when demolition equipment will traverse, infringe upon or limit access to their property.
E. Keep work sprinkled with water to minimize dust. Provide hoses and water connections for this purpose.

3.4 DEMOLITION REQUIREMENTS
A. Remove existing concrete, steel and masonry to extent indicated on drawings. Provide smooth, straight joint or cut line. Make cuts parallel with adjoining pavement
B. Concrete structures to be removed to limits shown on drawings.
C. Provide temporary shoring and bracing to transfer loads of existing construction to remain from construction being removed.
D. Remove materials to be salvaged, re-installed or retained in manner to prevent damage. Store and protect.

E. Do not burn or bury materials on site. Leave site in clean condition.

F. Do not use blasting method for demolition.

G. Fill below grade abandoned structures with compacted fill material.

3.5 ABANDONMENT

A. Abandon disconnected utilities and underground piping within influence zone of proposed underground piping and proposed structures.

3.6 DISPOSAL

A. Separate all non-concrete materials from concrete rubble and stone rubble.

B. Concrete and brick shall be disposed of as follows:
   1. Cut exposed rebar from all concrete rubble.
   2. Haul above listed materials to contractor obtained site. Contractor to pay all disposal costs.
   3. Legally dispose of materials at a location off site.

C. All disposals shall be in accordance with Federal, State and local laws, ordinances and rules.

END OF SECTION 024113
SECTION 028319.13 – LEAD BASED PAINT ABATEMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:
   1. Exterior lead based paint (LBP) abatement using encapsulation, enclosure, removal of LBP substrate, or interim controls do not require the use of full containment.
   2. Chemical paint removers shall be used for all lead-based paint removal unless noted otherwise.
   3. Use mechanical and/or abrasive blast abatement only when chemical and hand scraping is not effective or when specified to be used.
   4. Mechanical and abrasive blast abatement shall be limited to the following area when approved.
      1. Steel, Metal, Concrete, Stone and Some Brick Surfaces
         a. Mechanical abrasion devices equipped with a shrouded head and HEPA vacuum.

B. The Contractor and his/her employees and subcontractors shall handle all lead contaminated debris or waste in a manner which prevents exposure to workers, occupants, others, and the environment. Waste containers shall not be dropped, thrown, ripped, or handled in any manner which may cause any lead exposure. Storage of waste shall be in a fully covered and locked container located in an area that is well lighted, secured and controlled. At no time will the Contractor be allowed to store more than 6000 KG of a hazardous waste. NOTE: All costs associated with all hazardous and non-hazardous waste handling, security, transport, and disposal shall be paid for by the Contractor.

1.2 SUBMITTALS

A. Section 013300 – Submittals: requirements for submittals

1.3 QUALITY ASSURANCE

A. Conform to applicable code for exterior LBP removal.

B. Follow the requirements and findings of the testing report found in Appendix

C. Use adequate numbers of skilled workmen who are thoroughly trained, licensed and experienced in the necessary skills, crafts, and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section. Conform to applicable code for procedures when hazardous or contaminated materials are discovered.

1.4 SEQUENCING

A. Section 011000 – Summary of Work for requirements for sequencing.

1.5 SCHEDULING

A. Section 013200 – Schedules – Bar Chart

B. Schedule:
1. Perform abatement, removal and disposal work so as not to interfere with Owner’s operations.

1.6 PROJECT CONDITIONS

A. Protection

1. Do not close or obstruct streets, walks and other public facilities occupied and used by Owner and public without prior written permission from Owner and other authorities having jurisdiction.

2. Maintain in service and protect from damage existing facilities, utilities, and equipment indicated to remain or adjacent to work areas.

PART 2 - PRODUCTS

2.1 MATERIALS

A. The following non-inclusive list of materials, as well as others as may be necessary, will be considered for use on abatement work area containments:

1. Polyethylene sheeting - 6-mil thick for covering non-removable items, floors, walls, ceilings, for construction barriers and wrapping objects too large to place into waste disposal bags. Opaque polyethylene shall be used for barriers on public side of enclosures. Nylon, polyester, or fiberglass reinforced polyethylene sheeting shall be used where required for outdoor barriers. Fire retardant polyethylene shall be used where the potential for fire exists.

2. Plywood - 1/2” thick, for Security and containment barrier. CDX plywood shall be used.

3. Work clothing - As a minimum, disposable coveralls (Tyvek, Saranex, etc.) with attached hoods; latex, rubber, and/or leather gloves; and boots or boot covers. All clothing shall be impervious to air and water. If using chemical strippers, work clothing shall be chemical resistant, or as recommended by chemical stripper manufacturer.

4. Respiratory protection equipment - Disposable single use respirators are not acceptable. A half-mask air-purifying respirator equipped with HEPA cartridges shall be utilized to provide the minimally allowed amount of protection. If these respirators do not provide adequate protection, as determined by 29 CFR 1926.62, 29 CFR 1910.134 the Contractor shall provide powered air-purifying respirators or supplied air systems. Supplied air systems shall supply Grade D air conforming to 29 CFR 1910.134.

5. Signs and labels - Provide notification signs which are visible from all angles of approach to the WORK AREA, which include the phrase "Caution Lead Hazard, Keep Out, No Smoking or Eating", in bold lettering at least two inches high. Also provide illuminated signage which is visible from all angles of approach to the dwelling units, which complies with applicable OSHA regulations and reads "Warning - Lead Work Area - Poison - No Smoking or Eating." Construction area caution and warning signs and barrier tape indicating "Authorized Personnel Only" without reference to lead-based paint are also required to restrict access to authorized personnel only.

6. Duct tape, adhesive, and fasteners for polyethylene, plywood, disposal bags, and drums.

7. Filters - HEPA filters and pre-filters for ventilation units, vacuums, and water filtration.

8. Wet wash solution - Solution containing a 5 percent solution of TSP or a non-TSP lead removal detergent (e.g. LEDIZOLV or equivalent), mixed according to manufacturer's recommendations.
9. Waste disposal bags - 6-mil thick polyethylene bags labeled with a minimum two inch high letters stating "Caution Lead Hazard" shall be used for the disposal of all applicable waste.
10. Steel drums - 55 gallon size which are resistant to chemicals for disposal and storage of liquids.
11. Disposal Container - Roll-off dumpsters which are lined with a minimum of two layers of 6-mil polyethylene sheeting. Dumpster shall have solid and lockable top.
12. Fiber drums - 55 gallon size for disposal of sharp and pointed objects.
13. Towels - Disposable towels for drying after personal decontamination.
14. Soap - Adequate supplies of soap for showering and personal decontamination shall be immediately available at all times during the project.

B. Chemical paint remover (stripper) shall be an alkaline solvent-based material or other chemical compound for removal of lead-based from a variety of substrates. (Methylene chloride agents are not permitted.)
   1. Chemical paint remover shall be a type that does not produce toxic fumes or contain flammable solvents.
   2. Chemical paint removers shall be in accordance with or equal to the following chemical removers, provided the chemical remover meets all the requirements of the Specification and other sections of the project manual.
      a. "Peel Away" by Dumond Chemical
      b. "Grip n' Strip" by American Building Restoration Chemical
      c. "Re-Entry VPS Solvent - 2070T" by Environment Solvents Corporation
      d. "Certane 401" by Certech Corporation
      e. "Back to Nature II" by Dynacroft Industries
      f. "Control Solvent Gel Paint and Coatings Stripper" by Grayling Industries, Inc.
      g. "Enviro Strip #F" by Prosoko Inc.
      h. "Safe-T Lead Strip" by International Protective Coatings
      i. "SuperTech Type A Alkaline Paste Stripper" by SuperTech Products, Inc.
      j. Other equal chemical removers

2.2 EQUIPMENT

A. The following non-inclusive list of equipment shall be considered for use on abatement work area containments:
   1. Electrical power - Ground wire equipped extension cords without splices.
   2. HEPA vacuum(s) - The Contractor shall provide HEPA vacuums for personal decontamination, clean up, and for abatement project site clean up during and after abatement.
   3. Ladders and scaffolding - A sufficient number of OSHA approved and properly used and maintained ladders, scaffolds, platforms, and walkways for use during preparation, removal, inspections, and cleanup shall be provided by the Contractor.
   4. Lighting - The Contractor shall supply a sufficient number of portable lighting units to provide adequate illumination (in compliance with all OSHA requirements) at all locations within the work areas.
   5. Carts - Constructed of opaque materials with a secure fitting lid used for transporting filled disposal bags from Load Out to temporary disposal storage facilities.
   6. Cleanup equipment - The Contractor shall provide an adequate number of mops, rags, shovels, buckets, brushes, vehicle mounted broom and/or vacuum devices, spray washers, etc. to clean up soil, lead debris, exterior dusts, and water as removal and cleaning proceeds. At least one wet/dry HEPA-filtered vacuum
cleaner shall be supplied. Vacuums not HEPA-filtered and brooms which are not used in conjunction with wet misting are not permitted on-site.

7. Water sprayer - A water sprayer/mister (i.e., hand pump garden type, truck mounted sprayer, etc.) to wet all dust and/or debris that is generated by the abatement or associated work.

8. Other abatement equipment - All other tools, equipment, and accessories as may be necessary to complete the requirements of the project, or as specified in these documents.

B. Hand tools as appropriate for scraping for use in removal of paint in conjunction with chemical paint remover, heat gun or lead cleaning agent. Tools shall be as recommended by the manufacturer of the chemical paint remover or as applicable.

C. Heat gun (flameless) as appropriate to use in conjunction with scraping tools as applicable and as recommended by heat gun manufacturer. Heat guns must not exceed 1000°F. Use of propane torches or other flame-type devices is strictly prohibited.

D. Only mechanical abrasion or paint removal devices equipped with a shrouded head and attached to a HEPA vacuum or filtration unit will be considered. Equipment used shall be appropriate for the task as recommended by the equipment manufacturer. Equipment shall include sanders, needle guns, planers, and other mechanical abrasive equipment.

E. Vacuum abrasive blasting as appropriate for the task and as recommended by the manufacturer.

F. Additional worker protection (in addition to that specified in other sections of the Specification) for specialized paint removal methods.
   1. Provide eye protection for use with chemical paint removers and all mechanical equipment removers (i.e., abrasive, sanders, needle guns, etc.).
   2. Provide eye washing facilities when using chemical removers.
   3. Other abatement equipment and accessories: All tools, equipment and accessories as may be necessary to complete the requirements of the project in a proper and professional workmanlike manner.

G. Provide rubber gloves resistant to the chemical used and chemical resistive disposable coveralls, hood and boot covers.

PART 3 - EXECUTION

3.1 CONTAINMENT BARRIERS AND COVERING OF WORK AREAS

A. Seal off the perimeter of the work area to completely isolate abatement areas and to contain all airborne lead contamination created by abatement work. Cover all surfaces of the abatement work area not scheduled to be abated to protect them from contamination, prevent contaminant migration, to facilitate more efficient clean-up, and to protect the finishes from the LBP abatement work activities. The work area shall be prepared and maintained in the following manner to begin and complete lead-based paint abatement work. The required preparations are presented in the approximate order in which they shall be completed on the lead-based paint abatement project. These preparations and actions shall be used as appropriate and specified for the particular abatement project. Examine existing structures and pavements indicated to be demolished before demolition.
3.2 EXTERIOR WORK AREAS

A. Work area containment set-up for the abatement of exterior building items such as gable ends, soffits, porch ceilings, porch columns, railings, stair rails, fascia boards, siding, windows, and doors or other exterior components shall, at a minimum, consist of 2 layers of 6-mil polyethylene sheeting (poly) placed on the ground at least ten (10) feet in all directions of the abatement area. The dwelling unit side (inside) of the ground poly shall extend at least 18" up the foundation wall. The outside ends of the ground poly shall be turned up at the edge 6" and securely supported with wood stakes to help prevent debris from being spread beyond the poly and the work area. The poly shall be secured at 6 foot on center minimum to prevent it from moving or blowing; additional attachment shall be added as necessary to prevent movement. Seams shall be overlapped a minimum of 12", glued, and taped continuous. Containment area and ground poly shall be able to withstand wind gusts of up to 40 MPH. Provide, erect, and maintain temporary barriers and security devices.

B. No containment walls shall be required for the abatement of the exterior items unless wind conditions disperse debris beyond the polyethylene sheeting on the ground. If the wind disperses paint debris, the abatement shall immediately stop until the wind reduces in velocity, as approved by the Project Representative. Protect existing landscaping materials, appurtenances, structures and utilities which are not to be demolished. The Contractor shall HEPA vacuum all ground areas to remove all visual debris that is dispersed beyond the 6-mil polyethylene ground cover. The Contractor shall clean by HEPA vacuum at the end of each day and at other times as necessary during abatement to prevent paint chips and debris from being spread beyond the ground cover sheeting.

C. Barrier tape shall be placed three (3) feet beyond exterior ground poly, outside all exterior abatement areas on all sides to prevent entry into the abatement area. OSHA lead abatement signs and other federal, state, or local warning signs shall be mounted on the barrier tape or on separate stakes at the barrier tape line.

3.3 CHEMICAL PAINT REMOVAL

A. Protect the surrounding surfaces per section 3.2.

B. Application: Spray or hand trowel the chemical paint remover paste according to the manufacturer's specifications to 1/8" to 1/4" thick, dependent upon age, thickness and type of paint being removed. If spray applied, material should be applied with recommended spray equipment approved by the manufacturer to ensure proper application of product. Spray application is contingent upon Project Representative's approval.
   1. During spray application, no more than two workers (one person applying and one helper) shall be allowed in the work area.

C. Cover chemical paint remover with paper, cloth or other material as recommended by the chemical manufacturer to prevent drying. Cloth shall be smoothed to remove all air. Remaining air bubbles shall be pierced with a knife and flattened.
   1. Work area shall be properly heated or cooled to meet temperature requirements outlined in the manufacturer's specifications. Heating and cooling procedures shall be consistent with these specifications, subject to the approval of the Project Representative and within all applicable codes, ordinances and regulations.
   2. Work area shall be completely secured and monitored during the application of the caustic paste, dwell time and removal of the paste to prevent accidental exposure.
   3. Allow chemical to stay on the paint to be removed the proper "dwell" time, as recommended by the manufacturer. Contractor shall run a series of test areas to
determine the optimal amount of time for the chemical to stay on a particular wall or component for most effective removal.

4. Cloth shall be removed by sliding putty knife, if possible, into paste around the edges of the cloth away from the surface in one piece. Do not rely on the adhering tension between the cloth and paste. Remove as much residue as possible with a tool before cleanup procedure. DO NOT ALLOW RESIDUE OF PASTE TO DRY. If necessary, lightly spray the remaining residue with water to keep moist.

5. Never remove material with personnel below or in a manner that would allow the caustic to fall on, splatter, or contact personnel in the vicinity of the removal. Take all necessary steps to minimize the fall distance of the paste/paint.

6. Repeat application as necessary for complete removal of paint. Scraping may be used to assist if wet scraping is used. At no time shall dry scraping be allowed.

7. Once removal of paint from the abated surface is complete, cleanup procedures shall then follow and include wash down of surface and neutralization per manufacturer's specifications. Apply caustic paste neutralizer (if required by manufacturer) in accordance with manufacturer's recommendations. Wash neutralizer off with water per manufacturer's instructions.

Apply second application of neutralizer over surface and allow to dry. After three hours or more or as recommended by manufacturer, wash neutralizer off with clean rinse water and allow surface to dry.

Contractor shall use pH paper to determine if neutralization is adequate. A dry surface showing a pH of between 6 and 8 after the proper drying-out period is generally ready to be recoated. A pH over 8 should be treated to another application of neutralizer and left to dry before retesting. It is most important that the surface properly dry out and that all residue is removed before recoating.

8. Once the neutralizing process is complete, the surface shall undergo normal cleanup procedures of HEPA vacuuming, lead sequestering detergent wash, and repeated HEPA vacuuming.

9. All accumulated debris resulting from removal of caustic paste shall be treated as hazardous and shall be properly stored and disposed of according to EPA, DOT, MoDNR, and all other applicable Federal, state and local regulations.

### 3.4 EQUIPMENT USED FOR LEAD BASED PAINT REMOVAL

**A.** Hand tools shall be used manually in a manner recommended by the manufacturer. Common lead-based paint abatement tools include putty knives, chisels, and paint scrapers.

**B.** Vacuum abrasive blasters shall be operated in accordance with the recommendations of their manufacturer. Blaster shall be equipped with a shroud which shall have direct contact with the surface being abated. Blaster shall be attached to a HEPA vacuum system. Provide temporary shoring and bracing to transfer loads of existing construction to remain from construction being removed.

1. Maintain vacuum system by emptying debris collected and draining filters as recommended by the manufacturer.
2. All debris removed from the vacuum system shall be considered hazardous waste unless it is tested and characterized differently.
3. Complete work on a test area to determine proper blasting pressure and application time.
3.5 **CLEANUP**

A. Cleanup work area, at a minimum, daily and more often during the day if surface dust is present. Daily cleanup shall consist of removal of all debris from the work area and HEPA vacuuming and wet wiping. Cleanup shall be completed at the end of each work shift.

B. Dispose of contaminated debris, consumable goods, cleaning materials, solutions or equipment in accordance with applicable Federal, state and local regulations.

C. Durable equipment such as power and hand tools, generators, etc. shall be thoroughly cleaned before removal from the project area.

D. If chemical removers are used:
   1. Collect caustic paste cloth (if used) with paste/paint along with remaining residue and put into 6-mil polyethylene bags and dispose of in compliance with all applicable Federal, state and local regulations and these Specifications.
   2. Mist surface lightly with water spray. With a nylon scrub brush, agitate surface to loosen all residue. Thoroughly scrub surface being sure to get all crevices, grooves, cracks, etc. free of all residue.
   3. Lightly spray clean water on surface removing remaining residue. A hand pump pressure sprayer may be utilized to facilitate debris removal. The use of a wet vacuum to assist in cleanup is suggested. Make certain that the entire surface is clean of any paste/paint residue. Allow to dry thoroughly before applying new finish.

3.6 **REPAIR SURFACE**

A. Repair and repaint any and all damaged surfaces caused by the abatement process. Repair work shall match adjacent surfaces that are identical. All repair work shall be conducted at the Contractors sole expense, with no additional cost to the Owner.

3.7 **DISPOSAL OF WASTE MATERIALS**

A. All materials, whether hazardous or non-hazardous, shall be handled, secured and disposed of in accordance with all laws and the provisions of this Section and any and all other applicable federal, state, county or local regulations and guidelines. It shall be the sole responsibility of the Contractor to assure complete compliance with the more stringent of all laws and regulations relating to any and all hazardous and nonhazardous waste storage, handling, security, and disposal. Until hazardous waste characterization analytical results are available, all waste materials (including water) shall be handled, stored, and secured as hazardous wastes, and stored separately from all other wastes. All wastes shall be separated and segregated into appropriate waste streams Separate all non-concrete materials from concrete rubble and stone rubble.

B. Disposal Requirements. The Contractor shall contact the Regional EPA, State, local and all other pertinent authorities to determine lead-based paint waste and/or debris disposal requirements. The requirements of the Resource Conservation and Recovery Act (RCRA) must be complied with, as well as all other applicable federal, state, county or local waste plan requirements. During or after the actual abatement, the Contractor shall not: leave debris in the yard or in near-by property; place debris into an unsecured container; incinerate debris; dump debris at any unauthorized location; place debris in any unauthorized dumpster; transport any waste or debris in non-licensed or permitted vehicles; or introduce lead contaminated (non-filtered) water onto soils, into storm sewers (shall not be poured down yard inlet or street drain) or sanitary sewers (shall not be
flushed down toilet or any other household, residential or commercial type drain system). The Contractor shall make all efforts to minimize the amount of hazardous waste produced (through accepted practices of waste separation/segregation, etc.). Additionally, the Contractor shall seek to identify and use a transport, storage, and disposal (TSD) facility that will incinerate, recycle, or reclaim all wastes, rather than having wastes sent to a landfill for whole disposal. All waste water, clean water, and wash water shall be so labeled. All waste water shall be labeled "filtered" (using 3 micron filter) or "non-filtered". All non-filtered waste water containers shall be labeled "hazardous waste" and with a date the Contractor began to collect contaminated water in that container. All filtered water must be hazardous waste characterization tested to confirm that it is or is not hazardous and disposed of accordingly.

C. EPA ID Numbers. Prior to abatement, the Contractor shall contact EPA to determine if EPA Hazardous Waste Identification numbers are required for any waste generated during the conduct of any and all work for this project. If required, the Contractor shall apply for an EPA identification number from the appropriate Regional EPA office, particularly if more than 100 kg of hazardous waste is expected to be generated from the abatement process during any calendar month. The Contractor has the responsibility to coordinate this action through the State, and secure any additional numbers as required. The Contractor shall comply with the strictest requirement for waste generation resulting from all other applicable state or local regulations.

D. Storage, Inspection and Record Keeping Requirements. All hazardous material shall be kept in a secured area and lockable container, that is inaccessible to all persons other than abatement personnel. All hazardous waste shall be labeled "Lead-Based Paint Abatement Hazardous Waste" and a date that the Contractor began to collect waste in that container. All hazardous and non-hazardous waste shall be kept in separate containers. All hazardous waste shall be stored, handled, transported, and disposed of in a manner to meet the more stringent of all federal, state, and local requirements. The Contractor shall, on at least a weekly basis, inspect all waste containers to ensure that the containers and the container integrity are sound and continue to be appropriate for the wastes stored in the containers. The Contractor shall keep a journal which records the results of all container inspections conducted and includes the dates and times of the inspection, as well as the name of the individual(s) conducting the inspections.

3.8 REGULATIONS

A. The Contractor will be required to comply with most stringent of all requirements which apply to waste shipment, disposal, or other items related to lead or lead-based paint.

3.9 TRANSPORTATION

A. If the Contractor is not a RCRA/DOT/EPA/MoDNR certified Hazardous Waste Transporter, the Contractor shall retain the services of a certified, permitted and licensed transporter to move the waste. The Contractor shall require the certified permitted and licensed hazardous waste transport firm to follow DOT, EPA and any/all other federal, state, and local applicable regulations. The Contractor shall be responsible for all actions of the waste hauler as pertaining to waste handling, removal, transport, and disposal under this Section and all EPA, DOT, MoDNR and all other applicable regulations.

B. The Contractor will comply with the requirements of this specification, as well as all applicable EPA, MoDNR and DOT regulations for disposal containers. The Contractor shall contact the Federal, State and local authorities to determine their criteria for containers. In the case of any conflict in regulations or this specification, the more stringent requirements shall apply. All waste containers shall be labeled with the
appropriate name or designation of contents and date which materials were placed first into the container.
1. The location of waste containers on-site shall be coordinated subject to Project Representative's approval.
2. The waste containers shall be solid, enclosed and lockable containers lined with at least two layers of 6-mil polyethylene sheeting. All containers shall be locked and secured at all times, except when loading or unloading.

3.10 EMERGENCIES

A. Contractor shall complete the following tasks in the event of an emergency:
1. Contact local fire, police, hospitals or local emergency response teams and inform those agencies of the type of hazardous activity at the project site and ask for assistance in the event of an accident;
2. Have an immediate means of communication with a regulatory agency in the event of an emergency;
3. Keep a list of locations and phone numbers of regulatory and emergency response agencies (i.e., police, fire, EPA, health department, hospital, emergency response team, etc.) on-site;
4. Train all employees to deal with types of accidents to be encountered at the project site, including hazardous material accidents. Provide documentation to the Project Representative that employees have been trained in job site safety and emergency response;
5. Have a person on-site at all times, who is the emergency coordinator to ensure that emergency procedures are carried out in the event an emergency arises;
6. Keep and maintain a "right to know" manual at the project site containing MSDS for all materials used on-site that is in an easily accessible location which is known to all employees;
7. Keep and maintain suitable first aid kits at the project site and work locations; and,
8. Maintain adequate water supply to adequately decontaminate workers, allow for clean-up, and to allow for a minimum of fifteen minutes of uninterrupted water flow for the purpose of eye irrigation.

3.11 DISPOSAL PACKING

A. The Contractor shall place lead-based paint fragments, dust, waste, and debris produced as a result of any abatement activity in 6-mil polyethylene (plastic) bags that are air-tight and puncture-resistant. Specific items shall be packaged in the following manner:
1. Cleaning Materials. The Contractor shall place all disposable cleaning materials such as sponges, mop heads, filters, rags, disposable clothing, etc. in 6-mil polyethylene bags and properly seal them, if after testing, those materials are determined to be hazardous. All disposal bags shall have proper labeling on them.
2. Contaminated Debris. In particular, the Contractor shall separate, at a minimum, label and containerize the following:
   a. All paint or paint fragments removed by mechanical abrasion, vacuum blasting, surface preparation, or by any other abrasive abatement method;
   b. All paint, paint fragments, solvents or other debris removed by chemical strippers (paint removers);
   c. Contaminated (i.e., used, already worn) body suits;
   d. HEPA vacuum contents, filters, respirator cartridges (paint chips, dust, or other abatement debris on plastic should always be HEPA vacuumed prior to picking up the plastic); and,
e. Any other waste or debris generated as a result of any activity on a lead abatement project. Note: All hazardous wastes or materials shall be kept completely separate from all nonhazardous materials.
f. Polyethylene Sheeting. The Contractor shall clean surfaces and equipment and containerize large debris. Prior to removing any 6-mil polyethylene sheeting, the Contractor shall lightly mist the sheeting in order to keep any non-visible dust down and fold the 6-mil polyethylene sheeting inward to contain any non-visible dust and to form tight bundles to containerize for disposal. The Contractor shall place all plastic sheeting in 6-mil thick polyethylene bags which are properly labeled and sealed.

3. Caustic debris. Materials that are caustic/corrosive which may "eat" or deteriorate plastic disposal bags shall be placed into metal or other appropriate disposal drums. Contractor shall complete the following tasks in the event of an emergency:

3.12 WASTE REMOVAL

A. Vehicles. The Contractor shall ensure that all hazardous and non-hazardous waste is transported in a placarded, permitted, licensed, covered and properly secured vehicles to the proper landfill, so as to meet all federal, state, and local requirements.

B. Container Handling. The Contractor shall carefully place the containers into the truck or dumpster used for disposal. The Contractor or his employees shall not throw or drop containers or handle them in any manner which will cause or potentially cause damage to the container or an exposure to employees, others, or the environment.

C. Dust or Debris. The Contractor shall ensure that the removal of all hazardous and/or nonhazardous lead-based paint abatement items be adequately covered, containerized, bagged, or enclosed, so as to assure that no dust or debris is released.

D. Liquid Wastes. The Contractor shall contain and properly dispose of all liquid waste, including lead-contaminated wash water. The Contractor shall contact the local Publicly Owned Treatment Works (POTW) department to discuss the disposal alternatives of waste water generated during the project and dispose of it in accordance with all applicable federal, state, and local requirements.

E. Containers. The Contractor shall HEPA vacuum and shall wet wipe all waste containers to ensure that there is no residual or visual contamination present, prior to removing the containers from the work area. All waste containers shall be labeled and placarded in accordance with all applicable state, local and federal regulations.

F. Solvents. The Contractor shall place solvent residues and residues from chemical strippers in drums made out of materials that cannot be dissolved or corroded by the chemicals. Solvents will be tested to determine if they are hazardous (toxic, corrosive, ignitable, or reactive). Solvents, caustic and acid waste must be segregated and not stored in the same containers.

G. Water Filtration. The Contractor shall filter all wash/rinse or other contaminated water with a filter capable of removing particles of at least 3 micron size. Other larger micron size filters may be used, prior to final 3 micron filtration. Dispose of filters as hazardous waste, unless testing indicates otherwise. Should the results of the hazardous waste characterization analysis indicate that filtered water has a lead concentration which meets or exceeds 5.0 parts per million (PPM), or other POTW disposal criteria, the Contractor shall continue to filter all liquids until analysis indicates lead concentrations less than 5.0 PPM, or the applicable POTW
requirements. Contact local fire, police, hospitals or local emergency response teams and inform

3.13 FINAL TESTING

A. Contractor shall provide testing of soils adjacent to work area upon completion of work indicating that no contamination has occurred.

END OF SECTION 028319.13
SECTION 031000 - CONCRETE FORMING AND ACCESSORIES

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Formwork for cast in place concrete; shoring bracing and anchorage; from stripping; form accessories

B. Related Sections:
   1. Division 01 – General Requirements
   2. Section 03 20 00 – Concrete Reinforcing.
   3. Section 03 30 00 – Cast-In-Place Concrete.
   4. Section 04 01 20.91 – Unit Masonry Restoration: Product requirements for masonry accessories for placement by this Section.
   5. Section 05 52 00 – Aluminum Handrails: Product requirements for metal fabrications for placement by this Section.

1.2 REFERENCES

A. American Concrete Institute:
   2. ACI 301 - Specifications for Structural Concrete for Buildings.
   3. ACI 318 - Building Code Requirements for Structural Concrete.
   4. ACI 347 - Guide to Formwork for Concrete.
   5. ACI 350 – Code Requirements for Environmental Engineering Concrete Structures

B. American Forest and Paper Association:
   1. AF&PA - National Design Specifications for Wood Construction.

C. The Engineered Wood Association:

D. American Society of Mechanical Engineers:

E. ASTM International:

F. West Coast Lumber Inspection Bureau:
   1. WCLIB R17 - Standard Grading Rules for West Coast Lumber.

1.3 DESIGN REQUIREMENTS

A. Design, erect, support, brace, and maintain formwork so it will safely support vertical and lateral loads applied, until such loads can be supported by the concrete structure.
B. Carry vertical and lateral loads to ground by formwork system and in-place construction which has attained adequate strength.

C. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation, and position.

D. Design forms and falsework to include assumed values of live load, dead load, weight of moving equipment operated of formwork, concrete mix, and height of concrete drop, vibrator frequency, ambient temperature, foundation pressures, stresses, lateral stability, and other factors pertinent to safety of structure during construction.

E. Provide shore and struts with positive means of adjustment capable of taking up formwork settlement during concrete placing operations, using wedges or jacks or a combination thereof.

F. Provide trussed supports when adequate foundations for shores and struts cannot be secured.

G. Support form facing materials by structural members spaced sufficiently close to prevent objectionable deflection.

H. Fit forms placed in successive units for continuous surfaces to accurate alignment, free from irregularities, and within allowable tolerances.

I. Provide camber in formwork as required for anticipated deflections due to weight and pressures of fresh concrete and construction loads.

J. Provide formwork sufficiently tight to prevent leakage of cement paste during concrete placement. Solidly butt joints and provide backup material at joints as required to prevent leakage and fins.

1.4 SUBMITTALS

A. Section 013300 – Submittals.

B. Shop Drawings:
   1. Submit formwork, shoring, and reshoring shop drawings.
   2. Indicate the following:
      a. Pertinent dimensions, openings, methods of construction, types of connections, materials, joint arrangement and details, ties and shores, location of framing, studding and bracing, and temporary supports.
      b. Means of leakage prevention for concrete exposed to view in finished construction.
      c. Sequence and timing of erection and stripping assumed compressive strength at time of stripping, height of lift and height of drop during placement.
      d. Vertical, horizontal and special loads in accordance with ACI 347, Section 2.2 and camber diagrams, when applicable.
      e. Notes to formwork erector showing size and location of conduits and piping embedded in concrete in accordance with ACI 318, Section 6.3.

C. Within 30-calendar days after Award of the Contract, submit manufacturer’s data and installation instruction for proprietary materials including form coatings, ties and
accessories, and manufacturer’s form system (if used).

D. Product Data: Submit data on void form materials and installation requirements.

1.5 QUALITY ASSURANCE
   A. Perform Work in accordance with ACI 318.
   B. For wood products furnished for work of this Section, comply with AF&PA.

1.6 DELIVERY, STORAGE, AND HANDLING
   A. Deliver void forms and installation instructions in manufacturer's packaging.
   B. Store off ground in ventilated and protected manner to prevent deterioration from moisture.

1.7 COORDINATION
   A. Section 013100 - Coordination
   B. Coordinate this Section with other sections of work, requiring attachment of components to formwork.
   C. If formwork is placed after reinforcement resulting in insufficient concrete cover over reinforcement, request instructions from Engineer before proceeding.

PART 2 – PRODUCTS

2.1 WOOD FORM MATERIALS
   A. Plywood: Douglas Fir species; exterior grade; sound undamaged sheets with clean, true edges.
   B. Lumber forms:
      1. Application: Use for edge forms and unexposed finish concrete.
      2. Boards: 6-inches or 8-inches in width, ship lapped or tongue and groove, “Standard” Grade Douglas Fir, conforming to WCLIB Standard Grading Rules for West Coast Lumber. Surface boards on four sides.

2.2 PRE-FABRICATED FORMS
   A. Preformed steel forms: Minimum 16 gage matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished surfaces.
   B. Glass fiber fabric reinforced plastic forms: Matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished concrete surfaces.
   C. Pan Type: Steel or Glass fiber of size and profile required.
   D. Tubular column type: Round, spirally wound laminated fiber, wood or glass fiber
material, surface treated with release agent, non-reusable.

E. Steel forms: Sheet steel, suitably reinforced, and designed for particular use indicated on Drawings.

F. Form liners: Smooth, durable, grain less and non-staining hardboard, unless otherwise indicated on Drawings.

G. Framing, studding and bracing: Stud or No. 3 structural light framing grade.

2.3 FORMWORK ACCESSORIES

A. Form ties: Removable or Snap-off type, steel, adjustable length, cone type, with waterproofing washer, free of defects capable of leaving holes larger than 1 inch in concrete surface.
   1. For locations exposed to sewage or fluids: Use snap type plastic cone with water seal. Minimum 1-1/2-inch break back and maximum 1-inch cone diameter.
   2. Do not use wire ties where surface on either side will be exposed to moisture or chemical attack.

B. Spreaders: Standard, non-corrosive metal form clamp assembly, of type acting as spreaders and leaving no metal within 1-inch of concrete face. Wire ties, wood spreaders or through bolts are not permitted.

C. Form anchors and hangers:
   1. Do not use anchors and hangers exposed concrete leaving exposed metal at concrete surface.
   2. Symmetrically arrange hangers supporting forms from structural steel members to minimize twisting or rotation of member.
   3. Penetration of structural steel members is not permitted.

D. Form release agent: Colorless mineral oil that will not stain concrete, absorb moisture, or impair natural bonding or color characteristics of coating intended for use on concrete.

E. Corners: Chamfer, rigid plastic or wood strip, ¾-inch by ¾-inch or as shown on drawings.

F. Vapor retarder: Where indicated on Drawings, 8 mil thick polyethylene sheet.

G. Bituminous joint filler: ASTM D1751.

H. Nails, spikes, lag bolts, through bolts, anchorages: Size, strength and character to maintain formwork in place while placing concrete.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Section 013100 - Coordination.

B. Verify lines, levels, and centers before proceeding with formwork. Verify dimensions agree with Drawings.
C. When formwork is placed after reinforcement resulting in insufficient concrete cover over reinforcement before proceeding, request instructions from Engineer.

3.2 INSTALLATION

A. Earth forms:
   1. Earth forms are not permitted.

B. Formwork - General:
   1. Provide top form for sloped surfaces steeper than 1.5 horizontal to 1 vertical to hold shape of concrete during placement, unless it can be demonstrated that top forms can be omitted.
   2. Construct forms to correct shape and dimensions, mortar-tight, braced, and of sufficient strength to maintain shape and position under imposed loads from construction operations.
   3. Camber forms where necessary to produce level finished soffits unless otherwise shown on Drawings.
   4. Carefully verify horizontal and vertical positions of forms. Correct misaligned or misplaced forms before placing concrete.
   5. Complete wedging and bracing before placing concrete.

C. Forms for smooth finish concrete:
   1. Use steel, plywood or lined board forms.
   2. Use clean and smooth plywood and form liners, uniform in size, and free from surface and edge damage capable of affecting resulting concrete finish.
   3. Install form lining with close-fitting square joints between separate sheets without springing into place.
   4. Use full size sheets of form lines and plywood wherever possible.
   5. Tape joints to prevent protrusions in concrete.
   6. Use care in forming and stripping wood forms to protect corners and edges.
   7. Level and continue horizontal joints.
   8. Keep wood forms wet until stripped.

D. Architectural form liners:
   1. Erect architectural side of formwork first.
   2. Attach form liner to forms before installing form ties.
   3. Install form liner squares, with joints and pattern aligned.
   4. Seal form liner joints to prevent grout leaks.
   5. Dress joints and edges to match form liner pattern and texture.

E. Forms for surfaces to receive membrane waterproofing: Use plywood or steel forms. After erection of forms, tape form joints to prevent protrusions in concrete.

F. Framing, studding and bracing:
   1. Space studs at 16-inches on center maximum for boards and 12-inches on center maximum for plywood.
   2. Size framing, bracing, centering, and supporting members with sufficient strength to maintain shape and position under imposed loads from construction operations.
   3. Construct beam soffits of material minimum of 2-inches thick.
   4. Distribute bracing loads over base area on which bracing is erected.
   5. When placed on ground, protect against undermining, settlement or accidental impact.
G. Erect formwork, shoring, and bracing to achieve design requirements, in accordance with requirements of ACI 301.

H. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.

I. Obtain Engineer’s approval before framing openings in structural members not indicated on Drawings.

J. Install chamfer strips on external corners of beams, joists, and columns.

K. Install void forms in accordance with manufacturer's recommendations.

L. Do not reuse wood formwork. Do not patch formwork.

M. Forms for exposed concrete:
1. Drill forms to suit ties used and to prevent leakage of concrete mortar around tie holes. Do not splinter forms by driving ties through improperly prepared holes.
2. Provide sharp, clean corners at intersecting planes, without visible edges or offsets. Back joints with extra studs or girts to maintain true, square intersections.
3. Use extra studs, whalers, and bracing to prevent objectionable bowing of forms strips of form material that will produce bow.
4. Assemble forms so they may be readily removed without damage to exposed concrete surfaces.

N. Corner treatment: Unless shown otherwise, form chambers with ¾-inch by ¾-inch strips, accurately formed and surfaced to produce uniformly straight lines and tight edge joints on exposed concrete. Extend terminal edges to required limit and miter chamfer strips at changes in direction.

O. Control joints: Locate as directed by Engineer or as indicated on the Drawings.

3.3 APPLICATION – FORM RELEASE AGENT

A. Apply form release agent on formwork in accordance with manufacturer's recommendations.

B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.

C. Do not apply form release agent where concrete surfaces are indicated to receive special finishes or applied coverings that are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.

D. Reuse and coating of forms: Thoroughly clean forms and reapply form coating before each reuse. For exposed work, do not reuse forms with damaged faces or edges. Apply form coating to forms in accordance with manufacturer’s specifications. Do not coat forms for concrete indicated to receive “scored finish”. Apply form coatings before placing reinforcing steel.

3.4 INSTALLATION – INSERTS, EMBEDDED PARTS, AND OPENINGS

A. Install formed openings for items to be embedded in or passing through concrete work.

B. Locate and set in place items required to be cast directly into concrete.
C. Coordinate with Work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other Work.

D. Install accessories straight, level, and plumb. Ensure items are not disturbed during concrete placement.

E. Install water stops continuous without displacing reinforcement. Heat seal joints watertight.

F. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.

G. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.

H. Form ties:
   1. Use sufficient strength and sufficient quantity to prevent spreading of forms.
   2. Place ties at least 1-inch away from finished surface of concrete.
   3. Leave inner rods in concrete when forms are stripped.
   4. Space form ties equidistant, symmetrical and aligned vertically and horizontally unless otherwise shown on Drawings.

I. Arrangement: Arrange formwork to allow proper erection sequence and to permit form removal without damage to concrete.

J. Construction joints:
   1. Install surfaced pouring strip where construction joints intersect exposed surfaces to provide straight line at joints.
   2. Just prior to subsequent concrete placement, remove strip and tighten forms to conceal shrinkage.
   3. Show no overlapping of construction joints. Construct joints to present same appearance as butted plywood joints.
   4. Arrange joints in continuous line straight, true and sharp.

K. Embedded Items:
   1. Make provisions for pipes, sleeves, anchors, inserts, reglets, anchor slots, nailers, water stops, and other features.
   2. Do not embed wood or uncoated aluminum in concrete.
   3. Obtain installation and setting information for embedded items furnished under other Specification sections.
   4. Securely anchor embedded items in correct location and alignment prior to placing concrete.
   5. Verify conduits and pipes, including those made of coated aluminum, meet requirements of ACI 318 for size and location limitations.

L. Openings for items passing through concrete:
   1. Frame openings in concrete where indicated on Drawings. Establish exact locations, sizes, and other conditions required for openings and attachment of work specified under other sections.
   2. Coordinate work to avoid cutting and patching of concrete after placement.
   3. Perform cutting and repairing of concrete required as result of failure to provide required openings.
M. Screeds:
1. Set screeds and establish levels for tops of concrete slabs and levels for finish on slabs.
2. Slope slabs to drain where required or as shown on Drawings.
3. Before depositing concrete, remove debris from space to be occupied by concrete and thoroughly wet forms. Remove freestanding water.

N. Screed supports:
1. For concrete over waterproof membranes and vapor retarder membranes, use cradle, pad or base type screed supports which will not puncture membrane.
2. Staking through membrane is not permitted.

O. Cleanouts and access panels:
1. Provide removable cleanout sections or access panels at bottoms of forms to permit inspection and effective cleaning of loose dirt, debris and waste material.
2. Clean forms and surfaces against which concrete is to be placed. Remove chips, saw dust and other debris. Thoroughly blow out forms with compressed air just before concrete is placed.

3.5 FORM CLEANING

A. Clean forms as erection proceeds, to remove foreign matter within forms.

B. Clean formed cavities of debris prior to placing concrete.

C. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.

D. During cold weather, remove ice and snow from within forms. Do not use de-icing salts. Do not use water to clean out forms, unless formwork and concrete construction proceed within heated enclosure. Use compressed air or other means to remove foreign matter.

3.6 FORM REMOVAL

A. Formwork not supporting the weight of concrete and construction live loads, such as sides of beams, walls, columns, and similar parts of the work, shall remain in place until concrete has reached 75 percent of its specified 28-day strength.

B. Formwork supporting weight of concrete, such as beam soffits, joists, slabs, and other structural elements may not be removed until concrete has attained design minimum 28-day compressive strength. Determine potential compressive strength of in-place concrete by testing field-cured specimens representative of the concrete location or members, as specified in other sections.

C. Form-facing material may be removed four days after placement, only if shores and other vertical supports have been arranged to permit removal of form-facing material without loosening or disturbing shores and supports.

D. Clean and repair surfaces of forms to be reused in the work. Split, frayed, delaminated or otherwise damaged form-facing material will not be acceptable. Apply new form-coating compound material to concrete contact surfaces as specified for new formwork. When forms are reused for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close all joints. Align and secure joints to avoid offsets.
3.7  ERECTION TOLERANCES

A. Construct formwork to maintain tolerances required by ACI 301.

3.8  FIELD QUALITY CONTROL

A. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and that supports, fastenings, wedges, ties, and items are secure.

B. Notify Engineer after placement of reinforcing steel in forms, but prior to placing concrete.

C. Schedule concrete placement to permit formwork inspection before placing concrete.

END OF SECTION 031000
SECTION 032000 – CONCRETE REINFORCING

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:
1. Reinforcing bars.
3. Reinforcement accessories.

B. Related Sections:
1. Division 01 – General Requirements
2. Section 031000 - Concrete Forming and Accessories.
3. Section 033000 - Cast-In-Place Concrete.

1.2 REFERENCES

A. American Concrete Institute:
1. ACI 301 - Specifications for Structural Concrete for Buildings.
2. ACI 318 - Building Code Requirements for Structural Concrete.
3. ACI 530.1 - Specifications for Masonry Structures.

B. ASTM International:
1. ASTM A82/A82M - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
4. ASTM A496/A496M - Standard Specification for Steel Wire, Deformed, for Concrete Reinforcement.
5. ASTM A1064/A1064M - 18a Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
6. ASTM A615/A615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.

C. American Welding Society:
   1. AWS D1.4 - Structural Welding Code - Reinforcing Steel.

D. Concrete Reinforcing Steel Institute:
   2. CRSI - Placing Reinforcing Bars.

1.3 SUBMITTALS

A. Section 013300 - Submittal Procedures: Submittal procedures.

B. Shop Drawings: Indicate bar sizes, spacings, locations, and quantities of reinforcing steel and welded wire fabric, bending and cutting schedules, and supporting and spacing devices.

C. Certificates: Submit AWS qualification certificate for welders employed on the Work.

D. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 318.

B. Prepare shop drawings in accordance with ACI SP-66.

1.5 QUALIFICATIONS

A. Welders: AWS qualified within previous 12 months.

1.6 COORDINATION

A. Section 013100 – Coordination.

B. Coordinate with placement of formwork, formed openings and other Work.

PART 2 – PRODUCTS

2.1 REINFORCEMENT

A. Reinforcing steel: ASTM A615 60 ksi yield grade, deformed billet bars.

2.2 ACCESSORY MATERIALS

A. Tie wire: Minimum 16 gage annealed iron wire.

B. Chairs, bolsters, bar supports, spacers: Sized and shaped for strength and support of reinforcement during concrete placement conditions including load bearing pad on bottom to prevent vapor retarder puncture.
C. Special chairs, bolsters, bar supports, spacers adjacent to weather exposed concrete surfaces: Stainless steel type; size and shape to meet Project specifications.

2.3 FABRICATION

A. Fabricate concrete reinforcement in accordance with ACI 318.

B. Form standard hooks for 180 degree bends, 90 degree bend, stirrup and tie hooks, and seismic hooks as indicated on Drawings.

C. Form reinforcement bends with minimum diameters in accordance with ACI 318.

D. Fabricate column reinforcement with offset bends at reinforcement splices.

E. Form ties and stirrups from the following:
   1. For bars No. 10 and Smaller: No. 3 deformed bars.
   2. For bars No. 11 and Larger: No. 4 deformed bars.

F. Under no circumstances will welding of any reinforcing be allowed.

G. Locate reinforcement splices not indicated on Drawings, at point of minimum stress.

H. Hooks: Conform to requirements of Paragraph 7.1, ACI 318-77.

I. Where column bars are offset or dowels used for column splices, provide ½-inch clearance between bars or dowels and vertical bars of next lift.

J. Locate reinforcing splices not indicated on Drawings at point of minimum stress. Review location of splices with Engineer.

K. Lap splices on #14 and larger bar or dowels are not permitted.

PART 3 – EXECUTION

3.1 PLACEMENT

A. Place, support and secure reinforcement against displacement. Do not deviate from required position beyond specified tolerance:
   1. Do not weld crossing bars for assembly unless permitted by Engineer.

B. Do not displace or damage vapor retarder.

C. Accommodate placement of formed openings.

D. Space reinforcement bars with minimum clear spacing in accordance with ACI 318:
   1. Where bars are indicated in multiple layers, place upper bars directly above lower bars.

E. Maintain concrete cover around reinforcement in accordance with ACI 318, as indicated on the drawings or as follows:
<table>
<thead>
<tr>
<th>Reinforcement Location</th>
<th>Minimum Concrete Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>Footings and Concrete Formed Against Earth</td>
<td>3-inches</td>
</tr>
<tr>
<td>Concrete exposed to earth or weather</td>
<td></td>
</tr>
<tr>
<td>No. 6 bars and larger</td>
<td>2-inches</td>
</tr>
<tr>
<td>No. 5 bars and smaller</td>
<td>1-1/2-inches</td>
</tr>
<tr>
<td>Supported Slabs, Walls, and Joists</td>
<td></td>
</tr>
<tr>
<td>No. 14 bars and larger</td>
<td>1-1/2-inches</td>
</tr>
<tr>
<td>No. 11 bars and smaller</td>
<td>¾-inches</td>
</tr>
<tr>
<td>Beams and Columns</td>
<td>1-1/2-inches</td>
</tr>
<tr>
<td>Shell and Folded Plate Members</td>
<td></td>
</tr>
<tr>
<td>No. 6 bars and larger</td>
<td>¾-inches</td>
</tr>
<tr>
<td>No. 5 bars and smaller</td>
<td>½-inches</td>
</tr>
</tbody>
</table>

F. Bars:
1. Reinforce footings as shown on Drawings. Where reinforcing is not shown, minimum reinforcing shall be as follows for each wall thickness:

   6” wall - #4@18-inches, one layer
   8” wall - #4@18-inches, one layer
   10” wall - #4@18-inches, each face
   12” wall - #5@18-inches, each face
   24” wall - #7@16-inches, each face
   30” wall - #7@12-inches, each face

2. Reinforce top of stem wall under door and other openings with two #5 bars, minimum; 4-feet longer than opening.
3. Reinforce curbs as shown on Drawings. Where reinforcing is not shown, place one #5 bar top and bottom.
4. At wall or floor openings, if reinforcing is not shown, include two #5 bars, each face, on all sides, 4-feet longer than opening dimension. Also add two #5 bars, each face, diagonally at each corner.

G. Reinforce concrete sidewalks with mesh, 4 x 4 WWF 2.1 x 2.1.

H. Reinforce concrete driveways (6-inch thickness) subjected to vehicular traffic with #4 bars at 12-inches on-center each way.

I. Lap splices shall be in accordance with Chapter 12 of ACI 318-89. All reinforcing shall be lap spliced or doweled as shown on Drawings.

J. Reinforcing embedded lengths shall be in accordance with ACI.

K. Drilled dowel placement and depth shall be as indicated on the Drawings. Engineer of Record must be contacted for drilled dowel placement and depth if not shown on the drawings.
L. Other:
1. Clean reinforcement to remove loose rust and mill scale, earth, and other materials which reduce or destroy bond with concrete.
2. Position, support, and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as required.
3. Place reinforcement to obtain the minimum coverage for concrete protection. Arrange, space, and securely tie bars and bar supports together with 16-gauge wire to hold reinforcement accurately in position during concrete placement operations. Set wire ties so that twisted ends are directed away from exposed concrete surfaces.
4. Bars are to be tied at all intersections except where spacing is less than 1-foot in each direction, in which case alternate intersections are to be tied.
5. Install welded wire fabric in lengths as long as practicable. Lap adjoining pieces at least 1 full mesh.
6. Provide sufficient numbers of supports and of strengths to carry reinforcement. Do not place reinforcing bars more than 2-inches beyond the last leg of any continuous bar support. Do not use supports as bases for runways for concrete conveying equipment and similar construction loads.
7. Splices: Provide standard reinforcement splices by lapping ends, placing bars in contact, and tightly wrapped tie wire around bars.

3.2 ERECTION TOLERANCES

A. Install reinforcement within the following tolerances for flexural members, walls, and compression members:

<table>
<thead>
<tr>
<th>Reinforcement Depth</th>
<th>Depth Tolerance</th>
<th>Concrete Cover Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greater than 8 inches</td>
<td>plus or minus 3/8-inch</td>
<td>minus 3/8-inch</td>
</tr>
<tr>
<td>Less than 8 inches</td>
<td>plus or minus 1/2-inch</td>
<td>minus 1/2-inch</td>
</tr>
</tbody>
</table>

B. Install reinforcement within the tolerances specified in ACI 530.1 for foundation walls.

END OF SECTION 032000
SECTION 033000 – CAST-IN-PLACE CONCRETE

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes cast-in-place concrete for the following:
   1. Exterior concrete work.

B. Related Sections:
   1. Division 01 – General Requirements
   2. Section 03 10 00 - Concrete Forming and Accessories.
   3. Section 03 20 00 - Concrete Reinforcing.
   4. Section 03 35 00 - Concrete Finishing.

C. Control, expansion, and contraction joint devices associated with concrete work including joint sealants.

D. Work shall not be performed directly upon newly constructed concrete floor slabs:
   1. All newly poured and cured floor slabs shall be covered with heavy cloth or canvas or plastic coated tarpaulins for the duration of the construction period.
   2. Remove for periodic cleaning and replace before continuing construction Work.
   3. Remove and dispose of just prior to final inspection.
   4. No vehicles of any type shall be operated directly upon newly poured and cured floor slabs.
   5. No materials placed upon or stored directly on newly poured and cured floor slabs.

E. Utilize all efforts necessary to protect surface of newly poured floor systems during the remainder of the construction period.

1.2 REFERENCES

A. American Concrete Institute:
   2. ACI 301 - Specifications for Structural Concrete for Buildings.
   5. ACI 305 - Hot Weather Concreting.
   7. ACI 308.1 - Standard Specification for Curing Concrete.
   8. ACI 318 - Building Code Requirements for Structural Concrete.

B. ASTM International:
   2. ASTM C31/C31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
5. ASTM C42/C42M - Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
11. ASTM C231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
16. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.
27. ASTM D994 - Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type).
33. ASTM E1643 - Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill under Concrete Slabs.
34. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.

1.3 SUBMITTALS

A. Section 013300 - Submittal Procedures: Submittal procedures.

B. Product Data: Submit data on joint devices, attachment accessories, and admixtures.

C. Concrete mix design:
   1. Submit separate mix designs when admixtures are required for the following:
      a. Hot and cold weather concrete work.
      b. Air entrained concrete work.
   2. Identify mix ingredients and proportions, including admixtures.

D. Manufacturer's installation instructions: Submit installation procedures and interface required with adjacent Work

1.4 CLOSEOUT SUBMITTALS

A. Not required.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 318.

B. Conform to ACI 305 when concreting during hot weather.

C. Conform to ACI 306.1 when concreting during cold weather.

D. Acquire cement and aggregate from one source for Work.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Maintain concrete temperature after installation at minimum 50 degrees F for minimum 7- days.

1.7 COORDINATION

A. Section 013100 – Coordination.

B. Coordinate placement of joint devices with erection of concrete formwork and placement of form accessories.


PART 2 – PRODUCTS

2.1 CONCRETE MATERIALS
A.  Cement:  ASTM C150, Type I - Normal except as otherwise noted on Drawings or approved by Engineer.  Type III and Type V Cement may be used as specified.

B.  Fine aggregate:
1.  Meet requirements of ASTM C33-71a, except where more rigid requirements are included.
2.  Gradation within requirements of ASTM C33, Sections 4, 5, 6 and 7.  Sieve analysis of aggregate must accompany mix design when submitted to Engineer for review.
3.  Natural sand:
   a.  Clean, hard, strong, durable, uncoated grains.
   b.  Coal and lignite:  0.25 percent maximum.
   c.  Prove acceptability of aggregate by laboratory test conducted and certified by laboratory acceptable to Engineer on sample taken in accordance with ASTM C75.

C.  Course aggregate:
1.  Meet requirements of ASTM C33-71a, Sections 8, 9 and 10, except where more rigid requirements are included.
2.  Clean, hard, strong, durable, uncoated grains.
3.  Gradation within requirements of ASTM C33, Table II:
   #57, 1" to No. 4; for footings and plain concrete.
   #57, 1" to No. 4; for slabs on grade and reinforced walls.
   #57, 1" to No. 4; for slabs, beams, fillet and fill concrete.
4.  Limitation of deleterious substances:
   a.  Clay lumps and friable particles: Maximum 1.0 percent.
   b.  Soft particles: Maximum 2.0 percent.
   c.  Coal and Lignite: Maximum 0.25 percent.

D.  Water:  ACI 318; potable, without deleterious amounts of oil, acid, alkali, chlorides and sulfates, other common salts, organic matter or other deleterious substances.

2.2 ADMIXTURES

A.  Air entrainment: ASTM C260.
1.  All concrete exposed to weather and freeze-thaw cycles shall be air-entrained, unless otherwise specified.

B.  Fly Ash:  ASTM C618 Class C.
1.  A singular source of fly ash shall be used for all work.

C.  Plasticizing:  ASTM C1017/C1017M Type I, plasticizing.

2.3 ACCESSORIES

A.  Bonding agent:  Two component modified epoxy resin.

B.  Expansion Joints:
1.  Expansion joint filler shall be flexible, lightweight, non-staining, polyethylene, and closed cell.  It shall be a chemical-resistant, ultraviolet stable, non-absorbent, low density, compressible foam and have the following requirements.
2.4 CONCRETE MIX

A. Select proportions for normal weight concrete in accordance with ACI 301 Method 1.

B. Provide concrete to the following criteria for construction of exterior concrete stairs:

<table>
<thead>
<tr>
<th>Material and Property</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressive Strength (7-day)</td>
<td>4,000-psi</td>
</tr>
<tr>
<td>Compressive Strength (28-day)</td>
<td>5,000-psi</td>
</tr>
<tr>
<td>Cement Type</td>
<td>ASTM C150</td>
</tr>
<tr>
<td>Aggregate Type</td>
<td>Normal weight</td>
</tr>
<tr>
<td>Water-Cement Ratio (maximum)</td>
<td>0.45 by weight</td>
</tr>
<tr>
<td>Air Content</td>
<td>6.5 percent plus or minus 1.5 percent</td>
</tr>
<tr>
<td>Slump – Exterior Stairs</td>
<td>3-inches plus or minus 1-inch</td>
</tr>
</tbody>
</table>

C. Admixtures: Include admixture types and quantities indicated in concrete mix designs only when approved by Engineer.
   1. Use accelerating admixtures in cold weather. Use of admixtures will not relax cold weather placement requirements.
   2. Do not use calcium chloride nor admixtures containing calcium chloride.
   3. Use set retarding admixtures during hot weather, only with Engineer’s authorization.
   4. Add air entrainment admixture to concrete mix for work exposed to freezing and thawing or deicing chemicals.
   5. For concrete exposed to deicing chemicals, limit fly ash, pozzolans, silica fume, and slag.

D. Average compressive strength reduction: Not permitted

E. Ready mixed concrete: Mix and deliver concrete in accordance with ASTM C94/C94M.

F. Site mixed concrete: Mix concrete in accordance with ACI 318.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Section 013100 – Coordination.

B. Verify requirements for concrete cover over reinforcement.

C. Verify anchors, seats, plates, reinforcement and other items to be cast into concrete are
accurately placed, positioned securely, and will not interfere with placing concrete.

3.2  PREPARATION

A. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent. Remove laitance, coatings, and unsound materials.

B. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout or epoxy in accordance with Drawings or manufacturer’s recommendations.

C. Remove debris and ice from formwork, reinforcement, and concrete substrates.

D. Remove water from areas receiving concrete before concrete is placed.
   1. Bottom of excavations shall be undisturbed earth free of frost or debris, level and compacted.
   2. Do not place any concrete until the Engineer has inspected and authorization forms and soil conditions, and until reinforcing, sleeves, and embedded items have been placed.
   3. Clean all dirt and debris from transporting equipment.
   4. Clean reinforcement of all foreign matter.
   5. Clean forms and oil or wet (except in freezing conditions) surfaces.
   6. Compact, level, and dampen base fill material under slabs on grade.

E. Transport concrete to prevent separation of materials in accordance with ACI practices:
   1. Do not add water to concrete during transporting.
   2. Handle from miser to point of placement with carts, buggies, or conveyors.
   3. Do not dump concrete from mixer or from transporting equipment with a free fall of more than 3-feet.
   4. Deposit concrete as nearly to its final position as possible.
   5. Clean transporting equipment at frequent intervals during placement.
   6. Do not use partially hardened or contaminated concrete.

3.3  PLACING CONCRETE

A. Place concrete in accordance with ACI 301.

B. Notify testing laboratory, Owner and Engineer minimum 48-hours prior to commencement of operations.

C. Ensure reinforcement, inserts, embedded parts, formed expansion and contraction joints, and accessories are not disturbed during concrete placement.

D. Separate slabs on grade from vertical surfaces with 1/2 inch thick joint filler.

E. Extend joint filler from bottom of slab to within 1/2 inch of finished slab surface.

F. Install joint device anchors. Maintain correct position to allow joint cover to be flush with floor and wall finish.

G. Install joint covers in longest practical length, when adjacent construction activity is complete.
H. Deposit concrete at final position. Prevent segregation of mix. Deposit concrete continuously or in layers of such thickness so no concrete will be placed on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as herein specified. Deposit concrete as nearly as practicable to its final location to avoid segregation.

I. Place concrete in continuous operation for each panel or section determined by predetermined joints.

J. Consolidate concrete.

K. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.

L. Place concrete continuously between predetermined expansion, control, and construction joints.

M. Do not interrupt successive placement; do not permit cold joints to occur.

N. Saw cut joints within 24-hours after placing. Use 3/16-inch thick blade, cut into 1/4 depth of slab thickness.

O. Placing concrete forms:
   1. Deposit concrete in forms in horizontal layers not deeper than 24-inches and in a manner to avoid inclined construction joints.
   2. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.
   3. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding or tamping. Use equipment and procedures for consolidation of concrete in accordance with ACI recommended practices.
   4. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than visible effectiveness of machine. Place vibrators to rapidly penetrate placed layer and at least 6-inches into preceding layer. Do not insert vibrators into lower layers of concrete which have begun to set. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing segregation of mix.

P. Cold weather placing:
   1. Protect concrete work from physical damage or reduced strength which could be caused by frost, freezing actions, or low temperatures, in compliance with ACI 306, “Cold Weather Concreting”, and as herein specified.
   2. When air temperature has fallen to or is expected to fall below 40°F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 40°F and not more than 80°F at point of placement, and maintain minimum temperature over the entire work for no less than 72 hours.
   3. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
   4. Do not use calcium chloride, salt and other materials containing antifreeze agents or chemical acceleration unless otherwise accepted in mix designs.

Q. Hot weather placing:
1. When hot weather conditions exist which could seriously impair quality and strength of concrete, place concrete in compliance with ACI 305 “Hot Weather Concreting” and as herein specified.

2. Cool ingredients before mixing to maintain concrete temperature at time of placement below 90°F. Mixing water may be chilled or chopped ice may be used to control temperature provided water equivalent of ice is calculated in total amount of mixing water.

3. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so steel temperature will not exceed the ambient air temperature immediately before embedment in concrete.

4. Wet forms thoroughly before placing concrete.

5. Use water-reducing retarding admixture (Type A) when required by high temperatures, low humidity, or other adverse placing conditions.

R. Construction joints: Contractor to submit placement and type of construction joints to Engineer for review prior to placement of any concrete on the project.

S. Expansion joints:
1. Install expansion joint filler where interior slabs abut exterior walls, interior bearing walls and columns, at perimeter of concrete equipment pads, and other necessary locations as determined by Engineer.
2. Omit expansion joint filler and install 15-pound felt, centered below doors, to break bond at exterior doors with concrete platforms, unless otherwise shown on the Drawings.

3.4 CONCRETE FINISHING

A. Finish concrete surfaces to requirements of Section 033500.

3.5 CURING AND PROTECTION

A. Cure and protect concrete surfaces to requirements of Section 033500.

3.6 EXTERIOR CONCRETE STAIRS

A. Thickness as shown on Drawings as per Specifications.

B. Place on 6-inch compacted fill/base. Compact to 98 percent standard proctor.

C. Slope minimum ¼-inch per foot across slab and/or away from building, unless otherwise shown on Drawings.

D. Finished as shown in finishing schedule.

E. Markings: If not otherwise shown, mark across slab at intervals equal to width of sidewalk for sidewalks up to 6-feet wide. For sidewalks over 6-feet wide, mark in squares at approximately 4-feet o.c. each way. Use edging tool along outer edges and joints.

F. Provide isolation and expansion joints where shown on Drawings and as specified herein under Section 2.5. Isolation joints between sidewalk and adjacent structures and expansion joints at maximum 50-foot intervals where length exceeds 50-feet.
3.7 FIELD QUALITY CONTROL

A. Perform field testing in accordance with these Documents.

B. Provide free access to Work and cooperate with appointed firm performing testing.

C. Concrete inspections:
   2. Periodic curing inspection: Inspect for specified curing temperature and procedures.

D. Slump tests:
   1. Make test in accordance with ASTM C143 on sample taken in accordance with ASTM C172.
   2. Tests required:
      a. First load each day.
      b. Every 50-cy or fraction thereof.
      c. Whenever other tests are being made.
      d. After any change in mix.
      e. When directed by Engineer.

E. Temperature tests:
   1. Required whenever outside temperature is within 10°F of limiting temperature.
   2. Make tests at same time slump tests are taken.
   3. Use armored thermometer accurate to plus or minus 2°F.
   4. Place thermometer in freshly discharged concrete and leave it in place until reading becomes stable.

F. Air content tests:
   1. By pressure method ASTM C231 or volumetric method ASTM C173 on samples taken in accordance with ASTM C172.
   2. Test first load of air entrained concrete and spot check by additional test on each day when air entrained concrete is placed.

G. Unit weight of concrete.

H. Compression tests:
   1. Prepare cylinders in accordance with ASTM C31.
   2. Set of 3 cylinders required for every run of 50-cy or fraction thereof.
   3. Cure cylinders under laboratory conditions and test by procedure in ASTM C39.
   4. Prepare additional cylinders and cure under job conditions if air temperature is likely to fall below 40°F.
   5. Break cylinders at 7 and 28-days, or as directed by Engineer.
   6. If over 1 in 10 tests of laboratory specimens fall below specified design compressive strength, check design of mix and make necessary corrections before additional concrete is placed.
   7. When test specimens break below strength specified, Contractor may be required to test concrete affected by procedure in ASTM C42 core tests or load test portion of structure affected.
   8. Remove concrete not in accordance with specifications and replace without cost to Owner.
I. Record results of all tests immediately in Log of Tests which must be maintained at job site. Log must contain following information:
   1. Date and time tests are made.
   2. Test results, if immediately available.
   3. Exact location where tested concrete was placed in structure.
   4. Weather conditions, including air temperature at time tests were made.
   5. Plant and number of mixer truck which delivered concrete.
   7. Mix design number.

3.8 PATCHING

A. Allow Engineer to inspect concrete surfaces immediately upon removal of forms. Repair defects in accordance with Chapter 9 of ACI 301 and with ACI 309.2R.

B. Tie holes:
   1. After being thoroughly cleaned and dampened, tie holes shall be grouted solid with a nonmetallic, non-shrinking grout.
   2. Tie holes shall be filled from the large end of the cone-shaped hole and packed solid by rodding.
   3. Rubber plugs shall be placed deep in the wall prior to filling with grout.
   4. Holes shall be grouted on both sides of the walls.
   5. Grout material shall fill the entire tie hole filling process shall be reviewed with and authorized by the Engineer prior to starting the Work.

C. Patching minor defects:
   1. Surfaces to be patched or repaired after removal of forms shall be by methods reviewed by the Engineer.
   2. Plastering over the defects is not allowed.
   3. Patching shall be performed as soon as the forms are removed and before any curing compound is applied.
   4. Non-shrink, non-staining grout should be used. Provide well-bonded patch to adjacent concrete.
   5. Patch imperfections in accordance with ACI 301.

D. Honeycombing:
   1. Excessive honeycomb or embedded debris in concrete is not acceptable.
   2. Honeycombing may be a result of improper concrete placement or inadequate vibration.
   3. Patching of honeycombing areas may be permissible, depending on the extent and depth of defective concrete and its location.
   4. If patching is allowed, all unsound material shall be chipped out back to sound, solid concrete.
   5. Patch per Paragraph C above.
   6. If patching is not allowed, concrete shall be removed and replaced.

3.9 JOINT FILLERS

A. Joint cleaning, priming and sealing to be in accordance with sealing manufacturer’s recommendations. All joints to be sealed continuously full height in accordance with all product recommendations, under specified environmental conditions.

3.10 PROTECTION OF CONCRETE CONSTRUCTION
A.  All surfaces shall be protected against injury. During the first 72-hours after placing the concrete, any wheeling, working or walking on the concrete shall not be permitted. This does not alter the requirements for proper curing.

B.  Work shall not be performed directly upon newly constructed concrete floor slabs:
1.  All newly poured and cured floor slabs shall be covered with heavy cloth or canvas or plastic coated tarpaulins for the duration of the construction period.
2.  Remove for periodic cleaning, and replace before continuing construction Work.
3.  Remove and dispose of just prior to final inspection.
4.  No vehicles of any type shall be operated directly upon newly poured and cured floor slabs.
5.  No materials placed upon or stored directly on newly poured and cured floor slabs.

C.  Utilize all efforts necessary to protect surface of newly poured floor systems during the remainder of the construction period.

D.  Do not place concrete slabs or top surfaces of walls during rain unless acceptable protective shelter is provided; and during such weather, all concrete placed within the preceding 12-hours shall be protected with waterproof canvas or other suitable coverings. These shall be provided and kept ready at hand.

E.  All concrete construction shall be protected from excessive loading. Installation of mechanical and electrical equipment shall be accomplished by employing shores, bearing plates, frames, cranes and temporary beams.

3.11  DEFECTIVE CONCRETE

A.  Defective concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.

B.  Repair or replacement of defective concrete will be determined by Engineer.

C.  Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Engineer for each individual area.

END OF SECTION 033000
SECTION 033500 – CONCRETE FINISHING

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Finishing Concrete.

B. Related Sections:
   1. Division 01 – General Requirements
   2. Section 031000 – Concrete Forming and Accessories
   3. Section 033000 - Cast-In-Place Concrete

1.2 REFERENCES

A. American Concrete Institute:
   1. ACI 301 - Specifications for Structural Concrete.
   2. ACI 302.1 - Guide for Concrete Floor and Slab Construction.

B. ASTM International:

1.3 SUBMITTALS

A. Section 013300 - Submittals.

B. Product Data: Submit data on concrete hardener, sealer, curing compounds curing papers, and slip resistant treatment, compatibilities, and limitations.

1.4 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three (3) years documented experience.

B. Finisher: Company specializing in performing work of this section with minimum three (3) year documented experience.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's packaging including application instructions.

1.6 COORDINATION

A. Section 01 31 00 - Coordination.

B. Coordinate the Work with concrete placement and concrete curing.

PART 2 – PRODUCTS

2.1 CURING COMPOUNDS
A. Exterior applications: “Kure-N-Harden” water-soluble, inorganic, silicate-based curing, hardening, sealing and dustproofing compound:
   1. Clear color.
   2. Apply at rate of 150 to 200-square feet per gallon.
   3. Prepare surface and apply per manufacturer’s recommendations.
   4. BASF, SIKA, Sonneborn; or equivalent.

PART 3 – EXECUTION

3.1 EXAMINATION
   A. Section 013100 - Coordination.

3.2 CURING AND PROTECTION
   A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
      1. Protect concrete footings from freezing for minimum 7 days.
   B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
   C. Cure concrete floors in accordance with the following:
      1. Cover with fabric mats and keep wet during curing period.
      2. Cover with waterproof paper which meets requirements of ASTM C171.
      3. Cover with clear or white polyethylene sheets, 0.004-inch thick. Lap edges minimum 4-inch and seal with tape.
      4. Seal with liquid applied curing and sealing compound applied in accordance with manufacturer’s directions. Do not apply compound on construction joints or floors to receive other finishes such as ceramic tile.
      5. Do not use Methods 1 and 4 in unheated areas during cold weather operations if exposed concrete is protected with blanket insulation.
   D. Vertical surfaces:
      1. Wood forms, kept wet, and metal forms provide satisfactory curing. Cure exposed top surfaces as specified above.
      2. When forms are removed before end of curing period, exposed concrete must be cured by one of first three authorization methods included under Item C.

3.3 CONCRETE SLAB FINISHING
   A. Finish concrete floor surfaces in accordance with ACI 301 and ACI 302.1.
   B. Complete screeding and darbying slabs before excess moisture or bleeding of water is present on surface.
   C. Do not begin subsequent finishing operations until surface water has disappeared and the concrete will sustain foot pressure with only approximately ¼ inch indentation.

3.4 CONCRETE WALL FINISHES
A. Complete screeding and darbying of top of walls before excess moisture or bleeding water is present on the surface.

B. Do not begin subsequent finishing operations until surface water has disappeared.

3.5 TOLERANCES

A. Maximum Variation of Surface Flatness for Exposed Concrete Floors: 1/4 inch in 10 ft

END OF SECTION 033500
SECTION 040120.19 – UNIT MASONRY RESTORATION

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes concrete masonry units; pre-faced concrete masonry units; decorative concrete masonry; firebrick, clay flue lining, reinforcement, anchorage, and accessories.

B. Related Sections:
   1. Division 01 – General Requirements
   2. Section 04 05 03 – Masonry Mortaring and Grouting: Mortar and grout.

1.2 REFERENCES

A. American Concrete Institute:
   1. ACI 530 - Building Code Requirements for Masonry Structures.
   2. ACI 530.1 - Specifications for Masonry Structures.

B. ASTM International:
   1. ASTM A82/A82M - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
   4. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
   7. ASTM C62 - Standard Specification for Building Brick (Solid Masonry Units Made From Clay or Shale).
   8. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units.
  10. ASTM C129 - Standard Specification for Nonloadbearing Concrete Masonry Units.
   11. ASTM C140 - Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.

C. International Code Council

D. The Masonry Society (TMS)
   1. TMS MSJC – Building Code for Masonry Structures (ACI 530/ASCE 5/TMS...
1.3 **SUBMITTALS**

A. Section 01 33 00 - Submittals.

B. Product Data: Submit on all accessories and reinforcement.

C. For all block, submit block and mortar color samples for selection.

D. Test Data: Submit on concrete masonry units.

E. Manufacturer's certificate: Certify products meet or exceed specified requirements.

1.4 **DELIVERY, STORAGE, AND HANDLING**

A. Accept units on site. Inspect for damage.

B. Store masonry units above ground on level platforms which allow air circulation under stacked units.

C. Cover and protect against wetting prior to use.

D. Handle units on pallets or flat bed barrows.

E. Do not permit free discharge from conveyor units or transporting in mortar trays.

1.5 **ENVIRONMENTAL REQUIREMENTS**

A. Cold weather requirements:
   1. Do not lay masonry on snow or ice covered bed or frozen surface.
   2. Do not lay masonry when temperature of outside air is below 40°F unless provisions are made for heating materials, maintaining temperature of materials, and for additional protection of materials and completed work as set forth herein.
   3. Whenever the temperature is below 40°F, protect walls and materials against possibility of wetting and freezing.
   4. When temperature is in range of 40°F to 32°F, heat mixing water to produce mortar temperature between 40°F and 120°F. When mortar temperature has been established in range allowed, maintain temperature for successive batches.
   5. Do not lay block when air temperature is less than 32°F.
   6. Maintain temperature of completed wall above freezing for 24-hours by use of auxiliary heat or insulated blankets. Increase to 48-hours where Type 1 Portland Cement is used in mortar and grout.
   7. Use temperature at start of construction. Change in procedure during same day construction not permitted until temperature is above 40°F.
   8. If temperature is predicted to fall below 32°F within 24-hours, protection is required.
   9. Additionally, comply with all applicable requirements of ACI 530.1 and ASCE 6-88.

B. Hot weather requirements: In accordance with ACI 530.1 when ambient temperature is greater than 100 degrees F or ambient temperature is greater than 90 degrees F with wind velocity greater than 8-mph.
1.6 COORDINATION

A. Section 01 31 00 - Coordination: Coordination and project conditions. Coordinate masonry work with painting and other operations.

PART 2 – PRODUCTS

2.1. BRICKS

A. Brick unit size and shape: Modular sized to thickness and dimensions as the existing brick on the building. Furnish special units as required for brick replacement.

B. Bricks shall be Light Ivory, Velour texture as manufactured by Cloud Ceramics, Concordia Kansas. Other acceptable manufacturers are Sioux City Brick and Acme Brick.
   1. Contractor shall verify color, size and shape match prior to ordering material.
   2. Owner has some loose bricks on hand to assist Contractor.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify field conditions are acceptable and are ready to receive work.

B. Verify items provided by other sections of work are properly sized and located.

C. Verify built-in items are in proper location, and ready for roughing into masonry work.

3.2 PREPARATION

A. Direct and coordinate placement of metal anchors supplied to other sections.

B. Furnish temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent support.

C. Wet clay and shale brick before laying when initial rate of absorption is greater than 30 grams when tested in accordance with ASTM C67.

3.3 INSTALLATION

A. Establish lines, levels, and coursing indicated. Protect from displacement.

B. Maintain masonry courses to uniform dimension. Form bed and head joints of uniform thickness. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

C. Placing and bonding:
   1. Lay solid masonry units in full bed of mortar, with full head joints.
   2. Lay hollow masonry units with face shell bedding on head and bed joints.
   3. Buttering corners of joints or excessive furrowing of mortar joints are not permitted.
   4. Remove excess mortar as work progresses.
   5. Fully bond intersections at external and internal corners.
   6. Do not shift or tap masonry units after mortar has achieved initial set. Where
7. Perform job site cutting of masonry units with proper tools to assure straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
8. Cut mortar joints flush where a finished base is scheduled.

D. Weeps and vents: Replace weeps and vents if required during replacement.

E. Cavity wall: Do not permit mortar to drop or accumulate into cavity air space or to plug weeps.

F. Grouted components:
   1. Remove excess.
   2. Place and consolidate grout fill without displacing reinforcing.
   3. At bearing locations, fill masonry cores with grout for minimum 12 inches both sides of opening, unless otherwise indicated on Drawings.
   4. Work grout into masonry cores and cavities to eliminate voids.
   5. Do not grout in lifts greater than 12 inches without consolidating grout by rodding.
   6. Top of lift shall terminate a minimum of 1 ½ inches from mortar joint, except at opening or top of wall.
   7. Two courses immediately below all beam, lintel and joist bearing points shall be completely filled with mortar. All concrete used in masonry bond beams shall be structural concrete, per Division 03 of these Specifications.

G. Built-in work:
   1. As work progresses, install built-in metal door frames, window frames, wood nailing strips, anchor bolts, plates, lintels, columns, beams, and other items to be built-in the work and furnished by other sections.
   2. Install built-in items plumb and level.
   3. Do not build in materials subject to deterioration.

H. Cutting and fitting:
   1. Cut and fit for chases, pipes, conduit, sleeves, and grounds. Coordinate with other sections of work to provide correct size, shape, and location.
   2. Obtain Engineer’s approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

I. Joining of Work:
   1. Where fresh masonry joins masonry is partially or totally set, clean and lightly wet exposed surfaces of set masonry to assure best possible bond (remove all loose brick and mortar).
   2. Where it becomes necessary for construction purposes to stop off a horizontal run of masonry, rake back 1/2-unit length in each course and, if collar joints are grouted or parged, stop grout or parging 4-inches back of rake (teething will not be permitted without advance review by Engineer).
   3. When grouting is stopped for 1-hour or longer, stop pour 1-1/2-inch below top of last course, except where last course is finishing course.

J. Cleaning, pointing and sealing:
   1. Point up open joints or holes in joints; cut out defective joints and repoint.
   2. Thoroughly clean all exposed masonry; follow manufacturer’s recommendation to clean masonry with colored mortar to avoid discoloration.
4. After cleaned surface has dried thoroughly, apply siloxane waterproofing sealer to all exposed exterior brick masonry surfaces in strict accordance with manufacturer’s instruction.

5. Leave surfaces of masonry clean and free of stain.

K. Cutting:
1. Make all unit cuts, including those for bonding, holes, boxes, etc., with motor-driven masonry saws, using either an abrasive or diamond blade.
2. Cut neatly and locate for best appearance.

3.4 ERECTION TOLERANCES

A. Maximum variation from unit to adjacent unit: 1/32 inch.

B. Maximum variation from plane of wall: ¼-inch in 10-ft and ½-inch in 20-ft or more.

C. Maximum variation from plumb: ¼-inch per story non-cumulative; ½-inch in two stories or more.

D. Maximum variation from level coursing: 1/8-inch in 3-ft and ¼-inch in 10-ft; ½-inch in 30-ft.

E. Maximum variation of joint thickness: 1/8 inch in 3-ft.

F. Maximum variation from cross sectional thickness of walls: 1/4 inch.

3.5 CLEANING

A. Remove excess mortar and mortar smears as work progresses.

B. Replace defective mortar. Match adjacent work.

C. Clean soiled surfaces with cleaning solution.

D. Use non-metallic tools in cleaning operations.

3.6 PROTECTION OF FINISHED WORK

A. Keep masonry work dry during erection. Cover with waterproof protection membrane at end of day and during shut down periods when work is halted by inclement weather or other reasons.

B. Maintain protection on partially completed walls at all times and on completed walls until permanent protection is placed.

C. Protection membrane must overhang each side of wall at least 2-feet and be securely anchored.

D. Protect sills and ledges from mortar droppings.

E. Protect door jambs and corners from construction damage. Install barricades at particularly vulnerable locations. Cover building corners with plywood.

F. Protect exposed external corners subject to damage.
G. Protect base of walls from mud and mortar splatter.

H. Protect masonry and other items built into masonry walls from mortar droppings and staining caused by mortar.

I. Protect tops of masonry work with waterproof coverings secured in place without damaging masonry. Provide coverings where masonry is exposed to weather when work is not in progress.

END OF SECTION 040120.19
SECTION 04 05 03 – MASONRY MORTARING AND GROUTING

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes mortar and grout for masonry.

B. Related Sections:
   1. Division 01 – General Requirements
   2. Section 04 05 03 – Masonry Mortaring and Grouting

1.2 REFERENCES

A. American Concrete Institute:
   1. ACI 530 - Building Code Requirements for Masonry Structures.
   2. ACI 530.1 - Specifications for Masonry Structures.

B. ASTM International:

C. The Masonry Society (TMS):
   1. ACI 530 – Building Code Requirements for Masonry Structures.
   2. ACI 530.1 – Specifications for Masonry Structures.

1.3 SUBMITTALS

A. Section 01 33 00 - Submittals.

B. Design data: Submit design mix when Property specification of ASTM C270 is to be
used, required environmental conditions, and admixture limitations.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 530 and ACI 530.1.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Cold weather requirements: In accordance with ACI 530.1 when ambient temperature or temperature of masonry units is less than 40 degrees F.

B. Hot weather requirements: In accordance with ACI 530.1 when ambient temperature is greater than 100 degrees F or ambient temperature is greater than 90 degrees F with wind velocity greater than 8-mph.

PART 2 – PRODUCTS

2.1 COMPONENTS

A. Portland cement: ASTM C150, Type I.

B. Mortar aggregate: ASTM C144, standard masonry type.

C. Hydrated lime: ASTM C206, Type S.


E. Water: Clean and potable.

F. Mortar color: Shall be to match existing as closely as possible, unless otherwise indicated by on Drawings or by Owner.

G. Calcium chloride is not permitted.

2.2 MIXES

A. Mortar mixes:
   1. Use Type S mortar for all work except as indicated below or on drawings.

B. Mortar mixing:
   1. Thoroughly mix mortar ingredients in accordance with ASTM C270 in quantities needed for immediate use.
   2. Achieve uniformly damp sand immediately before mixing process.
   3. Add water repellant in accordance with manufacturer’s instructions. Provide uniformity of mix and coloration.
   4. Re-temper only within two hours of mixing.

C. Grout mixes:
   1. Bond Beams and Lintels: 3,000 psi strength at 28 days, 8-10 inch slump, premixed type in accordance with ASTM C94 or mixed in accordance with ASTM C476 course grout.
2. Grout for structural masonry: 3,000 psi strength at 28-days; 8-10 inches slump; premixed in accordance with ASTM C476 Coarse grout.

3. Application:
   a. Coarse grout: For grouting spaces with minimum 4 inches dimension in every direction.
   b. Fine grout: For grouting other spaces.

C. Grout mixing:
   1. Thoroughly mix grout ingredients in quantities needed for immediate use in accordance with ASTM C476.
   2. Add admixtures; mix uniformly.
   3. Do not use anti-freeze compounds to lower the freezing point of grout.

PART 3 – EXECUTION

3.1 EXAMINATION
   A. Request inspection of spaces to be grouted.

3.2 PREPARATION
   A. Apply bonding agent to existing surfaces.

3.3 INSTALLATION
   A. Install mortar and grout in accordance with Section 04 01 20.91.

END OF SECTION 040503
SECTION 055200 - ALUMINUM HANDRAILS

PART 1 - GENERAL

1.1 QUALITY ASSURANCE

A. Handrails and railings shall meet requirements of OSHA and local building codes. Install 2-rail systems. Top edge height of top rails shall be 42-inches above the walking / working level. Midrails shall be installed at a height midway between the top edge of the guardrail system and the walking / working level. Posts spaced not more than 8-feet apart on centers.

B. Install where shown on Drawings or as part of prefabricated stairway or equipment. Provide required post mounting alternates: embedded, wall mount or site mount, and removable sleeves.

C. Like items of material provided shall be end products of a single manufacturer to achieve standardization for appearance, maintenance and replacement.

D. Reference Standards:

1.2 SUBMITTALS

A. Shop Drawings:
   1. Handrails and railings including splices, attachments, and mounting.
   2. Identify location and type indicated.
   3. Indicate railings in related and dimensional position with scale elevations.
   4. Indicate required field measurements.

B. Design and test data:
   1. Catalog data and/or design information. Submit test data showing load, and deflection due to load, in enough detail to prove handrail system satisfies OSHA requirements.
   2. Test data shall be furnished on all base connections of types required for this project. Acceptance for use will not be granted without this test data.
   3. Design calculations for railing system to resist load specified in latest edition of OSHA only when required by Engineer.
   4. Engineering calculations shall include transfer of forces from base of railing post, through base connection assembly, into supporting structure.

C. Samples:
   1. Duplicate samples, 6-inches long, of typical pipe showing finish.
   2. Sample of each fitting.

D. Manufacturer's recommendations describing procedures for maintaining including cleaning materials, application methods, and precautions as to use of materials which may be detrimental to finish when improperly applied.

E. Manufacturer's assembly and installation instructions.
F. Submit in accordance with Section 013300.

1.3 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle components in manner preventing damage to finished surfaces. Pack pipe and elbows in individual plastic shrink film to protect finish. Do not remove until after installation.

B. Storage of materials:
   1. Store components in dry, clean location, away from uncured concrete and masonry.
   2. Cover with waterproof paper, tarpaulin or polyethylene sheeting.

1.4 STRUCTURAL REQUIREMENTS

A. Handrail and wall rail assemblies and attachments shall be capable of withstanding, without failure, a force of at least 200-pounds applied within 2-inches of the top edge, in any outward or downward direction, at any point along the top edge.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Aluminum:
   1. Extruded pipe: Alloy 6063-T52 meeting ASTM B 221.
   2. Drawn pipe: Alloy 6063-T832 meeting ASTM B 483.
   3. Extruded bars, shapes, and moldings: Alloy 6063-T52 meeting ASTM B 221.
   4. Extruded posts: Alloy 6063-T6 meeting ASTM B 221.

B. Fabricate rails from anodized aluminum, 6063-T52 pipe with nominal size of 1-1/2-inches (1.90-inch outside diameter), Schedule 40 wall thickness.

C. Fabricate posts from anodized aluminum, 6063-T832 pipe with a nominal size of 1-1/2-inches, (1.90-inch outside diameter), Schedule 40 wall thickness. Provide post reinforcement of 1.36-inch diameter solid aluminum reinforcing bar.

D. Fittings:
   1. Fabricate from material similar to railings.
   2. Elbows, flanges, sleeves, brackets, and similar items shall be welded, set screw, riveted, or bolted type.
   3. Connections shall be continuous diameter type for smooth appearance and to permit continuous sliding of hands.

E. Connector sleeves: Internal connector sleeves shall be of extruded aluminum.

F. Mounting flanges:
   1. Floor flanges shall be of aluminum.
   2. Heavy-duty floor flange shall be of cast aluminum with a solid aluminum reinforcing bar.
   3. Fascia flanges shall be of aluminum with a solid aluminum reinforcing bar.

G. Toe board: Shall be of extruded aluminum.
2.3 FINISHES

A. Clear satin anodized finish on exposed surfaces:
   1. Extruded components: 0.7-mil anodized.
   2. Cast components: 0.4-mil anodized.

B. Light, circumferentially-brushed finish before anodizing on pipe shaped components.

2.4 FASTENINGS

A. Mechanical fasteners: Stainless steel.

B. Cement: Hydraulic, quick-setting, ASTM C595, factory prepared with accelerator (CaCl₂ accelerator not acceptable).

C. Provide recessed or surface mounted base sockets for removable handrails as shown on Drawings.

2.5 FABRICATION

A. Fabricate to conform to details shown on the Drawings. Locate handrails and railings where shown on the Drawings.

B. Handrails are free-standing. Railings are both permanently anchored.

C. Form connections and changes in rail direction by using prefabricated radius bend fittings. Remove burrs from exposed cut edges, with no chamfer.

D. Form elbow bends and wall returns to uniform radius, free from buckles and twists, with smooth finished surfaces or use prefabricated bends.

E. Locate intermediate rails midway between top rail and finished floor or center line of tread.

F. Close pipe ends using prefabricated fittings or appropriate end cap.

G. For posts set in concrete, furnish matching sleeves or inserts not less than 5-inches long.

H. For posts set on stair or platform stringers or on walkways, provide base flange or side mounting base plate.

I. Fabricate joints which will be exposed to weather to exclude water or provide weep holes where water may accumulate.

J. Provide minimum ¼-inch thick toe board or plate on railings except on stairs and where concrete or stainless steel curb is not provided. Extend not less than 4-inches above walking surface.

K. Blend in color discrepancies on anodized aluminum areas due to fabrication such as welding and exposed fasteners.
PART 3 - EXECUTION

3.1 INSTALLATION

A. Install as shown on Drawings and reviewed submittals.

B. Coat aluminum components which come into contact with dissimilar metals with zinc chromate primer. Coat exposed aluminum components which come into contact with concrete, cement, or lime mortar with bituminous paint.

C. Setting posts in grout:
   1. Clean dust and foreign matter from sleeves.
   2. Moisten interior of hole and surrounding surface with clean water.
   3. Mix grout and install in accordance with manufacturer's instructions.
   4. Brace railing until grout sets.

D. Set posts plumb and aligned to within 1/8-inch in 12-feet.

E. Set rails horizontal or parallel to rake of steps to within 1/8-inch in 12-feet.

F. Assemble and install in accordance with printed instructions of manufacturer.

G. Expansion joints:
   1. Provide at intervals of not more than 40-feet on centers.
   2. Provide slip joint with internal sleeve extending 2-inches beyond each side of joint.
   3. Locate joints within 12-inches of posts.

3.2 CLEANING

A. Wash thoroughly using clean water and soap. Rinse with clean water.

B. Do not use acid solution, steel wool or other harsh abrasive.

C. If stain remains after washing, remove finish, and restore in accordance with manufacturer's recommendations.

D. Finish must not be removed from anodized aluminum. Return component to anodizer for re-anodizing.

3.3 REPAIR OF DEFECTIVE WORK

A. Remove stained or otherwise defective Work and replace with material meeting specification requirements.

END OF SECTION 055200
SECTION 071923 – SILOXANE WATER REPELLENTS

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Water repellent coating applied to all exterior masonry walls.

1.2 RELATED WORK

A. Section 040120.91 Unit Masonry Restoration
B. Section 099113: Exterior Painting (concrete)

PART 2 - PRODUCTS

2.1 MATERIALS

A. Chemprobe Coating Systems Masonry Division of Tnemec Company, Inc. or approved equal.
B. Sherwin Williams equivalent
C. PPG equivalent.

PART 3 - EXECUTION

3.1 APPLICATION

A. Surface Preparation:

1. Masonry shall be thoroughly cleaned as specified under Section 040120.91.
2. Complete all caulking and painting work before commencing application.
3. Surfaces shall be dry and free of frost. After rainfall allow surface to dry at least two or three days or longer.

B. Application Methods:

1. Apply at any time when temperatures are above 40 degrees F.
2. Apply one coat to masonry by low pressure spray equipment. Spray must be equipped with neoprene hose.
3. Spray utilizing a uniform horizontal stroke followed by a uniform overlapping vertical stroke.
4. Apply at the rate recommended by manufacturer, coverage rates will vary depending on porosity of surface.

C. Protection:

1. Protect glass and metal while spraying so as to prevent damage.

END OF SECTION 071923
PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:
   1. Surface Preparation.
   2. Application

B. Related Sections:
   1. General Requirements – Division 01 (All Sections).
   2. Concrete – Division 03 (All Sections).

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM), Annual Book of ASTM Standards:

B. Federal Specification Unit:
   3. FS TT-C-555 - Coating, Textured (For Interior and Exterior Masonry Surfaces).

C. SSPC: The Society for Protective Coatings:
   1. SSPC - Steel Structures Painting Manual.
   2. SSPC Paint 16 - Coal Tar Epoxy-Polyamide Black (or Dark Red) Paint.
   3. SSPC SP 2 - Hand Tool Cleaning.
   4. SSPC SP 3 - Power Tool Cleaning.
   5. SSPC SP 5 - White Metal Blast Cleaning.
   6. SSPC SP 6 - Commercial Blast Cleaning.
   7. SSPC SP 7 - Brush-Off Blast Cleaning.
   8. SSPC SP 10 - Near-White Blast Cleaning.
   9. SSPC SP 11 - Power Tool Cleaning to Bare Metal.

1.3 SUBMITTALS

A. Section 013300 - Submittals.

B. Materials List:
   1. Submit complete list of materials and painting schedule for all coats required for each type of surface. Deliver no material to job site until list is reviewed by Engineer.
   2. Submit schedule of products proposed for each system if other than those specified in paragraph 2.4, along with complete manufacturer's literature on each coating.
   3. List in form permitting identification by container labels.

C. Shop Drawings:
   1. Prepare a complete listing (table) of all items Contractor intends to paint. Do not simply copy these Specifications. Include in the table:
a. Paint type intended for use for each specific item or location.
b. Space for color selection by Owner. Provide color charts.
c. Dry film thickness.
d. System type.
e. Finish and surface preparation for each coat and each system on list.

2. Color selections:
   a. May be adjusted by the Engineer after a specific brand of paint has been selected by Contractor and Shop Drawings have been reviewed by Engineer.
   b. Engineer may specify colors other than those stated in this Section or shown on Drawings.
   c. Contractor to have the final color selections authorized by the Owner before ordering any painting materials.

3. Duplicate 6 by 8-inch samples of paint and stain colors when requested by Engineer. When possible, apply finishes on identical type materials to which they will be applied on job. Identify each sample as to finish type, formula, color name and number, and gloss.

D. Samples:
   1. Submit two paper chip samples illustrating range of colors available for each surface finishing product scheduled.

E. Manufacturer's Installation Instructions: Submit special surface preparation procedures, and substrate conditions requiring special attention.

1.4 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

B. Applicator: Company specializing in performing work of this section with minimum 3 years documented experience and approved by manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

D. Take precautionary measures to prevent fire hazards and spontaneous combustion.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Do not apply materials when surface and ambient temperatures are outside temperature ranges required by paint product manufacturer.
B. Do not apply exterior coatings during rain or snow when relative humidity is outside humidity ranges, or moisture content of surfaces exceed those required by paint product manufacturer.

C. Ensure surface temperatures or surrounding air temperature is above 45°F before applying finishes. Minimum application temperature for epoxy and/or polyurethane coatings is 60°F.

D. Apply all finishes under adequate illumination.

1.7 QUALITY CONTROL

A. Before proceeding with painting, finish one complete sample panel, space, room or item of each color scheme showing selected color, finish texture, and workmanship. Request review and approval by Engineer of first finished sample panel, space, room or item. Use first acceptable sample panel, space, room or item as the standard for similar work throughout.
   1. Approved samples will be kept on job for comparison;
   2. Engineer reserve right to select unopened containers of materials furnished on job and have materials tested at an approved laboratory;

1.8 EXTRA MATERIALS

A. Leave excess material on premises, where directed by Engineer, usable partial cans of paint.

B. Containers to be tightly sealed and clearly labeled for identification.

PART 2 - PRODUCTS

2.1 HIGH PERFORMANCE COATINGS

A. Manufacturers:
   1. Tnemec, Sherwin-Williams, Carboline
   2. Or equivalent.

2.2 COMPONENTS

A. Coatings – General: Furnish complete multi-coat systems formulated and recommended by manufacturer for applications indicated, and in thicknesses indicated.
   1. Lead content: None.
   2. Maximum VOC content: As required by applicable regulations.
   3. Colors: Selected from manufacturer’s Standard Colors.

2.3 COLORS

A. Architectural colors shall be selected by Owner.

B. See color coding and labeling schedule, Part 3.7, for equipment and pipes requiring identification colors.
2.4 COATING SYSTEMS

A. System I: Concrete and Masonry, Poured-in-Place & Dense CMU – Exterior Exposed:
   1. First coat: 6.0-8.0 mdft.
   2. Finish coat: 6.0-8.0 mdft.

PART 3 - EXECUTION

3.1 GENERAL

A. Provide surface preparation, materials, equipment, and labor for painting specified.

B. Determine compatibility of primers with paints to be applied over them. If priming, undercoating, or finish coating specified does not conform in every way to recommendations of manufacturers, prepare schedule of recommended coatings and submit to Engineer for review. Any resulting changes shall be made at no additional cost to Owner.

3.2 INSPECTION

A. If surfaces to be finished cannot be put into proper condition for finishing by customary cleaning, sanding and putting operations or if surfaces were improperly primed by others, immediately report defects to Contractor, in writing, or assume responsibility and rectify any unsatisfactory finish resulting. Commencing of work indicates acceptance of surfaces.

B. Work removed and replaced to correct surface defects due to procedures on unsuitable surfaces shall be at Contractor's expense.

C. Where there are questions as to dryness of surfaces test with dampness indicating machine in presence of Engineer.

3.3 PROTECTION

A. Adequately protect other surfaces from paint and damage.

B. Furnish sufficient drop cloths, shields, and protective equipment to prevent spray or droppings from fouling surfaces not being painted and in particular, surfaces within storage and preparation area.

C. Place cotton waste, cloths, and material which may constitute a fire hazard in closed metal containers and remove daily from site.

3.4 SURFACE PREPARATION AND TOUCH-UP

A. Surface preparation:
   1. Shall conform to recommendations of paint manufacturer.
   2. Shall conform to these Specifications to ensure satisfactory performance of each coating system.
   3. Surfaces, before painting and between coats, shall be dry, smooth, and free from dust, rust, loose mill scale, grease, grit, and frost.

B. Remove mildew, by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry completely. Use wire brushing only to remove
loose dirt.

C. Concrete and masonry:
1. All surfaces to be painted or sealed shall be clean, dry and free of dirt, dust, oils, grease, wax, flaking or loose paint, efflorescence and other deleterious materials.
2. All cracks, chips and other defects in plain concrete surfaces shall be filled prior to coating or sealing.
3. New concrete and masonry should not be coated for at least 28-days to permit the concrete or mortar to cure and dry out.
4. Concrete will be tested for moisture content prior to painting by the following method:
   a. Securely tape a piece of heavy gauge plastic film, about 1-foot square, to the concrete.
   b. Plastic film will act as a moisture barrier and trap any moisture migrating through the concrete.
5. Film:
   a. Pieces of test film should be placed at various locations which are likely to be slow drying out, such as below grade, low spots in floors, inside corners and lower wall areas.
   b. Film should be carefully sealed with tape to prevent the escape of any moisture of vapor which may be trapped behind the film.
   c. Film should be left in-place overnight or longer to allow sufficient time for moisture migration.
   d. If condensation appears on the backside of the film or if the concrete under the film appears to be darker, damp or wet, more drying time shall be allowed and the test then repeated.
6. Surface defects and cleaning:
   a. Surfaces to be coated should be examined for defects such as fins, protrusions, bulges and mortar spatter.
   b. Defects should be corrected by grinding or scraping.
   c. Remove non-degraded release agents, oil, wax, and grease by scraping off heavy deposits and solvent cleaning or washing with a hot trisodium phosphate solution consisting of 2-8 oz. of trisodium phosphate to each gallon of hot water (160°F).
   d. Repeat the cleaning operation until the contamination is removed and flush the area with clean water to remove residual cleaning solution. Allow drying thoroughly before coating.
7. Laitance removal:
   a. High-build, high film-strength coatings will not develop optimum adhesion to concrete unless laitance and other loosely bound material are first removed from the surface.
   b. Removal shall be by either acid etching or sandblasting.
   c. Sandblasting is preferred where practical.
8. Sandblasting:
   a. Care will be taken to define the degree of blast cleaning required for the coating system so the concrete will not be eroded beyond what is necessary.
   b. Two degrees of abrasive blast cleaning are sufficient for most coating systems:
   1) Brush-off blast cleaning.
2) Sandblast cleaning.

c. Brush-off blast cleaning is lightly abrading the surface without entirely removing the surface or exposing underlying aggregate.
d. Brush-off cleaning will open up sub-surface holes and voids and etch the surface sufficiently for the coating to bond and adhere satisfactorily.
e. Sandblast cleaning involves the complete removal of the top surface of the concrete, exposing the underlying aggregate.
f. Removal of the concrete surface shall not be so deep as to undermine or loosen exposed aggregate.
g. Brush-off blast cleaning will meet the requirements for most non-immersion systems, whereas a greater degree of surface removal may be required for some immersion coating systems.

9. Dry sandblasting equipment using a compressed air blast nozzle is recommended:
   a. Wet or water-vapor blast cleaning should be used only with prior approval and where the coating is not scheduled to be applied immediately after surface preparation.
   b. Abrasive used should be dry silica sand with the maximum particle size which will pass through a 16-mesh screen.
   c. After blast cleaning is completed, sand, dust and loose particles should be removed from the surface by vacuuming or blowing off with high-pressure air.
   d. Examine the surface for texture and uniformity, as well as the removal of dust, efflorescence and laitance.
   e. Patch voids and cracks causing discontinuities in the coating or unsightly appearance using a patching compound compatible with the coating system.

10. Compressed air used for nozzle blasting should be periodically checked to verify it is clean, dry and oil free. Oil and water separators should be placed in the airline as close as possible to blast cleaning equipment.

11. Acid etching:
   a. Acid etching solution shall be made with 1 part Muriatic Acid (20° Baume) and 2 to 4 parts of fresh water.
   b. If a chloride-free acid etching solution is required, 85 percent phosphoric acid diluted with 2 to 3 parts of fresh water shall be used.
   c. Stronger acid solutions may be used if the etching action is insufficient, but care should be taken not to etch the concrete so deeply the aggregate is not securely bound.
   d. Residual dust and dirt shall be removed from the surface of the concrete with fresh water, using a high-pressure hose.
   e. Excess water shall be removed from the floor with brooms or rubber squeegees and the concrete allowed to dry until the surface is damp, but not wet.
   f. Acid etching solution shall be applied uniformly to the concrete by low-pressure spray equipment or plastic sprinkling cans.
   g. Spreading operation shall be coordinated with the rinsing operation so acid is not completely spent or has started to dry out before the surface is flushed with fresh water.
   h. Rinsing operation shall be started when the bubbling action of the acid
begins to subside.

i. Surface shall be rinsed with clean water, using a pressure hose while scrubbing with stiff bristle fiber brooms to remove salt formations and loose material.

j. Rinse a second time using a solution of 1-cup of ammonia to 1-gallon of water.

k. Test with pH paper and continue the rinsing operation until a pH of 7 or higher is obtained.

l. Remove excess water by brooms or rubber squeegees.

m. Etched concrete should be examined for uniformity and texture and should have the feel of medium (100-grit) sandpaper.

n. Surface should be free of surface glaze, laitance, salts and loosely adhering material.

o. Allow the surface to dry a minimum of 72-hours under conditions which will promote drying and then remove all dust and foreign matter by vacuuming.

p. Acid etching shall be used to prepare concrete floors. It shall not be used on vertical surfaces and on slopes or inclines.

3.5 APPLICATION

A. Basic application requirements:
   1. Spread evenly and flow on smoothly without runs, lumps or sags.
   2. Make edges of paint adjoining other materials or colors sharp and clean without overlapping.
   3. All previous coats to thoroughly dry before applying succeeding coats.
   4. Keep pigments, fillers, varnishes, and enamels well-stirred during application. Paint and finishing materials to be free from skins, lumps or other foreign matter when used. Apply materials without additives and without reducing or thinning.
   5. Dry under conditions eliminating possibility of dust becoming impregnated.

3.6 FINAL TOUCH-UP

A. Prior to final completion and acceptance, examine painted and finished surfaces and retouch or refinish as necessary and required to leave surfaces in condition acceptable to Engineer.

3.7 CLEANING

A. As Work proceeds and upon completion, promptly remove paint where spilled, splashed, or spattered.

B. During progress of Work keep premises free from any unnecessary accumulation of tools, equipment, surplus materials, and debris.

C. Upon completion of work, remove masking, remove paint and varnish spots from floors, glass, and other surfaces and remove rubbish and accumulated materials of whatever nature not caused by other trades from premises and leave in clean, orderly condition, with floors broom clean.

END OF SECTION 099113
SECTION 31 10 00 – SITE PREPARATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:
   1. Clearing of surface debris.
   2. Excavating topsoil.
   3. Removing designated trees, shrubs, and other plant life.

1.2 JOB CONDITIONS

A. Notify corporations, companies, individuals or authorities owning utilities running to property or encountered during excavating operations.
B. Cap or remove services in accordance with instructions by owners of services.
C. Protect, support, and maintain utilities which are to remain.
D. Replace to original condition or better, landscape work such as trees, shrubs, and grass within and outside of construction and grading limits that are damaged.

1.3 SUBMITTALS

A. Not required.

1.4 QUALITY ASSURANCE

A. Conform to applicable codes for environmental requirements, disposal of debris, and use of herbicides.

PART 2 - PRODUCTS - (Not Used)

PART 3 - EXECUTION

3.1 CLEARING AND GRUBBING

A. Clear and grub area within limits to be covered with tanks, buildings, walks, parking areas, drives, and where grade to be raised of shrubs, trees, stumps, vegetation, rubbish, and other perishable or objectionable matter. Grub stumps.
B. Remove cleared material from site.

3.2 STRIPPING TOPSOIL

A. Remove topsoil to entire depth in areas where grade is to be raised and in areas to be covered by structure, walk, or paving. Stockpile where designated by Engineer. Stockpile for proper drainage.
B. Strip stockpile areas of vegetation prior to stockpiling.
C. Stripped topsoil shall be free from clay, stones, excessive vegetation, and debris.
D. Use for finish grading.

3.3 DISPOSAL OF SPOIL MATERIAL

A. Contractor is responsible for disposal methods and compliance with all Federal, State, County and City laws, ordinances and regulations.

B. Contractor is responsible for obtaining all permits necessary for disposal.

C. Disposal of spoil material may be by one of the following methods:
   1. Removal and disposal:
      a. Promptly remove cleared debris from site. Burning of debris on-site is not permitted.
      b. Disposal site will be arranged by Contractor subject to approval by Engineer.

END OF SECTION 311000
SECTION 312319 – DEWATERING

PART 1 - GENERAL

1.1 SUMMARY

A. Provide and maintain means for removal of water entering all structural and trenching excavations.

B. Dispose of water in a manner not causing damage, pollution, or unsafe conditions to adjacent land and water areas.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 PROTECTION

A. Surface runoff: Control grading around the excavation to prevent surface water from running into the excavations for the structure and trenches.

B. Protect adjacent and/or downstream property and structures from damage due to water removal and disposal.

3.2 PREPARATION

A. Provide for safe disposal of removed water.

3.3 DEWATERING

A. Install and maintain dewatering system.

B. Maintain water level within the excavation at or below the surface of the excavation, trench bottom, or base of the bedding course, until all Work to be performed therein is completed.

C. Carry out dewatering operation so the strength of the soil under or alongside of the excavation is not weakened or destroyed.

D. After completion of the structure or conduit installation, restore the normal water table in a manner not to disturb the foundation or the pipe or its foundation.

E. Provide de-silting devices or basins if necessary to protect adjacent property or structures or downstream property or structures.

F. Saturated foundations: Prior to placing any concrete for foundations, remove soils in footing excavation that have become saturated with surface water. Backfill areas to contours and elevations with unfrozen materials.

END OF SECTION 312319
SECTION 312323 – FILL

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes fill over excavations

1.2 SUBMITTALS

A. Section 013300 – Submittals: requirements for submittals

B. Test reports or samples of all fill materials

C. Materials Source: submit name of fill materials suppliers.

D. Manufacturer’s Certificate: Certify products meet or exceed specified requirements

PART 2 - PRODUCTS

2.1 COARSE AGGREGATES

A. Type A - Coarse Stone: Angular, limestone, washed or screened clean, free of shale, clay, friable material, sand, debris; graded within the following limits:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 inch (25mm)</td>
<td>100</td>
</tr>
<tr>
<td>3/4 inch (19mm)</td>
<td>85-100</td>
</tr>
<tr>
<td>1/2 inch (16mm)</td>
<td></td>
</tr>
<tr>
<td>3/8 inch (9mm)</td>
<td>15-55</td>
</tr>
<tr>
<td>No. 4</td>
<td>0-10</td>
</tr>
<tr>
<td>No. 8</td>
<td></td>
</tr>
<tr>
<td>No. 200</td>
<td></td>
</tr>
</tbody>
</table>

B. Type B:

1. Pea Gravel: Natural stone; washed, free of clay, shale, organic matter; graded in accordance with ASTM C136, to the following:
   a. Minimum Size: 1/4 inch
   b. Maximum Size: 5/8 inch

2. 3/8-inch limestone chips: may be used in place of pea gravel if the following gradation is met:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2 inch</td>
<td>100</td>
</tr>
<tr>
<td>3/8 inch</td>
<td>70 - 100</td>
</tr>
<tr>
<td>No. 4</td>
<td>10-30</td>
</tr>
<tr>
<td>No. 8</td>
<td>0 - 10</td>
</tr>
<tr>
<td>No. 30</td>
<td>0 - 5</td>
</tr>
<tr>
<td>No. 200</td>
<td>0-1.5</td>
</tr>
</tbody>
</table>
2.2 FINE AGGREGATES

A. Type C - Sand: Natural river or bank sand; washed: free of silt, clay, loam, friable or soluble materials, or organic matter; graded in accordance with ANSI/ASTM C136, within the following limits:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 4</td>
<td>100</td>
</tr>
<tr>
<td>No. 8</td>
<td>10 to 100</td>
</tr>
<tr>
<td>No. 100</td>
<td>4 to 30</td>
</tr>
<tr>
<td>No. 200</td>
<td>0 to 10</td>
</tr>
</tbody>
</table>

2.3 SUBSOILS

A. Type D – Structural Fill: Approved site excavated material free of organic matter and debris, place in loose fill lifts not to exceed 8 inches in thickness and compacted to minimum standard proctor density as listed in paragraph 3.7, SCHEDULE.

2.4 BORROW MATERIALS

A. Obtain borrow material from off-site source if volume of suitable excavation material is inadequate.

B. Borrow materials shall conform to material specifications for intended use.

2.5 TOPSOILS

A. Friable clay loam surface soil reasonable free of subsoil, clay lumps, stones and other objects over 2-inches in diameter and without weeds, roots and other objectionable materials

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 013100 – Coordination.

3.2 PREPARATION

A. Compact subgrade to density requirements for subsequent backfill materials.

B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with Type ‘A’ fill and compact to density equal to or greater than requirements for subsequent fill material.

C. Scarify top 6 to 8 inches of natural subgrade and compact to 95% Standard Proctor density.

D. Proof roll to identify soft spots; fill and compact to density equal to or greater than requirements for subsequent fill material.

3.3 BACKFILLING

A. Backfill areas to contours and elevations with unfrozen materials.
B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.

C. Place fill material in continuous layers as follows:
   1. Subsoil Fill: Maximum 8 inches compacted depth.
   2. Structural Fill: Maximum 8 inches compacted depth.

D. Employ placement method that does not disturb or damage other work.

E. Maintain optimum moisture content of backfill materials to attain required compaction density.

F. Backfill against supported foundation walls. Do not backfill against unsupported foundation walls.

G. Slope away from building minimum of 2 percent slope for minimum distance of 10-feet, unless noted otherwise.

H. Make gradual grade changes. Blend slope into level areas.

I. Remove surplus backfill materials from site.

J. Leave fill material stockpile areas free of excess fill materials.

3.4 TOLERANCES

A. Top surface of general backfilling: Plus, or minus 1 inch from required elevations.

3.5 FIELD QUALITY CONTROL

A. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.

3.6 PROTECTION OF FINISHED WORK

A. Reshape and re-compact fills subjected to vehicular traffic.

3.7 SCHEDULE

A. Unpaved Exterior Areas:
   1. Top six (6) inches black topsoil.

B. Trenched Pipe Envelope:
   1. Type ‘A’ fill (per 2.1.A of this specification) compacted to 95% of maximum in place density.
   2. Fill remainder of trench as indicated on drawings.

END OF SECTION 312323
SECTION 312500 - EROSION CONTROL-STORM WATER POLLUTION PREVENTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Installation of temporary water pollution control measures to prevent discharge of pollutants such as chemicals, fuels, lubricants, bitumen, raw sewage, or other harmful material from the project.

B. Other related documents.

1.2 GENERAL

A. The Contractor shall manage his operations to control water pollution in accordance with this specification and applicable State regulations. Construction of permanent drainage facilities and other contract work, contributing to control of erosion, shall be scheduled at the earliest practicable time.

B. The Contractor shall furnish, install, maintain, and remove temporary erosion control measures. The Contractor shall prevent silt or polluted storm water discharge from the site.

C. The Engineer may require installation of additional erosion control facilities, by the Contractor, if in the sole opinion of the Engineer, the Contractor's efforts are inadequate.

1.3 DEFINITIONS

A. General Permit: The General Permit for storm water discharges associated with construction activity (Land Disturbance General Permit No. MO-R100038) issued to FMDC as a blanket permit by the Missouri Department of Natural Resources, Water Pollution Program.

B. Storm Water Pollution Prevention Plan (SWPPP): A plan required by the General Permit that includes site map(s), an identification of construction/contractor activities that could cause pollutants in the storm water, and a description of measures or practices to control these pollutants.

C. Best Management Practice (BMP): Any program, technology, process, siting criteria, operating method, measure, or device that controls, prevents, removes, or reduces pollution.

D. Ditch Check: An obstruction placed at frequent intervals across ditches, creating small ponds to cause sediment to settle and be contained.

E. Temporary Seeding and Mulching: Placement of a quick ground cover to reduce erosion in areas expected to be re-disturbed.
F. Straw Bales: Standard agricultural bales used to filter the flow of water, trap, deposit sediment, and/or divert water.

G. Silt Fence: A geotextile barrier fence to contain sediment by removing suspended particles from water passing through the fence.

H. Sediment Removal: Removal of accumulated sediment to restore the efficiency of sediment control features.

1.4 SUBMITTALS

A. The Contractor shall submit his proposed “Erosion Control Plan” for review and approval by the Engineer. Approval of the plan does not relieve the Contractor of his contractual responsibility to prevent the discharge of pollutants into the receiving drainage ways.

B. The Contractor develop a Storm Water Pollution Prevention Plan (SWPPP) for review and approval by the Engineer. Once approved, provide final corrected copies of the SWPPP to the Owner and facility.

1.5 RELATED SECTIONS

A. Section 013300 – Submittals

B. Section 311000 – Site Preparation

C. Section 329219 - Seeding

PART 2 - PRODUCTS

2.1 MATERIALS

A. Ditch Checks:
    1. Rock ditch checks: 2" to 3" clean gravel or limestone.
    2. Straw bale ditch checks: Rectangular wheat straw bales in good condition.
    3. Silt fence ditch checks: Geotextile meeting the requirements of this specification.

B. Temporary Seeding:
    1. December 1 to March 1: 50 lbs oats/acre.
    2. March 1 to December 1: 50 lbs cereal rye or wheat.
    3. Mulch shall be wheat straw.

C. Wire Supported and Self Supporting Silt Fence:
    1. Geotextile Fabric
       a. Fibers used in geotextiles shall consist of longchain synthetic polymers, composed of at least 85 percent by weight polyolefins, polyesters, or polyamides. They shall be formed into a network such that the filaments
or yarns retain dimensional stability relative to each other, including selvages.

b. The geotextile shall be free of any treatment or coating which might adversely alter its physical properties after installation.

c. Geotextile shall be furnished in 36" width rolls.

d. Geotextile rolls shall be furnished with suitable wrapping for protection against moisture and extended ultraviolet exposure.

e. Each roll shall be labeled or tagged to provide product identification sufficient for inventory.

f. Rolls shall be stored in a manner, which protects them from the elements.

g. Geotextile shall conform to the following:

**TABLE 1**

**PHYSICAL REQUIREMENTS**\(^1\) **FOR**

**TEMPORARY SILT FENCE GEOTEXTILES**

<table>
<thead>
<tr>
<th>Property</th>
<th>Test Method</th>
<th>Wire Fence Supported Requirements</th>
<th>Self Supported Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile Strength, Lbs.</td>
<td>ASTM D4632</td>
<td>90 Minimum(^2)</td>
<td>90 Minimum(^2)</td>
</tr>
<tr>
<td>Elongation at 50% Minimum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tensile Strength (45 Lbs.)</td>
<td>ASTM D4632</td>
<td>N/A</td>
<td>50 Maximum</td>
</tr>
<tr>
<td>Ultraviolet Degradation</td>
<td></td>
<td>Minimum 70%</td>
<td>Minimum 70%</td>
</tr>
<tr>
<td>at 500 hrs.</td>
<td>ASTM D4355</td>
<td>Strength Retained</td>
<td>Strength Retained</td>
</tr>
</tbody>
</table>

Notes: 1. All numerical values represent minimum average roll value.

2. When tested in any principal direction.

2. Posts: Wood, steel or synthetic posts may be used. Posts shall have a minimum length of 36" plus embedment depth (24" min.). Posts shall have sufficient strength to resist damage during installation and to support applied loads.

3. Support Fence: Wire or other support fence shall be at least 24" high and strong enough to support applied loads.

4. Prefabricated Fence: Prefabricated fence systems may be used provided they meet all of the above material requirements.

**2.2 CERTIFICATION AND SAMPLING:**

A. The Contractor shall furnish a manufacturer’s certification, stating the material conforms to the requirements of these specifications.

B. The certification shall include, or have attached, typical results of tests for the specified properties, representative of the materials supplied.

C. The Engineer reserves the right to sample and test any material offered for use.
PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS

A. The Engineer may limit the surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow, or fill operations.

B. The Engineer may direct the Contractor to provide immediate permanent or temporary pollution control measures to prevent contamination of adjacent streams, other watercourses, lakes, ponds, or other areas of water impoundment. Work may involve the construction of temporary berms, dikes, dams, sediment basins, slope drains, use of temporary mulches, seeding or other control devices or methods to control erosion.

C. The Contractor shall incorporate permanent erosion control features at the earliest practicable time.

D. The Contractor at no additional cost shall provide temporary pollution control measures needed to control erosion during normal construction practices to the Owner.

E. Contractor shall designate trained and knowledgeable personnel to coordinate all SWPPP activities, and identify these personnel to the Engineer during construction. Missouri Department of Natural Resources offers training classes in Erosion Control free of charge in Jefferson City. Contact for training: David Goggins at (573) 751-2556.

F. The SWPPP is a living document. As the conditions of the site changes, the SWPPP should be updated by the Contractor.

G. The SWPPP is subject to random inspection by the Owner. The SWPPP should be kept up to date by the Contractor and available for inspection at any time.

H. If Contractor determines that any BMP should need modification, the changes shall be dated and documented, and all necessary field changes performed.

3.2 LIMITATION OF AREA DISTURBED:

A. The Contractor’s operations shall be scheduled to install permanent erosion control features immediately after clearing and grubbing, and grading.

B. The surface area of erodible earth material exposed at one time by clearing and grubbing, excavating, fill, or borrow shall not exceed 200,000 square feet without written approval of the Engineer.

C. The Engineer may limit the area of clearing and grubbing, excavation, borrow, and embankment operations commensurate with the Contractor’s capability and progress in completing the finish grading, mulching, seeding, and other such permanent pollution control measures current.

D. The Contractor shall respond to seasonal variations. If required by weather, temporary erosion control measures shall be taken immediately.
3.3 **BORROW AND WASTE AREAS**

A. Material pits other than commercially operated sources and material spoil areas shall be subject to pollution control measures of this specification. An offsite location does not relieve the Contractor of his contractual obligation to prevent the introduction of silt or other pollutants into receiving waterways.

3.4 **CONFLICT WITH FEDERAL, STATE OR LOCAL LAWS, RULES OR REGULATIONS**

A. In case of conflict between these requirements and pollution control laws, rules, or regulations or other Federal, State or local agencies, the more restrictive laws, rules, or regulations shall apply.

3.5 **DITCH CHECKS**

A. General:

1. Rock ditch checks may be used on ditches with grades of 4 percent or less.
2. Straw bale ditch checks may be used on all ditches.
   
   a. The silt fence fabric may be eliminated for grades of 2 percent or less.

3. Silt fence ditch check may be used on all ditches.
4. A straw bale ditch check or a silt fence ditch check may be used in lieu of a sediment basin for drainage areas less than two acres. The basin shall have a volume of 1,815 CF per acre of contributing drainage area.

B. Construction Requirements:

1. Construct rock ditch checks in accordance with the drawing detail.
   
   a. Achieve complete coverage of the ditch or swale and insure the center of the check is lower than the edges.

2. Construct straw bale ditch checks in accordance with the drawing detail.
3. Construct silt fence ditch checks in accordance with the drawing detail.

C. Maintenance:

1. Inspect ditch checks for sediment accumulation after each rainfall.
2. Sediment shall be removed when it reaches one-half of the original height.
   
   a. Regular inspections shall insure that the center of a rock check is lower than the edges. Correct erosion caused by high flows around the edges of the check immediately.

3.6 **TEMPORARY SEEDING AND MULCHING**

A. General

1. This item is applicable to all projects.
2. Seeding and/or mulching shall be a continuous operation on all cut slopes, fill slopes, and borrow pits during the construction process. All disturbed areas shall be seeded and mulched within five (5) working days after the last construction activity in all locations where necessary to eliminate erosion.

B. Construction Requirements:

1. Permanent seeding and mulching following temporary seeding will be performed during the favorable seeding seasons only.

2. Temporary seeding mixtures and planting season:

   a. December 1 to March 1: 50 lbs. oat grain per acre
   b. March 1 to December 1: 50 lbs. (cereal rye or wheat) per acre

3. Temporary mulch, fertilizer, and lime for seeding:

   a. Fertilizer and mulch for temporary seed mixtures shall be applied in accordance with Section 329219.
   b. Fertilizer shall be applied at the rate specified for permanent seeding.
   c. Lime will not be required for temporary seeding.

3.7 STRAW BALES

A. General

1. Install at the bottom of embankment slopes less than 10' high to divert runoff from sheet flow and intercept some of the sediment in the sheet flow.
2. Install as ditch checks in small ditches and drainage areas.
3. Install on the lower side of cleared areas to catch sediment from sheet flow.

B. Construction Requirements:

1. Bales of straw shall be utilized to control erosion, trap sediment, and divert runoff.
2. Bales must be adequately braced from behind.

3.8 SILT FENCE

A. General

1. Install along the toe of fills over 10' in height, along the right-of-way line, parallel to streams or around an inlet to prevent sediment from entering the pipe system.

B. General Requirements:

1. The Contractor shall install a temporary silt fence in locations shown on the drawings, around inlets that accept flows containing silt, and other locations necessary to prevent the discharge of silt from the site.
2. Installation shall conform to the detail at the end of this section.
3. Fence construction shall be adequate to handle the stress from hydraulic and sediment loading.

C. Installation

1. Geotextile at the bottom of the fence shall be buried as indicated on the detail.
2. The trench shall be backfilled and the soil compacted over the geotextile. The geotextile shall be spliced together as indicated on the detail.
3. Post Installation
   a. Post spacing shall not exceed 8' for wire support fence installation or 5' for self supported installations.
   b. Posts shall be driven a minimum of 24" into the ground. Where rock is encountered, posts shall be installed in a manner approved by the Engineer.
   c. Closer spacing, greater embedment depth and/or wider posts shall be used in low areas, soft, or swampy ground to ensure adequate resistance to applied loads.
4. When support fence is used, the mesh shall be fastened securely to the upstream side of the post.
   a. The mesh shall extend into the trench a minimum of 2" and extend a maximum of 36" above the original ground surface.
5. When self-supported fence is used, the geotextile shall be securely fastened to fence posts.
6. Maintenance
   a. The Contractor shall maintain the integrity of silt fences as long as they are necessary to contain sediment runoff.
   b. The Contractor shall inspect all temporary silt fences immediately after each rainfall and at least daily, during prolonged rainfall.
   c. The Contractor shall immediately correct deficiencies.
   d. The Contractor shall make a daily review of the location of silt fences in areas where construction activities have changed the natural contour and drainage runoff to ensure that the silt fences are properly located for effectiveness.
   e. Where a single fence is not adequate to handle the volume of silt or flows are not completely intercepted, additional silt fences shall be installed.
7. The Contractor shall remove and dispose of sediment deposits when the deposit approaches one-half the height of the fence.
8. The silt fence shall remain in place until the upstream surface is stabilized. Upon removal, the Contractor shall remove the silt fence, dispose of excess silt, and restore the disturbed area in accordance with Section 329219.

3.9 SEDIMENT REMOVAL

A. General

1. Sediment deposits shall be removed when:
a. The deposits reach approximately one-half the height of a ditch check, straw bale barrier or silt fence.
b. The sediments have reduced the ponded volume of sediment basins to one-third of the original volume.
c. Requested by the Engineer.

B. Sediment removed from erosion control features shall be deposited in a location where it will not erode into construction areas or watercourses.

END OF SECTION 312500
PART I GENERAL

1.1 SUMMARY
A. This section describes the following:
   1. Installation of geogrid for use with gravity retaining wall systems.
B. Related work specified elsewhere
   1. Section 01 33 00: Submittals.
   2. Section 31 10 00: Site Preparation.
   4. Section 32 32 16: Precast Concrete Retaining Walls.
   5. Section 32 32 23: Segmental Retaining Walls.

1.2 SUBMITTALS
A. General: Submit listed submittals in accordance with Division 1 requirements.
B. Product Data: Submit product data, including manufacturer's product sheet, for specified products.
C. Shop Drawings: Submit shop drawings showing layout, profile and product components, including anchorage, accessories, finish colors, patterns, and textures
D. Samples: Submit selection and verification samples for finishes, colors, and textures if requested.
E. Quality Assurance Submittals: Submit the following:
   1. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria, and physical requirements,
   2. Manufacturer's Instructions: Manufacturer's installation instructions.

1.3 QUALITY ASSURANCE
A. Qualifications:
   1. Installer Qualifications: Installer experienced in performing work who has specialized in installation of work similar to that required for this project,
   2. Manufacturer Qualifications: Manufacturer must be capable of providing field service representation during construction.
B. Pre-installation Meeting: Conduct pre-installation meeting to verify project requirements, substrate condition, manufacturer's installation instructions, and manufacturer's warranty requirements.

1.4 DELIVERY, STORAGE & HANDLING
A. General: Comply with Division 1.
B. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers, with identification label intact.
C. Storage and Protection: Store materials protected from exposure to harmful weather condition recommended by manufacturer.
PART 2 PRODUCTS

2.1 GEOGRID MATERIALS
   A. Manufacturer: Versa Lok Materials, Miragird, Synteen, Stratgrid, Huesker, or approved equal
      1. Design strength:
         a. LTDS=1800 plf (26.3 kN/m) Tal=1200 plf (17.5 kN/m)
      2. Products:
         a. Synteen SF35 by Synteen
         b. Miragrid 3XT by TC Mirafl
         c. Stratagrid 200 by Strata Systems
         d. 55/30-20 by Huesker Inc
         e. VERSA-Grid Soil Reinforcement

PART 3 EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS
   A. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation details and instructions, and product carton instructions for installation.

3.2 PREPARATION
   A. Verify substrate condition is acceptable for product installation in accordance with manufacturer's instructions.
   B. Surface Preparation: Prepare base leveling pad by removing vegetation and excavating base trench.

3.3 INSTALLATION
   A. Geogrid Installation:
      1. Excavate reinforced soil area. Cut, install and secure geogrid. Install next course of units.
      2. Place compacted backfill over geogrid in 8” lifts for segmental retaining walls.
         a. Geogrid to be installed at the top of each course, with the exception of the cap course and the course immediately below the cap course.
      3. Place compacted backfill over geogrid in 8” lifts for precast concrete retaining walls.
         a. Geogrid to be installed at the top of each precast course, with the exception of the cap course.
      4. Install additional courses of units over grid.
   B. Install caps. Apply manufacturer’s recommended construction adhesive on top of surface of last course before applying cap unit to create a mechanical bond.

3.4 CLEANING
   A. Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Prior to Owner’s acceptance, clean the installed products in accordance with manufacturer's instructions.

3.5 PROTECTION
   A. Protect installed product and finish surfaces from damage during construction.

END OF SECTION 320519.19
SECTION 321313 – CONCRETE PAVING

PART 1 - GENERAL

1.1 SUMMARY

A. This section describes the following:
   1. Construction of non-reinforced portland cement concrete pavement and sidewalks on prepared subgrade or subbase as shown on plans and specified herein.
   2. Non-reinforced portland cement pavement includes deformed tie bars and joints; see Standard Drawings.
   3. Thickness of portland cement concrete pavement as shown on plans.

B. Related work specified elsewhere:
   1. Section 01 33 00: Submittals.
   2. Section 03 30 00: Cast-in-Place Concrete.
   3. Section 31 10 00: Site Preparation.
   4. Section 21 23 23: Fill.

1.2 SUBMITTALS

A. Refer to Specification Section 03 30 00 for concrete submittal requirements and tests.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Concrete shall be in accordance with AASHTO M85 mix, modified as follows:
   1. Specific surface, fineness, for all Type I Portland cements shall not exceed 430 m2/kg using Air permeability test. Maximum fineness limits do not apply if the sum of C3S + 4.75C3A is less than or equal to 90.
   2. Type I (Portland Cement), 4,000 psi at 28 days, 3,000 psi at 7 days
   3. A Class 3 durability coarse aggregate shall be used.
   4. Entrained Air Content: 6.5% +/- 1.5%.
   5. Water Cement Ratio: 0.45
   6. Minimum 517 pounds of cement per cubic yard.

B. Admixtures:
   3. Calcium chloride may be used only with approval of Engineer.
   4. Other admixtures may be used subject to approval of Engineer in accordance with ASTM C494 or applicable standards.

C. Fine Aggregate:

   Passing 3/8-inch sieve  100
   Passing No. 4 sieve    95-100
   Passing No. 8 sieve    70-100
   Passing No. 16 sieve   45-90
   Passing No. 30 sieve   15-65
   Passing No. 50 sieve   5-30
   Passing No. 100 sieve  0-10
D. Coarse Aggregate:

- Passing 3/4-inch sieve: 100
- Passing 1/2-inch sieve: 70-100
- Passing 3/8-inch sieve: 30-70
- Passing No. 4 sieve: 0-20
- Passing No. 8 sieve: 0-6

E. Water: Clean and clear, free from salt, oil, acid, strong alkalis, vegetable matter, or other substances injurious to concrete; water may be heated for cold weather paving operations; anti-freezing agents not permitted.

F. Reinforcing Steel: Shall comply with Section 032000.
   1. Dowel bars shall be number four (1/2”), be 24” long and placed at 18” on center (O.C.).
   2. Dowel bar placement shall be at 40’ maximum spacing and at all connections to existing pavement. Dowel bars shall also be placed at end of day’s work.
   3. When placed into existing concrete, dowel bars shall be drilled and epoxied into place. Epoxy shall be suitable for pavement applications.

G. Metal expansion tubes: fabricated steel tubes; provide tubes with internal diameter 1/16" larger than dowel bar; bar stop capable of withstanding 20 lb. push, minimum.

H. Metal keyways: fabricated 24 gauge sheet steel; provide lengths in multiples of tie bar spacing; punch to receive tie bars.

I. Supports for reinforcing steel:
   1. Support tie bars as required to place and maintain correct location during construction.
   2. Welded wire fabric supports: heavy gauge wire, welded or bent to form 4-legged chair; use only with permission of Engineer.
   3. Support dowel bars at expansion and contraction joints.

J. Joint Filler: Preformed expansion joint filler: asphalt saturated fiber strips; AASHTO M213; furnish in strips of plan dimensions.

K. Concrete pavement joint sealer:
   1. Joint filler shall be gray in color and for concrete pavement.
   2. Backer rope: cellulose, cotton or plastic foam suitable for use with hot-poured sealer; size and compression such that it maintains position during filling operation.

L. Sidewalk joint sealer:
   1. Joint sealer: gray, one-component, non-priming, self-leveling, pour grade, polyurethane joint sealer; ASTM C920-79, Type S, Grade P, Class 25 or FS TT-5-00230C, Type 1, Class A; Use in sidewalk joints adjacent to buildings and curb and gutter.

M. Liquid curing compound:
   1. liquid membrane-forming curing compounds shall be in accordance with ASTM C 309.
   2. After the free water has left the pavement surface, the entire surface shall be sealed by spraying with a uniform application of white pigmented membrane curing material.
The contractor shall provide satisfactory equipment to ensure uniform mixture and coverage of curing material, without loss, on the pavement at the rate of not less than one gallon for each 200 square feet. If rain falls on the newly coated pavement before the film has dried sufficiently to resist damage, or if the film is damaged in any other way, the contractor shall apply additional curing material to the affected portions. All areas cut by finishing tools subsequent to the application of the curing material shall immediately be given new applications at the rate specified above.

N. Plastic film: Polyethylene sheeting for curing Portland cement concrete shall be white and shall be in accordance with ASTM C 171.

O. Fly ash: not acceptable for use after October 15 or prior to March 15.

P. Burlap: AASHTO M182, Class 3.

2.2 STORAGE AND PROTECTION OF MATERIALS

A. All materials shall be stored at a certified ready-mix facility.

2.3 QUALITY CONTROL

A. Tests on trial batches and concrete placed at project site:
   1. Slump: 4”
   2. Air Entrainment: 6.5% +/- 1.5%
   3. Minimum compressive strength: ASTM C39; 3,000 psi when tested at 7 days and 4,000 psi when tested at 28 days. For Type II (high early), 3,000 psi at 3 days.
   4. Quantity of compression cylinders as specified in Section 03300 - Cast-in-Place Concrete; cast, protect and cure cylinders in accordance with ASTM C31; all concrete testing performed by ACI certified field testing technician per ASTM C94, Section 14.
   5. Unit weight of fresh concrete.

2.4 MIXING

A. Mix at batch plant, deliver to site in trucks with continuous mix.

PART 3 - EXECUTION

3.1 SUBGRADE PREPARATION

A. Prepare subgrade or subbase as specified in Section 311000 – Site Preparation

3.2 PAVEMENT CONSTRUCTION

A. Setting and removing forms:
   1. Forms shall be sufficiently supported to avoid displacement during paving operations. Both straight and curved forms shall be supported in such position that the face of the form shall be vertical on tangents and perpendicular to the superelevated section on curves. The top of the form shall not vary more than 1/8 inch from the true grade line during placing, compacting and finishing operations. The form alignment shall not vary more than 1/4 inch from the true alignment.
   2. Forms shall be removed carefully to avoid damage to the concrete base or pavement. Honeycombed areas not rejected shall be immediately repaired. If the forms are removed less than 72 hours after placing concrete, the sides of the concrete shall be
cured by one of the methods specified above. Any trench excavated for the forms shall be entirely backfilled so water will not stand next to the concrete base or pavement.

B. Finishing: concrete shall be leveled with a bullfloat or scraping with a straightedge. The surface should be finished no more than necessary to remove irregularities. All edges, tooled joints and isolation joint should be rounded with the appropriate tools. As soon as the finished concrete has set sufficiently to maintain a texture, the surface shall be broomed to develop a skid-resistant surface and uniform appearance.

C. Construct joints as shown on Drawings; seal as specified hereinafter.
   1. Round edges of concrete adjacent to header boards and expansion joint material to 1/8" radius.

D. Seal all joints before pavement is opened to Contractor's forces or general traffic; seal only dry and clean joint surfaces; slightly under-fill joints, keep sealer off of adjacent pavement.
   1. Heat joint sealer to required temperature in thermostatically controlled heating kettle approved by Engineer; do not overheat.

3.3 CURING AND PROTECTION

A. Apply liquid curing compound in fine spray to form continuous, uniform film on surface and vertical edges of pavement and curbs.

B. Concrete pavement less than 36 hours old shall be protected during cold weather as follows:
   1. Use of insulated blankets to keep uncured concrete from freezing.

C. Concrete damaged by excessive scaling, popouts, shrinkage cracks, rain or freezing shall be removed and replaced at Contractor's expense.

3.4 RESTRICTIONS

A. Weather:
   1. Place no concrete when existing or forthcoming stormy or inclement weather prevents good workmanship, when subgrade is frozen or if air temperature is 38°F or below and falling; use no aggregates containing frozen lumps.
   2. With favorable weather conditions, start paving operations when temperature of concrete delivered to subgrade is 40°F or higher.
   3. Continue paving operations as long as concrete temperature requirement is met and air temperature remains above 38°F.

B. Night Operation: only upon authorization by facility.

C. Use of pavement:
   1. Time for pavement for use will be determined by results of tests on cylinders taken during concrete placement.
   2. Pavement may be opened to Contractor's forces after 7 days for purpose of removing coverings and building shoulders if tests of cylinders from section show compressive strength of 3,000 psi or higher.
   3. Open pavement to general traffic when authorized by Engineer.
Concrete placed in cold weather may require additional curing time, as directed by Engineer; keep all vehicles off pavement until such curing time has been completed.

3.5 DEFECTS

A. Pavement containing fractures, spalls, random cracks, significant popouts or shrinkage cracks, or other unacceptable defects: remove and replace at no cost to Owner; rout and seal all random cracks which develop prior to project completion.

END OF SECTION 321313
SECTION 321500 – AGGREGATE BASE COURSE

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes:
   1. This section consists of furnishing, hauling, placing, compacting, and shaping to
      obtain desired cross-section and profile for crushed stone base and surface course
      for parking areas and for crushed stone surfaced roadways and driveways.

B. Related Sections:
   1. Section 31 10 00 – Site Preparation

1.2 SUBMITTALS

A. Submit certification that aggregate source is approved by Engineer for material specified.

B. Submit in accordance with Section 013300 – Submittals.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Aggregate for Gravel Surfacing Base Course: aggregate for base shall consist of crushed
   stone, sand and gravel or reclaimed asphalt or concrete. The aggregate shall not contain
   more than 15 percent deleterious rock and shale. The fraction passing the No. 40 sieve shall
   have a plasticity index not to exceed six. Any sand, silt and clay, and any deleterious rock
   and shale shall be uniformly distributed throughout the material.

Gradation:

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<tr>
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PART 3 – EXECUTION

3.1 PREPARATION

A. Subgrade preparation shall be prepared in accordance with these specifications and be to
   95% Standard Proctor density.

3.2 EQUIPMENT

A. Compaction Equipment:
   1. Be of such design that operation shall not disturb subgrade or subbase.
   2. Equipment may be used provided it is demonstrated that they will consistently
      produce specified density and gradation.
   3. Compaction equipment known as sheep-foot rollers shall not be used to compact
      base or surface material.
B. Equipment for Applying Water: equipment shall be capable of uniformly spreading water without creating ponding.

C. Proportioning Equipment: When base material is composed of more than one aggregate, proportioning equipment shall include system of calibrated gates.

D. Spreading Equipment: Capable of uniformly spreading base material to required thickness.

3.3 CONSTRUCTION

A. Construct crushed stone base on prepared subgrade or subbase in accordance with following requirements.

1. Delivery of Base Material:
   a. Pre-wet aggregate before delivery of aggregate to subbase.
   b. Engineer may control rate of delivery of aggregate to reduce time aggregate will remain on subbase in uncompacted condition to practical minimum.

2. Moisture Content:
   a. At time base material is delivered to subbase, water shall be uniformly distributed throughout material so that all particles are uniformly wetted.
   b. Amount of water shall be within 2.0 percentage points of amount determined as field optimum to produce maximum density, together with stability with field compaction procedure. Moisture content will usually be 85 to 90 percent of optimum.
   c. Maintain moisture content in aggregate until compaction of base has been completed.

3. Spreading Aggregate:
   a. Spread wetted base and surface material to width and depth that base will conform to desired profile and cross-section. Compacted thickness shall be a minimum 9 inches for base material and a minimum 6 inches for surface material with a total combined thickness of 15 inches.
   b. Maximum compacted thickness of material that may be spread for compaction as single course will be limited to that which will be uniformly and satisfactorily compacted for full depth of such course by compaction equipment employed.
   c. Spread so that uniformity of base and surface material and its moisture content is maintained. When spreader does not spread to full design width in one operation, Engineer may require special handling of center joint to avoid segregation. Special handling may include motor patrol cut of joint after initial compaction, followed by spreading cut material in path of second spreading operation.
   d. Contractor shall be responsible for obtaining designated thickness and for application rates. Any course determined to be deficient in thickness may be corrected by increased thickness of subsequent lift of course; however, thickness of course of 1/2 or 3/8 in. mixture size shall not be increased by more than 1/4 in. to correct deficiency.

4. Compaction:
   a. Promptly after material has been spread, thoroughly and uniformly compact to not less than 95 percent of maximum density (Standard Proctor Test).
5. Aggregate Base Under Existing Pavement to be Replaced (subbase):
   a. In areas where the existing pavement is to be replaced and the grade is altered, the difference shall be adjusted by the installation of additional aggregate base. This base material shall be compacted to a minimum of 95 percent of maximum density (Standard Proctor Test).

B. On areas of pavement removal and replacement where the base has failed:
   a. Upon the determination of the field inspector, the base has failed, the contractor shall remove the base and replace with a minimum of 6” of new base material. This base material shall be compacted to a minimum of 95 percent of maximum density (Standard Proctor Test). Prior to installation of the new base, the subgrade shall be compacted to a minimum of 95 percent of maximum density (Standard Proctor Test).

END OF SECTION 321500
SECTION 321623 - SIDEWALKS

PART 1 - GENERAL

1.1 QUALITY ASSURANCE

A. Certification shall be provided by producer that Portland cement concrete furnished is in accordance with design mix specifications.

B. Reference Standards:
   1. American Association of State Highway and Transportation Officials (AASHTO):
      a. AASHTO M213-81 - Preformed Expansion Fillers for Concrete Paving and Structural Construction.
      b. AASHTO M153-70 - Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Considerations.
      c. AASHTO M148-82 - Liquid Membrane-Forming Compounds for Curing Concrete.

1.2 SUBMITTALS

A. Submit in accordance with Section 013300 – Submittals Certification

PART 2 - PRODUCTS

2.1 MATERIALS

A. Concrete: Comply with Section 033000.

B. Expansion Joint Filler: Grey joint filler

PART 3 - EXECUTION

3.1 PREPARATION

A. Moisten subgrade prior to placing concrete.

3.2 FORMING

A. Wood or metal, straight and sufficient length to resist springing, tipping or other displacement during process of depositing and consolidating concrete.

B. Full depth of sidewalk 4 inch minimum or as shown on plans.

C. Secure, stake, brace, and hold firmly to required line and grade, and sufficiently tight to prevent leakage of mortar.

D. Clean and oil forms before placing concrete.
3.3 REINFORCING

A. All sidewalks to be reinforced with ASTM C1116-89 4.1.3 Type III polypropylene fibers to concrete mix in ready-mix truck or stationary mixer at a rate of 1.5 pounds per cubic yard of concrete. Mix glass fibers with concrete mix for a minimum of 5 minutes. Fibers shall not be floated to surface, final surface shall be able to be broom finished.

B. 4x4 welded wire fabric may be used provided it is placed on chairs to the mid-point of the sidewalk thickness.

3.4 INSTALLATION

A. Forms shall be checked by Engineer before concrete is placed.

B. Consolidate and spade sufficiently to bring mortar to surface. Strike off and float with wooden float.

C. Steel trowel and brush surface before mortar is set.

D. Before giving concrete final finish, check surface with 10-ft. straightedge. Correct variations in surface of more than 1 inch by adding or removing concrete while concrete is still plastic.

E. Round edges of sidewalks along forms and joints with edger of 1/4 in. radius.

3.5 JOINTS

A. Contraction Joints:

1. Slot or groove at least 1-1/2 inches deep and 1/4 inch wide formed by inserting metal parting strip in concrete after it has been stuck off and consolidated and while concrete will retain its shape and finish joint edge.

   a. When approved by Engineer, contraction joint may be sawed. Saw joint at least 1-1/2 inches deep and 1/8 inch wide. Saw as soon as practicable after concrete has set sufficiently to preclude raveling during sawing and before any shrinkage cracking takes place in concrete.

2. Construct transverse joints at right angles to centerline of sidewalk and longitudinal joints parallel to sidewalk centerline.

3. Divide sidewalk into sections with contraction joints. Spacing shall be 4 feet as indicated on the plans or approved by the Engineer.

4. On slabs constructed in partial widths, place transverse joints in line with like joints in previously constructed slabs.

B. Expansion Joints:

1. Place 1 in. expansion joint filler between sidewalk and building or other rigid structure.

2. Extend expansion joint filler full depth of sidewalk with top slightly below finished surface of sidewalk.
3. On long lengths of sidewalk, 3/4 inch expansion joints shall be placed at minimum of 50-ft intervals.

C. Sidewalk Joint Sealer:

1. Joint sealer: gray, one-component, non-priming, self-leveling, pour grade, polyurethane joint sealer; ASTM C920-79, Type S, Grade P, Class 25 or FS TT-5-00230C, Type 1, Class A. Use in sidewalk joints adjacent to buildings and curb and gutter.

3.6 PROTECTION AND CURING

A. Erect and maintain suitable barricades as may be necessary to exclude traffic from newly constructed sidewalk. Sidewalk damaged by traffic or otherwise damaged prior to acceptance shall be repaired or replaced at expense of Contractor.

B. After finishing, concrete shall be cured and protected utilizing curing compound in Section 321313.

END OF SECTION 321623
SECTION 321723 – PAVEMENT MARKINGS

PART 1 - GENERAL

1.1 SECTION INCLUDES
A. Section includes painting pavement marking of all types.
B. Drawings and General Provisions of Contract, including General and Special Conditions, apply to this section.

1.2 WORK INCLUDED
A. Cleaning and preparation of surfaces to receive paint striping with a high pressure water sprayer. Only the surfaces for striping require cleaning.
B. Painting in parking lines, safety zones, handicap zones, loading zones, no parking zones, in parking lots indicated on drawings.
C. Protecting adjacent surfaces from paint drips, spatters and over spray
D. Protect wet paint from vehicular and pedestrian traffic.

1.3 SUBMITTALS
A. Section 013300 - Submittal Procedures: Submittal procedures.
B. Product Data: Submit data on paint.

PART 2 - PRODUCTS

2.1 PAINT
A. Temporary striping shall not be required.
B. Paint shall be manufactured by Pratt and Lambert, Glidden, Cook, Sherwin-Williams, Pittsburgh, Benjamin Moore, or approved equal
C. Epoxy pavement marking material shall not contain toxic heavy metals. The material shall be two-component, 100 percent solids and formulated and tested to perform as a pavement marking material with glass beads applied to the surface. The two components shall be epoxy resin and an amine curing agent.
D. The pavement marking material shall have a high degree of adhesion to the concrete surface such that there is a 100 percent concrete failure when tested in accordance with ACI 503, Appendix A.1. The prepared specimens shall have a film thickness of 15 ± 1 mil and shall be applied to concrete with a minimum compressive strength of 4,000 psi. The concrete surface shall be 90 ± 2 F when the material is applied. The applied material shall be cured for 72 hours at 75 ± 2 before performing the test.
E. Paint type must be compatible with the surfaces to be painted.

2.2 COLORS
A. The Owners Representative will select color and finish from Contractor's submittal. Paint shall be applied per the following color code:
   1. White: Parking space lines, stop bars, curbs, cross walks, and directional arrows
   2. Yellow: Loading zones, safety zones, no parking zones, curbs, and median edges
   3. Blue: Accessible parking lines and symbols (American’s with Disability Act – ADA)
   4. Red: Fire Lanes
2.3 MATERIALS
   A. Materials shall include standard commercial grade masking materials, scrapers, cleaning solvents, and other materials required for the work.
   B. Use only materials specified by manufacturer's direction label on container.

2.4 DELIVERY AND STORAGE
   A. Deliver materials to the site in original containers with seals unbroken and labels intact.
   B. Protect all paint from freezing.
   C. Do not allow paint to settle, cake, or thicken in the container. Readily stir with a paddle to a smooth consistency.
   D. Paint shall arrive on the job color-mixed except for tinting of undercoats and possible thinning.
   E. The Contractor shall insure that all colors match the color selected by the Engineer prior to application.

PART 3 - EXECUTION

3.1 PROTECTION
   A. Prior to beginning cleaning or painting operations, Contractor shall protect all items or surfaces not included in area to be painted. Protect vehicles, equipment, structures, or other items from paint spatters, over spray, or damage.
   B. Contractor shall provide fencing, barricades, signage, and other devices to protect all painted areas from pedestrian and vehicular traffic until achieving sufficient drying time.

3.2 JOB CONDITIONS
   A. Do painting immediately after final surfacing as practical unless instructed otherwise by the Engineer.
   B. Adequate illumination shall be available.
   C. Carefully examine surfaces to receive paint for defects, which might prevent satisfactory striping results.
      1. Do not paint over rust, scale, grease, oil, fuel, dust, moisture, or conditions otherwise detrimental to paint adhesion.
      2. Remove grease, oil, or fuel on any surface before painting.
      3. Correct all surface defects before painting.
   D. Contractor shall examine areas to be painted. Notify the Engineer in writing of conditions that might delay timely completion of the work.

3.3 WEATHER CONDITIONS
   A. Painting shall not be performed when the ambient temperature is less than 55°F., while the surface is damp, or in rainy.
   B. The surface must be five degrees or more above the dew point temperature during painting operations and while paint is drying.
   C. Avoid painting surfaces exposed to direct sunlight.

3.4 APPLICATION
   A. The material shall have a no-track time of 10 minutes or less, when mixed in the proper proportions and applied at a 25-mil wet film thickness at 75 ± 2 F with the proper application of glass beads and when tested in accordance with ASTM D 711. The material shall fully
cure under a constant surface temperature of 32 F or above shall receive one coat of paint not less than 25 mils thickness.

1. In locations requiring multiple coats, prior coat shall be dry to manufacturer's recommendations before applying succeeding coat.

B. Finished work shall be uniform, of approved color, free of runs, drips, defective brushing, spraying, and clogging.
   1. Parking lines and symbols shall be neat and well defined.
   2. Only skilled applicators shall apply paint.
   3. Engineer shall approve application techniques.

3.5 QUALITY CONTROL

A. Remove paint splatter from adjacent areas or areas not designated to receive paint.

B. Contractor shall repair or touch up any surfaces if exposed to vehicular and pedestrian traffic, to the satisfaction of the Engineer, at no additional cost to the Owner.

C. When color, dirt, stains, existing paint, etc., show through the final coat, repaint the surface until the film is uniform in finish, coverage, color, and appearance.

END OF SECTION 321723
PART 1 GENERAL

1.1 SUMMARY
A. This section describes the following:
   1. Construction of precast concrete gravity retaining wall systems.
B. Related work specified elsewhere
   1. Section 01 33 00: Submittals.
   2. Section 31 10 00: Site Preparation.
   3. Section 31 23 23: Fill
   4. Section 32 05 19.19: Geogrid for Exterior Improvements

1.2 REFERENCES
A. Precast Modular Block Units:
   1. ASTM C-33 Specification for Concrete Aggregates
   2. ASTM C-39 Test Method for Compressive Strength of Cylindrical Concrete Specimens
   3. ASTM C-94 Specification for Ready-Mixed Concrete
   4. ASTM C-138 Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
   5. ASTM C-143 Test Method for Slump of Hydraulic-Cement Concrete
   6. ASTM C-260 Specification for Air-Entraining Admixtures for Concrete
   7. ASTM C-494 Specification for Chemical Admixtures for Concrete
   8. ASTM C1611 Test Method for Slump Flow of Self-Consolidating Concrete
   9. ASTM C-1776 Standard Specification for Wet-Cast Precast Modular Block Retaining Wall Units

1.3 SUBMITTALS
A. General: Submit listed submittals in accordance with Division 1 requirements.
B. Product Data: Submit product data, including manufacturer's product sheet, for specified products.
C. Shop Drawings: Submit shop drawings showing layout, profile and product components, including anchorage, accessories, finish colors, patterns, and textures
D. Samples: Submit selection and verification samples for finishes, colors, and textures if requested.
E. Quality Assurance Submittals: Submit the following:
   1. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria, and physical requirements,
   2. Manufacturer's Instructions: Manufacturer's installation instructions.

1.4 QUALITY ASSURANCE
A. Qualifications:
   1. Installer Qualifications: Installer experienced in performing work who has specialized in installation of work similar to that required for this project,
   2. Manufacturer Qualifications: Manufacturer must be capable of providing field service representation during construction.
B. Pre-installation Meeting: Conduct pre-installation meeting to verify project requirements, substrate condition, manufacturer's installation instructions, and manufacturer's warranty requirements.

1.5 DELIVERY, STORAGE & HANDLING

A. General: Comply with Division 1.

B. Delivery: Deliver materials in manufacturer’s original, unopened, undamaged containers, with identification label intact.

C. Storage and Protection: Store materials protected from exposure to harmful weather condition recommended by manufacturer.

PART 2 PRODUCTS

2.1 RETAINING WALL MATERIALS

A. The block unit shall consist of concrete with the average 28-day compressive strength of no less than 4000 psi.

B. Concrete shall have air entrainment by volume (as measured in the plastic state in accordance with ASTM C172) of:
   1. 5.5 – 8.5 percent, or
   2. In conformity with ASTM C94, latest revision.

C. Dimensions as shown on the plans

D. Finish as shown on the plans.

E. Manufacturer: Keystone, Versa Lok Retaining Wall Systems, Inc., Anchor Retaining Wall Systems, or approved equal

F. Color: To be selected by the Owner from the manufacturer’s color chart

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify locations of utilities and existing structures prior to excavation.

B. Examine the Project site and evaluate conditions where the retaining wall will be constructed. Notify the proper supervising authority in writing of any conditions that may interfere with the proper construction of the wall or delay completion.

C. Promptly notify the wall design engineer of site conditions which may affect wall performance, soil conditions observed other than those assumed, or other conditions that may require a reevaluation of the wall design.

3.2 EXCAVATION

A. Contractor shall excavate to the lines and grades shown on the construction drawings. The contractor shall be careful not to disturb the base beyond the lines indicated.

B. Foundation soils shall be excavated as required for footing base / leveling pad dimensions shown on the construction drawings, or as directed by the wall engineer.

C. Over-excavated areas shall be filled with suitable base or backfill material and compacted to 95 percent standard proctor.
3.3 FOUNDATION SOILS PREPARATION
A. Foundation soils shall be evaluated by a Geotechnical Engineer or Owners Representative to ensure that the bearing soils meet or exceed the design conditions or assumptions.
B. Compact foundation soil zone to 95 percent standard proctor prior to installing base / leveling pad.

3.4 BASE / LEVELING PAD
A. Base shall be located as indicated on the Construction Drawings and shall have a minimum thickness of 6-inches. Base materials are to be as specified by the wall engineer (generally crushed stone, 3/4-inch minus, or similar).
B. Width of the base pad must extend a minimum of 6-inches in front and 6-inches in back of the Base Block footprint.
C. Base material shall be compacted so as to provide a smooth, hard surface on which to place the first course of units.
D. Compact base material to 95 percent of standard proctor.
E. Base shall be prepared to ensure full contact of the wall unit with base material. Spacing or gaps between units shall no exceed 1/2-inch.
F. Contractor may elect to substitute a portion of the specified granular base materials with a lean, unreinforced concrete topping.
G. When a reinforced footing is required by the Construction Drawings, it shall be located below the frost line.

3.5 UNIT INSTALLATION
A. First course of units shall be Base Block units and shall be placed in full contact with the base material.
B. Check units for level from side-to-side, front to back, and check to maintain unit batter front-to-back.
C. Place unit faces in contact side to side and avoid any gaps greater than 1/2-inch.
D. Fill and compact fill to grade in front of embedded units prior to compaction behind the wall units.
E. Fill voids between units with 3/4-inch clean crushed rock to a distance of one foot behind the unit depth unless otherwise instructed in the Construction Drawings.
F. Sweep and clean the top of each course before setting additional courses.
G. Lay each successive course making sure that the bottom recess is in full contact with the unit locators of the course below. Pull unit forward as far as possible. Backfill and compact soil behind the units.
H. Check and maintain level and wall batter by use of shims when necessary.
I. Handle units with proper lifting devices that have been certified for the loads associated with the weights of the units. Avoid applying forces to the lifting loops in excess of the normal force associated with the weight of the unit (i.e., avoid dynamic loads from bouncing or swinging of a unit). If the unit is to be transported over a significant distance in the field, it is recommended that a CABLE be used in lieu of a chain.

3.6 MANUFACTURER'S INSTRUCTIONS
A. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation details and instructions, and product carton instructions for installation.
3.7 GEOGRID INSTALLATION
   A. Excavate reinforced soil area. Cut, install and secure geogrid. Install next course of units.
   B. Place compacted backfill over geogrid in 8” lifts.
   C. Install additional courses of units over grid.

3.8 FIELD QUALITY REQUIREMENTS
   A. Contractor shall be responsible for proper installation and quality control of all wall components and appurtenant materials.
   B. Quality Assurance should include foundation soil inspection, frequent backfill compaction testing, verification of geotechnical design parameters and compliance with Construction Drawings and Project Specifications.

3.9 SITE TOLERANCES
   A. Straight walls
   B. Vertical Alignment: +/- 1.5-inches over any 12-feet distance and no more than +/- 3-inches over the entire length of wall.
   C. Horizontal Alignment Control:
   D. Corners and radius location: +/- 1-foot to theoretical location indicated on the Grading Plan.
   E. Radii: +/- 2-feet from theoretical lines indicated on the Grading Plan.
   F. Wall Batter at Completion of Work: +/- 2-degrees from the design batter and no batter less than 2-degrees.

3.10 CLEANING
   A. After completion of wall installation, remove construction debris and restore any adjacent finished areas affected by wall construction to their pre-construction state.
   B. Wash wall face to remove soiling and stains. Do not use acid or detergents that may “burn” or discolor face.

3.11 PROTECTION
   A. Protect installed product and finish surfaces from damage during construction,

END OF SECTION 323216
PART 1 GENERAL

1.1 SUMMARY
A. This section describes the following:
   1. Construction of segmental gravity retaining wall systems.
B. Related work specified elsewhere
   1. Section 01 33 00: Submittals.
   2. Section 31 10 00: Site Preparation.
   3. Section 31 23 23: Fill

1.2 SUBMITTALS
A. General: Submit listed submittals in accordance with Division 1 requirements.
B. Product Data: Submit product data, including manufacturer's product sheet, for specified products.
C. Shop Drawings: Submit shop drawings showing layout, profile and product components, including anchorage, accessories, finish colors, patterns, and textures
D. Samples: Submit selection and verification samples for finishes, colors, and textures if requested.
E. Quality Assurance Submittals: Submit the following:
   1. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria, and physical requirements,
   2. Manufacturer's Instructions: Manufacturer's installation instructions.

1.3 QUALITY ASSURANCE
A. Qualifications:
   1. Installer Qualifications: Installer experienced in performing work who has specialized in installation of work similar to that required for this project.
   2. Manufacturer Qualifications: Manufacturer must be capable of providing field service representation during construction.
B. Pre-installation Meeting: Conduct pre-installation meeting to verify project requirements, substrate condition, manufacturer's installation instructions, and manufacturer's warranty requirements.

1.4 DELIVERY, STORAGE & HANDLING
A. General: Comply with Division 1.
B. Delivery: Deliver materials in manufacturer’s original, unopened, undamaged containers, with identification label intact.
C. Storage and Protection: Store materials protected from exposure to harmful weather condition recommended by manufacturer.
PART 2 PRODUCTS

2.1 RETAINING WALL MATERIALS

A. Manufacturer: Keystone, Versa Lok Retaining Wall Systems, Inc., Anchor Retaining Wall Systems, or approved equal

B. Blocks:
   1. Keystone Materials:
      a. Standard: 8” high x 18” wide x 21” deep with exposed face area 1-sf and weight of 105-lb
      b. Cap: 4” high x 18” wide x 10½” deep with exposed face area 1/2-sf and weight of 45-lb
      c. Fiberglass pins shall be ½” x 5 ¼” with flexural strength of 128,000-psi, tensile strength of 110,000-psi, and short beam shear strength 6,400-psi

   2. Versa Lok Materials:
      a. Standard: 6” high x 16” wide x 12” deep with exposed face area 2/3-sf and weight of 82-lb
         – Split faced
      b. Cap: 3-5/8” high x 12” or 14” wide x 12” deep and weight of 40 or 50-lb
      c. Fiberglass pins shall be 0.48” x 6.8” glass-reinforced nylon made for the expressed use with the SRW units supplied

   3. Anchor Retaining Wall Systems:
      a. Standard: 8” high x 18” wide x 12” deep, with exposed face area 1-sf and weight of 77 lbs.
      b. Cap: 4” high x 18” wide X 12” deep, with and weight of 47 lbs.
      c. No pins required.

C. Color: To be selected by the Owner from the manufacturer’s color chart

PART 3 EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

A. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation details and instructions, and product carton instructions for installation.

3.2 PREPARATION

A. Verify substrate condition is acceptable for product installation in accordance with manufacturer's instructions.

B. Surface Preparation: Prepare base leveling pad by removing vegetation and excavating base trench.

3.3 INSTALLATION

A. Retaining Wall Installation:
   1. Install base course with sides of units touching. Ensure level front to back and side to side.
   2. Insert interlocking fiberglass pins into the paired holes in each unit (if required). Minimum radius for convex or concave curves is 3’ 6”.
3. Install and compact backfill. Fill all voids in and between units using clean, ½” to ¾” crushed stone. Place drain zone behind units to provide a total of 2’ deep (from face of unit) drainage zone.


B. Geogrid Installation (include if noted on the drawings or required by the manufacturer’s representative):
   1. Excavate reinforced soil area. Cut, install and secure geogrid. Install next course of units.
   2. Place compacted backfill over geogrid in 8” lifts.
   3. Install additional courses of units over grid.

C. Install caps. Apply manufacturer’s recommended construction adhesive on top of surface of last course before applying cap unit to create a mechanical bond.

3.4 FIELD QUALITY REQUIREMENTS

A. Manufacturer Field Services: Upon Owner's request, provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with manufacturer's instructions.

3.5 CLEANING

A. Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Prior to Owner’s acceptance, clean the installed products in accordance with manufacturer's instructions.

3.6 PROTECTION

A. Protect installed product and finish surfaces from damage during construction,

END OF SECTION 32 32 23
SECTION 329219-SEEDING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division Specification sections, and the Approved DNR Land Disturbance Permit, apply to the Work specified in this Section. The approved land disturbance permit is included in the Appendix of these Specifications.

1.2 DESCRIPTION OF WORK

A. Furnish all materials, labor, equipment and services necessary to perform all Work.

B. Work included in this Section includes clearing of weeds, seed bed preparation, installation of seeding operations required for seeding of all disturbed areas of the project that are not to be paved.

1.3 SPECIFICATIONS AND STANDARDS


1.4 SUBMITTALS

A. Section 013300 - Submittal Procedures: Submittal procedures.

B. Product Data: Submit data on seed to be sown.

PART 2 - PRODUCTS

2.1 SEED

A. All seed shall be furnished in sealed, standard containers, unless otherwise approved. Seed which has become wet, moldy, or otherwise damaged will not be acceptable.

B. Each container of seed shall be fully labeled in accordance with the Federal Seed Act and seed certifications.

C. Seed shall be Fescue, 97 percent pure live seed

D. Tags for seed shall show type furnished. Upon acceptance of the seeded areas, a final check of total quantities of seed used will be made against total area seeded and if minimum rates of application or specified quantities have not been met, the Engineer will require distribution of additional quantities of these materials to make up minimum application specified.

2.2 FERTILIZER

A. Fertilizer shall be uniform in composition, free-flowing, suitable for application with approved equipment and delivered to the site unopened in original containers each bearing the
manufacturer’s guaranteed analysis and in conformity with state fertilizer laws. Fertilizer shall contain the following minimum percentage of plant food by weight.

1. 12 percent available nitrogen
2. 12 percent available phosphoric acid
3. 12 percent available potash

B. Fertilizer application rates shall be 600 pounds per acre.

C. Fertilizer shall show grade furnished. Upon acceptance of the seeded areas, a final check of total quantities of fertilizer used will be made against total area seeded and if minimum rates of application or specified quantities have not been met, the Engineer will require distribution of additional quantities of these materials to make up minimum application specified.

PART 3 - EXECUTION

3.1 GROUND PREPARATION

A. General: the ground areas are to be seeded and fertilized installation of seeding operations required for seeding of all disturbed areas of the project that are not to be paved. Equipment necessary for the proper preparation of the ground surface and for handling and placing all required materials shall be on hand, in good condition and shall be approved before the Work is started.

B. Clearing: Prior to tillage, seeding or other specified operations, all vegetation which might interfere with the indicated treatment of the areas shall be mowed, grubbed, raked and the debris removed from the site. Prior to or during grading and tillage operations, the ground surface shall be cleared of materials which might hinder final operations. Areas which have been disturbed shall be finish graded.

C. Tillage: After the areas required to be seeded have been brought to the finish grades as specified, they shall be thoroughly tilled to a depth of at least 6 inches by plowing, disk ing, harrowing or other approved methods until the condition of the soil is acceptable to the Engineer. Work shall be performed only during period when beneficial results are likely to be obtained. When conditions are such by reason of drought, excessive moisture, or other factors that satisfactory results are not likely to be obtained, Work shall be stopped. Work shall be resumed only when desired results are likely to be obtained.

D. Leveling: Any undulations or irregularities in the surface resulting from tillage, fertilizing or other operations shall be leveled with a float drag before seeding operations are begun.

E. Fertilizing: Fertilizer shall be distributed uniformly at the 13.77 pounds per 1,000 square feet over the areas to be seeded and shall be incorporated into the soil to a depth of at least 3 to 4 inches by disk ing, harrowing or other approved methods. The incorporation of fertilizer may be a part of the tillage operation hereinbefore specified. Distribution by means of an approved seed drill equipped to sow seed and distribute fertilizer at the same time will not be accepted. Fertilizer shall be incorporated into the soil a minimum of 10 days before seed is planted.

F. Inspection: A minimum of 48 hours prior notice must be given to the Construction Administrator before fertilizing may commence.

G. Planting Time: All seeding Work shall be done between the dates of March 15 to May 15 for spring planting and from August 15 to October 31 for fall planting except as otherwise directed in writing by the Construction Administrator.
H. Planting Condition: No planting shall be done until a permanent source of water is available at the site for use by the Owner.

3.2 SEEDING

A. General: Prior to seeding, any previously prepared seedbed areas compacted or damaged by interim rains, traffic, or other cause shall be reworked to restore the ground condition previously specified. Seed shall be planted by drill seeding.

B. Drill Seeding: Seed shall be uniformly drilled to an average depth of ½ inch and at the rate of 8 pounds per 1,000 square feet using equipment having drills not more than 6 ½ inches apart. Row markers shall be used with the drill seeder.

C. Rolling: Immediately after seeding, except for slopes 3 horizontal to 1 vertical and greater, the entire area shall be firmed with a roller not exceeding 90 pounds for each foot of roller width. Do not roll areas seeded with seed drills equipped with rollers.

D. Inspection: A minimum of 48 hours prior notice must be given to the Construction Administrator before seeding may commence.

3.3 MAINTENANCE

A. General: The project areas shall be kept clean at all times and care shall be taken that use of the premises shall not be unduly hampered by Work herein specified. The intent of this Section is to ensure a healthy, well-established turf, and prevent soil erosion in compliance with the Land Disturbance Permit issued by the Missouri Department of Natural Resources. The approved land disturbance permit is included in the Appendix of these Specifications.

B. Responsibility: The Owner shall be responsible for maintenance of all seeded areas upon completion of seeding and general acceptance by the Construction Administrator.

C. Damage: Damage to seeded areas during the project shall be repaired by the persons responsible for causing such damage.

3.4 GENERAL ACCEPTANCE

A. The Construction Administrator shall make an inspection of the seeded areas upon completion of seeding. Seeded areas shall be considered acceptable if the specified quantities of fertilizer & seed have been properly applied.

3.5 GUARANTEE

A. The Contractor is responsible for the proper application of the fertilizer & seeding. Watering, weeding, re-seeding, and mowing will be the responsibility of the Owner after proper application of the seed.

END OF SECTION 329219
APPENDIX 1
LEAD ASSESSMENT
Lead Paint Survey

Missouri State Highway Patrol Headquarters Troop B
308 Pinecrest Drive
Macon, Missouri
May 4, 2020
Terracon Project No. 09207012

Prepared for:
McClure Engineering
Columbia, Missouri

Prepared by:
Terracon Consultants, Inc.
Columbia, Missouri
May 4, 2020

McClure Engineering
1901 Pennsylvania Drive
Columbia, Missouri 65202

Attn: Mr. Mike Hall
P: (573) 476-3211
E: MHall@mecresults.com

Re: Lead Paint Survey
Missouri State Highway Patrol Headquarters Troop B
Macon, Missouri
Terracon Project No. 09217012

Terracon Consultants, Inc. (Terracon) is pleased to submit the attached report for the above referenced site to McClure Engineering. The purpose of this report is to present the results of a lead paint survey performed on April 30, 2020. This survey was conducted in general accordance with Terracon's Proposal P09207012 dated March 6, 2020. We understand that this survey was requested due to planned renovation activities within the above referenced building.

Based on results of the lead paint testing, Lead-based paint was identified on the following exterior surfaces:

- Front entrance concrete fascia – approximately 6 square feet
- Front entrance concrete roof – approximately 64 square feet
- South and East sides metal air intake louvers - 2 louvers approximately 16 square feet

Please refer to the attached report for details.

Terracon appreciates the opportunity to provide this service to McClure Engineering. If you have any questions regarding this report please contact the undersigned at 573-214-2677.

Sincerely,
Terracon Consultants, Inc.

Chris L. Segaldeo
Senior Staff Environmental Scientist

Mitch Reiber
National Director Environmental Services
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APPENDIX A LEAD PAINT XRF DATA

APPENDIX B INSPECTOR LICENSE
1.0 INTRODUCTION

Terracon Consultants, Inc. (Terracon) conducted a lead paint survey of the building located at 308 Pinecrest Drive in Macon, Missouri. The survey was conducted on April 30, 2020 by a state of Missouri licensed lead inspector in general accordance with Terracon’s Proposal P09207012 dated March 6, 2020. The lead paint survey was limited to the building exterior. The exterior building components were surveyed, and areas of suspect lead paint (LP) were visually identified and documented.

1.1 Project Objective

We understand this lead paint survey was requested due to the planned renovation of the on-site building to satisfy requirements of the United States Occupational Safety and Health Administration (USOSHA) communication standard.

1.2 Reliance

This report is for the exclusive use of McClure Engineering for the project being discussed. Reliance by any other party on this report is prohibited without written authorization of Terracon and McClure Engineering. Reliance on this report by McClure Engineering and all authorized parties will be subject to the terms, conditions, and limitations stated in the proposal, this report and the Agreement for Services. The limitations of liability defined in the Agreement for Services is the aggregate limit of Terracon’s liability to McClure Engineering.

2.0 BUILDING DESCRIPTION

This is a two-story office building constructed in 1964. The building has exterior brick walls and concrete support columns.
3.0 LEAD PAINT SURVEY

Mr. Timothy Easley, a state of Missouri licensed lead inspector, conducted lead paint testing using an Innov-X systems, Alpha series X-Ray Fluorescence instrument to determine if surface coatings contain lead.

3.1 Visual Assessment

The lead paint inspection began by visually surveying exterior building components. Various colors of paint were found on exterior surfaces. All of these components have the potential to be disturbed during renovation activities.

3.2 Sample Collection

A total of 55 XRF readings were taken from testing combinations associated with the various exterior building components. XRF readings are measured in milligrams per square centimeter (mg/cm²).

3.3 Sample Analysis

An Innov-X Systems Alpha series X-Ray Fluorescence Spectrometer analyzed the surface coating for lead content. The instrument was used in accordance with guidelines detailed in the manufacturer’s Standard Operating Procedures.

Calibration checks were performed prior to and after sampling, using protocols provided by the instrument manufacturer.

3.4 Lead Paint Regulatory Overview

The USOSHA 29 CFR 1926.62 has established permissible limits for airborne lead concentrations in the workplace. Owners or employers conducting renovation or demolition activities which may disturb building materials containing lead (in any concentration) are required to protect their employees from airborne lead exposures in excess of the USOSHA permissible exposure limit (PEL).

USOSHA has established an “Action Level” for lead concentrations “in air” of 30 micrograms per cubic meter of air (μg/m³) and a “Permissible Exposure Limit” for lead concentrations “in air” of 50 μg/m³. At this time, USOSHA has no established limits for lead content in bulk paint (non-airborne). Their interpretation on this issue is that any amount of lead may cause airborne concentrations above the established limits.
3.5 Lead Paint Findings and Recommendations

Lead based paint (LBP) is defined by the United States Environmental Protection Agency (USEPA) and the State of Missouri as any paint or surface coating that contains 1.0 mg/cm² or greater of lead.

Based on results of the lead paint testing, LBP was identified on the following exterior surfaces:
- Front entrance concrete fascia – approximately 6 square feet
- Front entrance concrete roof – approximately 64 square feet
- South and East sides metal air intake louvers - 2 louvers approximately 16 square feet

Refer to Lead Paint XRF Data in Appendix A, for a complete list of surfaces tested. Surfaces testing positive for lead are highlighted in red.

The USOSHA hazard communication requirement states that when hazardous materials (lead, asbestos, etc.) are present, employers who have employees that may disturb the hazardous materials, employers should inform their employees of the presence of such materials.

While the painted surfaces containing lead in concentrations between 0.0 and 1.0 mg/cm² do not meet the definition of lead-based paint under the USEPA or the State of Missouri, the paint does contain lead and is subject to exposure limits under USOSHA. Therefore, it is the contractor's responsibility to make appropriate decisions concerning compliance with applicable USOSHA regulations.

4.0 LIMITATIONS/GENERAL COMMENTS

Terracon did not perform sampling which required demolition or destructive activities such as knocking holes in walls, dismantling of equipment or removal of protective coverings. Reasonable efforts to access suspect materials within known areas of restricted access (e.g., crawl spaces) were made; however, confined spaces or areas which may pose a health or safety risk to Terracon personnel were not sampled. Sampling did not include suspect materials which could not be safely reached with available ladders/man-lifts. Although reasonable effort was made to survey accessible suspect materials, additional suspect but un-sampled materials could be located in walls, in voids or in other concealed areas.

This survey was conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions in the
same locale. The results, findings, conclusions and recommendations expressed in this report are based on conditions observed during our survey of the building. The information contained in this report is relevant to the date on which this survey was performed, and should not be relied upon to represent conditions at a later date. This report has been prepared on behalf of and exclusively for use by McClure Engineering, for specific application to their project as discussed. This report is not a bidding document. Contractors or consultants reviewing this report must draw their own conclusions regarding further investigation or remediation deemed necessary. Terracon does not warrant the work of regulatory agencies, laboratories or other third parties supplying information which may have been used in the preparation of this report. No warranty, express or implied is made.
APPENDIX A

LEAD PAINT XRF DATA
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Pb = Lead in milligrams per square centimeter
Positive Lead results in red
APPENDIX B

INSPECTOR LICENSE
STATE OF MISSOURI
DEPARTMENT OF HEALTH AND SENIOR SERVICES

LEAD OCCUPATION LICENSE REGISTRATION

Issued to:

Timothy E. Easley

The person, firm or corporation whose name appears on this certificate has fulfilled the requirements for licensure as set forth in the Missouri Revised Statutes 701.300-701.338, as long as not suspended or revoked, and is hereby authorized to engage in the activity listed below.

Lead Inspector
Category of License

Issuance Date: 10/1/2018
Expiration Date: 10/1/2020
License Number: 101001-001794

Randall W. Williams, MD, FACOG
Director
Department of Health and Senior Services

Lead Licensing Program, PO Box 570, Jefferson City, MO 65102
APPENDIX 2
DNR LAND DISTURBANCE PERMIT
JUL 11 2017

OA-Facilities Mgmt, Design, and Construction
301 West High Street, Hst Rm 370
Jefferson City, MO 65101

Dear OA-Facilities Mgmt,

Enclosed please find your Missouri State Operating Permit which authorizes land disturbance activities for Office of Administration. This permit has been issued at your request and is based upon information submitted in your application to the Missouri Department of Natural Resources.

Please note that prior to the beginning of land disturbance activities other permits may also be required. Especially note the requirements for a Missouri Department of Natural Resources 401 Water Quality Certification and the U.S. Army Corps of Engineers 404 permit. A 401 Certification is needed when placing material, or fill, into the jurisdictional waters of the United States. Examples are culverts under road crossings, riprap along stream banks and storm water outfall pipes. The term ‘jurisdictional waters’ refers to large lakes, rivers, streams and wetlands, including those that don't always contain water.

The permitting and certification process is shared between the department and the U.S. Army Corps of Engineers. More details can be found at the US Army Corps of Engineer’s Website at http://www.usace.army.mil/. Some of these activities are also described on page 2, item 3 of the enclosed permit.

This permit contains several requirements and should be thoroughly read and understood by you. If your permit requires environmental monitoring, copies of the necessary forms have been enclosed. In all future correspondence regarding your permit please reference your permit number as shown on page 1 of the permit.

Please contact the Water Pollution Enforcement and Compliance Unit if you would like to schedule an Environmental Assistance Visit (EAV) at 573-751-1300. During the visit, staff will review the requirements of the permit and answer any questions that you may have. Staff will also be available to walk the site to advise on Best Management Practices required by the permit. The department's regional office staff may also contact you to schedule an EAV.
If you were adversely affected by this decision, you may be entitled to an appeal before the administrative hearing commission pursuant to 10 CSR 20-1.020 and Sections 644.051.6 and 621.250, RSMo. To appeal, you must file a petition with the administrative hearing commission within thirty days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the Administrative Hearing Commission. Contact information for the AHC is as follows: Administrative Hearing Commission, Third Floor, 131 West High Street, Jefferson City, MO 65101 (Mailing address: PO Box 1557, Jefferson City, MO 65102-1557), Phone: 573-751-2422, Fax: 573-751-5018, Website: www.oa.mo.gov/ahc.

Please be aware that this facility may also be subject to any applicable county or other local ordinances or restrictions.

Sincerely,

WATER PROTECTION PROGRAM

David J. Lamb
Acting Director

DJL/sm

Enclosure
MISSOURI STATE OPERATING PERMIT

General Operating Permit

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit No: MOR100038
Owner: OA-Facilities Mgmt, Design, and Construc
Address: 301 West High Street, Ist Rm 370
Jefferson City, MO 65101

Continuing Authority: OA Facilities Mgmt Design Construction
301 West High St.
Hst Rm 730
Jefferson City, MO 65102

Facility Name: Office of Administration
Facility Address: OA-FMDC, PO Box 809 301 W High street
JEFFERSON CITY, MO 65102

Legal Description: Land Grant 681, Cole County
UTM Coordinates: 571840.000/4270368.000
Receiving Stream: Various State Wide (U)
First Classified Stream - ID#: Missouri R. (P) 701.00
USGS# and Sub Watershed#: 10300102 - 1305

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein.

FACILITY DESCRIPTION
All Outfalls SIC #1629
All Outfalls - Construction or land disturbance activity (e.g., clearing, grubbing, excavating, grading, filling and other activity that results in the destruction of the root zone and/or land disturbance activity that is reasonably certain to cause pollution of waters of the state)

This permit authorizes only wastewater, including storm water, discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System, it does not apply to other regulated areas. This permit may be appealed in accordance with RSMo Section 644.051.6 and 621.250, 10 CSR 20-6.020, and 10 CSR 20-1.020.

July 01, 2017
Issue Date
Edward B. Galbraith, Director
Division of Environmental Quality

June 22, 2022
Expiration Date
David J. Lamb, Acting Director
Water Protection Program
APPLICABILITY

1. This general permit authorizes the discharge of stormwater and certain non-stormwater discharges from land disturbance sites that disturb one or more acres or disturb less than one acre when part of a larger common plan of development or sale that will disturb a cumulative total of one or more acres over the life of the project. This general permit also authorizes the discharge of stormwater and certain non-stormwater discharges from smaller projects where the Missouri Department of Natural Resources (department) has exercised its discretion to require a permit [10 CSR 20-6.200(1)(B)].

2. This general permit is issued to a city, county, state or federal agency or other governmental jurisdiction for land disturbance projects performed by or under contract to the permittee.

3. A general stormwater control plan or stormwater pollution prevention plan (SWPPP) must be developed prior to issuance of this permit. These plans must include a narrative of the types and appropriate uses of Best Management Practices (BMPs) for erosion and sediment control and stormwater management. All water pollution controls on land disturbance sites shall conform to the storm water control program and/or SWPPP of the city, county or other governmental jurisdiction in which the land disturbance activity is occurring. The requirements of the stormwater control program and/or SWPPP must be at least as stringent as those described in this permit and 10 CSR 20-6.200.

4. A Missouri State Operating Permit must be issued before any site vegetation is removed or the site disturbed. Any site owner/operator subject to these requirements for stormwater discharges and who disturbs land prior to permit issuance from the department is in violation of both State regulations per 10 CSR 20-6.200(1)(A) and Federal regulations per 40 CFR 122.26. The legal owner of the property, right-of-way or the holder of an easement on the property, and operator on which the site is located are responsible for compliance with this permit.

5. This permit authorizes discharges from construction support activities (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas) provided that appropriate stormwater controls are designed, installed, maintained and provided:
   a. The support activity is directly related to the construction site required to have permit coverage for stormwater discharges;
   b. The support activity is not a commercial operation; and
   c. The support activity does not continue to operate beyond the completion of the construction activity at the project it supports.

   The permittee is responsible for compliance with this permit for any construction support activities.

6. This permit authorizes non-stormwater discharges from the following activities provided that these discharges are addressed in the permittee’s specific SWPPP required by this general permit:
   a. Dewatering activities if there are no contaminants other than sediment present in the discharge, and the discharge is treated as specified in Requirements, Section 10.0. of this permit;
   b. Flushing water hydrants and potable water lines;
   c. Water only (i.e., without detergents or additives) rinsing of streets and buildings; and
   d. Site watering to establish vegetation.

7. This general permit does not authorize the:
   a. placement of fill materials in waters or floodplains
   b. obstruction of stream flow,
   c. redirection of stormwater across private property not owned or operated by the permittee, or
d. Changing the channel of a defined drainage course.
These actions may be regulated by other federal, state, or local entities, such as the U.S. Army Corps of Engineers or Federal Emergency Management Agency. This general permit addresses only the quality of the stormwater runoff and the minimization of off-site migration of sediments and other water contaminants.

8. This permit does not authorize land disturbance activity in jurisdictional waters of the United States, unless the permittee has obtained the required Clean Water Act Section 404 Department of the Army permit from the U.S. Army Corps of Engineers and its associated Section 401 Water Quality Certification from the department. Land disturbance activities may not begin in the affected waters of the United States until the required §404 permit and §401 water quality certification have been obtained.

9. This general permit prohibits any discharge of wastewater generated from air pollution control equipment or the containment of scrubber water in lined ponds to waters of the state.

10. This general permit prohibits any discharge of sewage or pollutants to waters of the state including but not limited to:
    a. Any hazardous material, oil, lubricant, solid waste or other non-naturally occurring substance from the site, including fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance;
    b. Soaps or solvents used in vehicle and equipment washing;
    c. Hazardous substances or petroleum products from an on-site spill or handling and disposal practices;
    d. Wash and/or rinse waters from concrete mixing equipment including ready mix concrete trucks, unless managed by an appropriate control. Any such pollutants must be adequately treated and addressed in the SWPPP, and cannot be discharged to waters of the state;
    e. Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;
    f. Domestic wastewaters, including gray waters; or
    g. Industrial stormwater runoff.

11. The department reserves the right to revoke or deny coverage under this general permit to applicants for stormwater discharges from land disturbance activities at sites that have contaminated soils that will be disturbed by the land disturbance activity or where such materials are brought to the site to use as fill or borrow. A site-specific permit may be required to cover such activities.

12. If at any time the department determines that the quality of waters of the state may be better protected by requiring the owner/operator of the permitted site to apply for a site-specific or different general permit, the department may do so [10 CSR 20-6.010(13)(C)]. Examples of when this may occur:
    a. The permittee is not in compliance with the conditions of this general permit;
    b. The discharge no longer qualifies for this general permit due to changed site conditions and/or regulations; or
    c. Information becomes available that indicates water quality standards have been or may be violated.

The permittee will be notified in writing of the requirement to apply for a site-specific permit or a different general permit. When issued to the authorized permittee, the applicability of this general permit to the permittee is automatically terminated upon the effective date of the site-specific or different general permit.

13. Any owner/operator authorized by a general permit may request to be excluded from the coverage of the general permit and apply for a site-specific permit [10 CSR 20-6.010(13)(D)].
14. This operating permit does not affect, remove, or replace any requirement of the National Environmental Policy Act; the Endangered Species Act; the National Historic Preservation Act; the Comprehensive Environmental Response, Compensation and Liability Act; or the Resource Conservation and Recovery Act. Determination of applicability for the above mentioned acts is the responsibility of the permittee.

15. This permit does not supersede any requirement for obtaining project approval under an established local authority.

16. This permit is not transferable to other owners or operators.

EXEMPTIONS FROM PERMIT REQUIREMENTS

1. Facilities that discharge all stormwater runoff directly to a combined sewer system are exempt from stormwater permit requirements.

2. Land disturbance activity as described in 10 CSR 20-6.010(1)(B) and 10 CSR 20-6.200(1)(B).

3. Oil and gas related activities as listed in 40 CFR 122.26(a)(2)(ii).

REQUIREMENTS

   Per 40 CFR Part 127 National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, reporting shall be submitted by the permittee via an electronic system to ensure timely, complete, accurate, and nationally-consistent set of data about the NPDES program. All general permit covered facilities under this master general permit shall comply with the department’s requirements for electronic reporting.
   a. Reporting Requirements.
      (1) Application to participate in the department’s eDMR system is required as part of the application for general permit coverage in order to constitute a complete permit application and may be accessed at dnr.mo.gov/env/wpp/edmr.htm.
      (2) The permittee must electronically submit quarterly reports via the eDMR system.
   b. Other actions. The following shall be submitted electronically after such a system has been made available by the department:
      (1) General Permit Applications/Notices of Intent to discharge (NOIs);
      (2) Notices of Termination (NOTs);
      (3) No Exposure Certifications (NOEs); and
      (4) Low Erosivity Waivers and Other Waivers from Stormwater Controls (LEWs).
   c. Electronic Submissions. To access the eDMR system, use the following web link: https://edmr.dnr.mo.gov/edmr/E2/Shared/Pages/Main/Login.aspx.
   d. Waivers from Electronic Reporting.
      (1) The permittee must electronically submit reports unless a waiver is granted by the department in compliance with 40 CFR Part 127.
      (2) The permittee may obtain a temporary or permanent electronic reporting waiver by first submitting an eDMR Waiver Request Form (Form 780-2692: http://dnr.mo.gov/forms/780-2692-f.pdf, by contacting the appropriate permitting office or emailing edmr@dnr.mo.gov). The department will either approve or deny this electronic reporting waiver request within 120 calendar days of receipt.
      (3) Only permittees with an approved waiver request may submit reports on paper to the Department for the period that the approved electronic reporting waiver is effective.

2. Quarterly Reports: Permittees shall prepare a quarterly report with a list of active land disturbance sites including any off-site borrow or depositional areas associated with the construction project
and submit the following information electronically as an attachment to the eDMR system until such a time when the current or a new system is available to allow direct input of the data:

a. The name of the project;
b. The location of the project (including the county);
c. The name of the primary receiving water(s) for each project;
d. A description of the project;
e. The number of acres disturbed;
f. The percent of completion of the project;
g. The projected date of completion.

The quarterly report(s) shall be maintained by the permittee and readily available for review by the department at the address provided on the application as well as submitted to the department quarterly via the department’s eDMR system. When a permittee terminates permit coverage, the permittee shall submit with the request for termination, the final quarterly report for the current calendar quarter. The permittee shall submit quarterly reports according to Table A.

<table>
<thead>
<tr>
<th>Table A</th>
<th>Schedule for Quarterly Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity for the months of:</td>
<td>Report is due:</td>
</tr>
<tr>
<td>January, February, March (1st Quarter)</td>
<td>April 28</td>
</tr>
<tr>
<td>April, May, June (2nd Quarter)</td>
<td>July 28</td>
</tr>
<tr>
<td>July, August, September (3rd Quarter)</td>
<td>October 28</td>
</tr>
<tr>
<td>October, November, December (4th Quarter)</td>
<td>January 28</td>
</tr>
</tbody>
</table>

3. This permit is to ensure the design, installation and maintenance of effective erosion and sediment controls minimize the discharge of pollutants by:

a. Controlling stormwater volume and velocity within the site to minimize soil erosion;
b. Controlling stormwater discharges, including both peak flow rates and total stormwater volume, to minimize erosion at outlets and to minimize downstream channel and stream bank erosion and scour in the immediate vicinity of discharge points;
c. Minimizing the amount of soil exposed during construction activity;
d. Minimizing the disturbance of steep slopes;
e. Addressing factors such as the amount, frequency, intensity and duration of precipitation, the nature of resulting stormwater runoff, and soil characteristics, including the range of soil particle size expected to be present on the site to minimize sediment discharges from the site;
f. Providing and maintaining natural buffers around surface waters as detailed in 10.f, 
g. Directing stormwater to vegetated areas to increase sediment removal and maximize stormwater infiltration and filtering, unless infeasible; and
h. Minimizing soil compaction and, unless infeasible, preserve topsoil. Minimizing soil compaction or preserving topsoil is not required where the intended function of a specific area of the site dictates that it be compacted or the topsoil be disturbed or removed.

4. Installation of Best Management Practices (BMPs) necessary to prevent soil erosion at the project boundary must be complete prior to the start of all phases of construction.

5. Install sediment controls along any perimeter areas of the site.

a. Remove any sediment per the manufacturer’s instructions or before it has accumulated to one-half of the above-ground height of any perimeter control.
b. For sites where perimeter controls are infeasible, other practices shall be implemented to minimize discharges to perimeter areas of the site.

6. BMPs shall be maintained and remain in effective operating condition during the entire duration of the project, with repairs made within the timeframe specified in the Requirements Section 9 of this permit, until final stabilization has been achieved.

7. Minimize sediment track-out from the site.

a. Restrict vehicle traffic to properly designed exit points such as an aggregate stone with an underlying geotextile or non-woven filter fabric.
b. Use appropriate stabilization techniques at all points that exit onto paved roads.

c. Remove any sediment that has been tracked out within the same business day or by the end of
the next business day if track-out occurs on a non-business day.

8. SWPPP Development and Implementation: The primary requirement of this permit is the
development and implementation of a SWPPP which incorporates site-specific practices to
best minimize the soil exposure, soil erosion, and the discharge of pollutants. The permittee
shall fully implement the provisions of the SWPPP required under this part as a condition of
this general permit throughout the term of the land disturbance project. The SWPPP must
be developed prior to issuance of the permit and must be updated with details specific to
the land disturbance site prior to conducting any land disturbance activities at the site.
Either an electronic copy or a paper copy of the SWPPP must be accessible to anyone on-site
at all times when land disturbance operations are in progress, or other operational activities
that may affect the maintenance or integrity of the BMP structures and made available as
specified under the Records Section of this permit.

9. The SWPPP must:
a. List and describe all points of discharge to receiving water(s);
b. Incorporate required practices identified below;
c. Incorporate erosion control practices specific to site conditions;
d. Provide for maintenance and adherence to the plan;
e. Discuss whether or not additional authorizations, such as a Section 404 permit and
   associated Section 401 Water Quality Certification are required for the project; and
f. Name the person responsible for inspection, operation and maintenance of BMPs.

The purpose of the SWPPP is to ensure the design, implementation, management and
maintenance of BMPs in order to prevent sediment and other pollutants in stormwater
discharges associated with the land disturbance activities; compliance with the Missouri
Water Quality Standards; and compliance with the terms and conditions of this general
permit.

The following manuals are acceptable resources for the selection of appropriate BMPs.
Developing Your Stormwater Pollution Prevention Plan: A Guide for Construction Sites,
(Document number EPA 833-R-06-004) published by the United States Environmental Protection
Agency (USEPA) in May 2007. This manual as well as other information, including examples of
construction SWPPPs, is available at the USEPA internet site at
https://www.epa.gov/npdes/developing-stormwater-pollution-prevention-plan-swppp; and
the latest version of Protecting Water Quality: A field guide to erosion, sediment and stormwater
best management practices for development sites in Missouri, published by the department is

The permittee is not limited to the use of these guidance manuals. Other guidance publications
may be used to select appropriate BMPs. However, all BMPs should be described and justified in
the SWPPP.

10. SWPPP Requirements: The following information and practices shall be provided for in the
SWPPP:
a. Nature of the Construction Activity: The SWPPP briefly must describe the nature of the
construction activity, including:
   (1) The function of the project (e.g., low density residential, shopping mall, highway, etc.);
   (2) The intended sequence and timing of activities that disturb the soils at the site;
   (3) Estimates of the total area expected to be disturbed by excavation, grading, or other
construction activities including off-site borrow and fill areas; and
   (4) A general map (e.g., United States Geological Survey quadrangle map, a portion of a city
or county map, or other map) with enough detail to identify the location of the
construction site and waters of the state within one mile of the site.
b. **Site Map:** The SWPPP must contain a legible site map showing the site boundaries and points of discharge to receiving water(s) and identifying:
   1. Direction(s) of stormwater flow and approximate slopes for all phases of construction activities;
   2. Areas of soil disturbance and areas that will not be disturbed (or a statement that all areas of the site will be disturbed unless otherwise noted);
   3. Location of permanent and temporary structural and non-structural BMPs identified in the SWPPP;
   4. Locations where stabilization practices are expected to occur;
   5. Locations of off-site material, waste, borrow or equipment storage areas;
   6. Locations of all waters of the state (including wetlands);
   7. Locations where stormwater discharges to a surface water; and
   8. Areas where final stabilization has been accomplished and no further construction-phase permit requirements apply.

c. **Site Description:** In order to identify the site, the SWPPP shall include facility and points of discharge to receiving water(s) information. The SWPPP shall have sufficient information to be of practical use to contractors and site construction workers to guide the installation and maintenance of BMPs.

d. **Selection of Temporary and Permanent BMPs:** The permittee shall select, install, use, operate and maintain appropriate BMPs for the permitted site and list them in the SWPPP.

e. **Preservation of trees and vegetation:** The SWPPP shall require existing vegetation and trees to be preserved where practical.

f. **Surface Water Buffers:** For surface waters of the state, defined as "all waters within the jurisdiction of this state, including all rivers, streams, lakes and other bodies of surface and subsurface water lying within or forming a part of the boundaries of the state which are not entirely confined and located completely upon lands owned, leased or otherwise controlled by a single person or by two or more persons jointly or as tenants in common, located on or adjacent to the site," the permittee must comply with (1)-(3), except as noted in (4):
   1. Provide and maintain a 50-foot undisturbed natural buffer;
   2. Provide and maintain an undisturbed natural buffer that is less than 50 feet and is supplemented by erosion and sediment controls that achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer; or
   3. If infeasible to provide and maintain an undisturbed natural buffer of any size, implement erosion and sediment controls to achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.
   4. The permittee is not required to comply with (1), (2) or (3) above if one of the following exceptions apply and documentation is provided in the SWPPP:
      (a) As authorized per Clean Water Act Section 404 Department of the Army permit and its associated Section 401 Water Quality Certification from the department.
         1. The angle of any crossing shall be as perpendicular as feasible to the water course or natural stream buffer to minimize adverse impacts.
      (b) If there is no discharge of stormwater to waters of the state through the area between the disturbed portions of the site and waters of the state located within 50 feet of your site. This includes situations where you have implemented permanent control measures that will prevent such discharges, such as a berm or other barrier.
      (c) Where no natural buffer exists due to preexisting development disturbances that occurred prior to the initiation of planning for the current development of the site.
         1. Where some natural buffer exists but portions of the area within 50 feet of the waters of the state are occupied by preexisting development disturbances, you are required to comply with (1), (2), or (3) above.
      (d) For linear projects where site constraints make it infeasible to implement a buffer or equivalent provided you limit disturbances within 50 feet of any waters of the state and/or you provide supplemental erosion and sediment controls to treat stormwater
discharges from earth disturbances within 50 feet of the water of state.  
(e) For small residential lot construction as defined as 'a lot being developed for residential purposes that will disturb less than 1 acre of land, but is part a larger common plan of development or sale,' one has the option of complying with (1), (2) or (3) above or one of the following alternatives:

1. Tiered-technology approach where:
   a. A 50-foot or larger buffer is retained, no additional requirements are needed,  
   b. The buffer is greater than 30 feet but less than 50 feet wide, implement double perimeter controls spaced a minimum of at least 5 feet apart between land disturbance and water of the state, or  
   c. A less than or equal to 30-foot buffer is maintained, implement double perimeter controls between land disturbance and water of the state and stabilization activities completed with 7 calendar days of temporary or permanent cessation of land disturbance; or  

2. Sediment discharge risk based on the site’s slope, location and soil type when combined with buffer width.


g. Measuring Buffer Width: Where the permittee is retaining a buffer of any size, the buffer should be measured perpendicularly from any of the following points, whichever is further landward from the water:

(1) The ordinary high water mark of the water body, defined as the line on the shore established by fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, and/or the presence of litter and debris; or
(2) The edge of the stream or river bank, bluff, or cliff, whichever is applicable.

h. Description of BMPs: The SWPPP shall include a description of both structural and non-structural BMPs used one or more times at the site, providing the following general information for each:

(1) Physical description of the BMP;  
(2) Site conditions that must be met for effective use of the BMP;  
(3) BMP installation/construction procedures, including typical drawings; and  
(4) Operation and maintenance procedures for the BMP.

i. Specific Instance of BMPs: The SWPPP shall provide the following information for each specific instance where a BMP is to be installed:

(1) Whether the BMP is temporary or permanent;  
(2) Where, in relation to other site features, the BMP is to be located;  
(3) When the BMP will be installed in relation to each phase of the land disturbance procedures to complete the project; and  
(4) Site conditions that must be met before removal of the BMP if the BMP is not a permanent BMP.

j. Disturbed Areas: Slopes for disturbed areas must be defined in the SWPPP. A site map or maps defining the sloped areas for all phases of the project must be included in the SWPPP.

(1) For soil disturbing activities that have temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days:
   (a) The permittee shall construct BMPs to establish interim stabilization; and  
   (b) Stabilization must be initiated immediately and completed within 14 calendar days.

(2) For soil disturbing activities that have been permanently ceased on any portion of the site, final stabilization of disturbed areas must be initiated immediately and completed within 14 calendar days.

(3) Allowances to the 14 day completion period for temporary and final stabilization may be made due to weather and equipment malfunctions. In drought-stricken areas where initiating vegetative stabilization measures immediately are infeasible, alternative stabilization measures must be employed. The use of allowances shall be documented in the SWPPP.
(4) Interim stabilization shall consist of well-established and maintained BMPs that are reasonably certain to protect waters of the state from sediment pollution over an extended period of time. This may require adding more BMPs to an area than is normally used during daily operations. These BMPs may include a combination of sediment basins, check dams, sediment fences and mulch. The types of BMPs used must be suited to the area disturbed, taking into account the number of acres exposed and the steepness of the slopes. If the slope of the area is greater than 3:1 (three feet horizontal to one foot vertical) or if the slope is greater than 3% and greater than 150 feet in length, then the permittee shall establish interim stabilization within seven days of ceasing operations on that part of the site.

(5) In limited circumstances, stabilization may not be required if the intended function of a specific area of the site necessitates that it remain disturbed.

k. **Installation:** The permittee shall ensure the BMPs are properly installed at the locations and relative times specified in the SWPPP.

   (1) Peripheral or border BMPs to control runoff from disturbed areas shall be installed or marked for preservation before general site clearing is started. Note that this requirement does not apply to earth disturbances related to initial site clearing and establishing entry, exit and access of the site, which may require that stormwater controls be installed immediately after the earth disturbance.

   (2) For phased projects, BMPs shall be properly installed as necessary prior to construction activities.

   (3) Stormwater discharges from disturbed areas which leave the site shall pass through an appropriate impediment to sediment movement such as a sedimentation basin, sediment traps and/or silt fences prior to leaving the land disturbance site.

   (4) A drainage course change shall be clearly marked on a site map and described in the SWPPP.

   (5) If vegetative stabilization measures are being implemented, stabilization is considered “installed” when all activities necessary to seed or plant the area are completed.

l. **Sedimentation Basins:** The SWPPP shall include a sedimentation basin for each drainage area with ten or more acres disturbed at one time.

   (1) The sedimentation basin shall be sized to a local 2-year, 24-hour storm. A 2-year, 24-hour storm event shall be determined for the project location using the National Oceanic and Atmospheric Administration’s National Weather Service Atlas 14 which can be located at [http://hdsc.nws.noaa.gov/hdsc/pfds/](http://hdsc.nws.noaa.gov/hdsc/pfds/).

   (2) Basins designed and initiated under the 2012 Area-Wide Land Disturbance General Permit MO-R100038 or prior authorizations shall comply with the requirements held in those authorizations. Any construction activities designed and initiated under this authorization shall comply with the local 2-year, 24-hour storm event by January 1, 2018.

   (3) Accumulated sediment shall be removed from the basin when basin is 50% full.

   (4) Utilize outlet structures that withdraw water from the surface when discharging from basins and impoundments unless infeasible.

   (5) Discharges from the basin shall not cause scouring of the banks or bottom of the receiving stream.

   (6) The SWPPP shall require the basin be maintained until final stabilization of the disturbed area served by the basin.

   (7) The SWPPP shall require both temporary and permanent sedimentation basins to have a stabilized spillway to minimize the potential for erosion of the spillway or basin embankment.

   (8) Where use of a sediment basin is infeasible, the SWPPP shall evaluate and specify other similarly effective BMPs to be employed to control erosion and sediment delivery. These similarly effective BMPs shall be selected from appropriate BMP guidance documents authorized by this permit. The BMPs must provide equivalent water quality protection to achieve compliance with this permit.
m. Pollution Prevention Measures: The SWPPP shall include BMPs for pollution prevention measures. At minimum such measures must be designed, installed, implemented and maintained to:

1. Minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters. Wash waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge;

2. Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a discharge of pollutants, or where exposure of a specific material or product poses little risk or stormwater contamination (such as final products and material intended for outdoor use);

3. Minimize the discharge of pollutants from spills and leaks and implement chemical spill and leak prevention and response procedures. Included but not limited to the installation of containment berms and use of drip pans at petroleum product and liquid storage tanks and containers; and

n. Roadways: Where applicable, upon installation of or connection to roadways, all efforts should be made to prevent the deposition of earth and sediment onto roadways through the use of proper BMPs.

1. Stormwater inlets susceptible to receiving sediment from the permitted land disturbance site shall have curb inlet protection.

2. Where stormwater will flow off the end of where a roadway terminates, a sediment catching BMP such as gravel berm or silt fence shall be provided.

3. Curb inlets shall be cleaned weekly or following a precipitation event that generates a run-off.

o. Dewatering: Discharges from dewatering activities, including discharges from dewatering of trenches and excavations, are prohibited unless managed by appropriate controls. The SWPPP shall include a description of any anticipated dewatering methods.

1. The SWPPP shall call for specific BMPs designed to treat water pumped from trenches and excavations and in no case shall this water be pumped off-site without being treated by the specified BMPs.

11. Good housekeeping practices shall be maintained at all times to keep waste from entering waters of the state. Solid and hazardous waste management include providing trash containers and regular site cleanup for proper disposal of solid waste such as scrap building material, product/material shipping waste, and food containers and cups, and providing containers and proper disposal of waste paints, solvents and cleaning compounds. The provision of portable toilets for proper disposal of sanitary sewage and the storage of construction materials should be kept away from drainage courses and low areas.

12. All fueling facilities present shall at all times adhere to applicable federal and state regulations concerning underground storage, above ground storage and dispensers.

13. Hazardous substances that are transported, stored, or used for maintenance, cleaning, or repair shall be managed according to the provisions of the Missouri Hazardous Waste Laws and Regulations.

14. Containers: All paint, solvents, petroleum products, petroleum waste products and storage containers such as drums, cans, or cartons shall be stored according to BMPs. The materials exposed to precipitation shall be stored in watertight, structurally sound, closed containers. All containers shall be inspected for leaks or spillage during the inspection of BMPs.
15. Amending/Updating the SWPPP: The permittee shall amend and update the SWPPP as appropriate during the term of the land disturbance activity. The permittee shall amend the SWPPP at a minimum whenever the:
   a. Design, operation, or maintenance of BMPs is changed;
   b. Design of the construction project is changed that could significantly affect the quality of the stormwater discharges;
   d. Department notifies the permittee in writing of deficiencies in the SWPPP;
   e. SWPPP is determined to be ineffective in minimizing or controlling erosion and sedimentation (e.g., there is visual evidence of excessive site erosion or excessive sediment deposits in streams or lakes); and/or
   f. Department determines violations of water quality standards may occur or have occurred.

16. An individual shall be designated by the permittee as the lead for environmental matters. The lead individual for environmental matters shall have a thorough and demonstrable knowledge of the site’s SWPPP and sediment and erosion control practices in general. The lead individual for environmental matters or a designated inspector knowledgeable in erosion, sediment and stormwater control principles shall inspect all structures that function to prevent pollution of waters of the state

17. Site Inspections: The permittee (or a representative of the permittee) shall conduct regularly scheduled inspections.
   a. These inspections shall be conducted by a qualified person, one who is responsible for environmental matters at the site, or a person trained by and directly supervised by the person responsible for environmental matters at the site.
   b. Inspections are only required during the project’s normal working hours.
   c. For disturbed areas that have not been finally stabilized, all installed BMPs and other pollution control measures shall be inspected for proper installation, operation and maintenance.
   d. Areas on-site that have been stabilized must be inspected at least once per month.
      (1) For areas where disturbed portions have undergone temporary stabilization at the same time active construction continues on other areas, inspections shall occur at least once a month while stabilized and when re-disturbed shall follow either frequency outlined in subsection h. below.
      (2) For areas where disturbed portions have undergone final stabilization at the same time active construction continues on other areas, inspection frequency may be cease on the finally stabilized areas according to the following:
         (a) After the first monthly inspection, inspect once more within 24 hours of a storm event of 0.25 inches or greater.
         (b) If there are no issues or evidence of stabilization problems, further inspections may cease.
         (c) If unstable site conditions or sediment movement are observed, the site must be re-stabilized and monthly inspections shall occur until final stabilization is confirmed following a storm event of 0.25 inches or greater.
   e. All stormwater outfalls shall be inspected for evidence of erosion or sediment deposition.
   f. When practicable the receiving stream shall also be inspected for 50 feet downstream of the outfall.
   g. Any structural or maintenance problems shall be noted in an inspection report and corrected as soon as possible but no more than seven calendar days after the inspection.
      (1) If weather conditions prevent correction of BMPs within seven calendar days, the reasons for the delay must be documented (including pictures) and there must be a narrative explaining why the work cannot be accomplished within the seven day time period.
      (2) The documentation must be filed with the regular inspection reports.
      (3) The permittee shall correct the problem as soon as weather conditions allow.
   h. All BMPs must be inspected in accordance to one of the two schedules listed below, and any
changes to the frequency of inspections, including switching between the options listed below, must be documented in the SWPPP:

1. At least once every seven calendar days and within 48 hours after any storm event equal to or greater than a 2-year, 24-hour storm has ceased during a normal work day and within 72 hours if the event ceases during a non-work day such as a weekend or holiday; or

2. Once every 14 calendar days and within 24 hours of the occurrence of a storm event of 0.25 inches or greater or the occurrence of runoff from snowmelt. To determine if a storm event of 0.25 inches or greater has occurred on-site, the permittee must either keep a properly maintained precipitation gauge on site, or obtain the storm event information from a weather station near the site.
   a. Inspections shall be conducted within 24 hours once a storm event has produced 0.25 inches within a 24 hour period, even if the storm event is still continuing.
   b. If the permittee has elected to inspect every 14 calendar days and there is a storm event at the site that continues for multiple days, and each day of the storm produces 0.25 inches or more of rain, the permittee is required to conduct an inspection within 24 hours of the first day of the storm and within 24 hours after the end of the storm.

18. The SWPPP must explain how the person responsible for erosion control will be notified when stormwater runoff occurs

19. Site Inspections Reports: A log of each inspection and copy of the inspection report shall be kept readily accessible and must be available upon request by the department. Electronic logs are acceptable as long as reports can be provided in a timely manner. If inspection reports are kept off-site, the SWPPP must indicate where they are stored. The inspection report shall be signed by the permittee or by the person performing the inspection if duly authorized to do so. The inspection report is to include the following minimum information:
   a. Inspector’s name;
   b. Date of inspection;
   c. Observations relative to the effectiveness of the BMPs;
   d. Actions taken or necessary to correct the observed problem; and
   e. Listing of areas where land disturbance operations have permanently or temporarily stopped.

20. Notification to All Contractors: The permittee shall be responsible for notifying each contractor or entity (including utility crews and city employees or their agents) who will perform work at the site of the existence of the SWPPP and what action or precautions shall be taken while on-site to minimize the potential for erosion and the potential for damaging any BMP. The SWPPP shall contain a record of notification; for example, a list of contractors or entities given a copy of the SWPPP or education session sign-in sheet. The permittee is responsible for any damage a subcontractor may do to established BMPs and any subsequent water quality violation resulting from the damage.

21. Public Notification: The permittee shall post a copy of the public notification sign on page 15 of this permit at the main entrance to the site. The public notification sign must be visible from the public road that provides access to the site’s main entrance. An alternate location is acceptable provided the public can see it and it is noted in the SWPPP. The public notification sign must remain posted at the site until the permit has been terminated.

OTHER DISCHARGES

A record of each reportable release of hazardous substance shall be retained with the SWPPP and made available to the department upon request. The department may also require the submittal of a written or electronic report detailing measures taken to clean up the spill within five (5) days of the spill. Such a report must include the type of material spilled, volume, date of spill, date clean-up was completed, clean-up method, and final disposal method.
SAMPLING REQUIREMENTS AND EFFlUENT LIMITATIONS

The department may require sampling and reporting as a result of illegal discharges, compliance issues, complaint investigations, or other such evidence of contamination from activities at the site. If such an action is needed, the department will specify in writing any sampling requirements, including such information as location, extent and parameters.

RECORDS

1. The permittee shall retain copies of this general permit, the SWPPP and all amendments for the site, results of any monitoring and analysis, and all site inspection records. The records shall be accessible during normal business hours. The records shall be retained for a period of at least three years from the date of the Letter of Termination.

2. The permittee shall provide a copy of the SWPPP to the department, USEPA, or any local agency or government representative if they request a copy in the performance of their official duties.

3. The permittee shall provide a copy of the SWPPP to those who are responsible for installation, operation, or maintenance of any BMP. The permittee, their representative, and/or the contractor(s) responsible for installation, operation and maintenance of the BMPs shall have a current copy of the SWPPP with them when on the project site.

LAND PURCHASE AND CHANGE OF OWNERSHIP

1. If the permittee sells any portion of the permitted site to a developer for commercial, industrial, or residential use, this land remains a part of the common sale and the new owner must obtain a permit prior to conducting any land disturbance activity. Therefore, the original permittee must amend the SWPPP to show that the property has been sold and therefore no longer under the original permit coverage.

2. Property of any size which is part of a larger common plan of development where the property has been stabilized and the original permit terminated will require application of a new land disturbance permit for any future land disturbance activity unless exempted per 10 CSR 20-6.010(1)(B), 10 CSR 20-6.200(1)(B), and 40 CFR 122.26(a)(2)(ii). .

3. If the entire tract is sold to a single entity, then this permit shall be terminated when the new owner obtains a new land disturbance permit for the site.

4. If a portion of a larger common plan of development is sold to an individual for the purpose of building his or her own private residence, a permit is required if the portion of land sold is equal to or greater than one acre while no permit is required for less than one acre of land sold.

TERMINATION

This permit may be terminated when all projects are stabilized. The project is considered to be finally stabilized when perennial vegetation, pavement, buildings, or structures using permanent materials cover all areas that have been disturbed. With respect to areas that have been vegetated, vegetation cover shall be at least 70% over 100% of the site. In order to terminate the permit, the permittee shall notify the department by submitting Form H- Request for Termination of a General Permit (http://dnr.mo.gov/forms/780-1409-f.pdf).

DUTY TO REAPPLY

Unless terminated, the permittee shall submit an application for the renewal of this permit by submitting Form E-Application for General Permit (http://dnr.mo.gov/forms/780-0795-f.pdf) and
MODIFICATION, REVOCATION, AND REOPENING

1. The full implementation of this operating permit shall constitute compliance with all applicable federal and state statutes and regulations in accordance with §644.051.16, RSMo, and the CWA section 402(k); however, this permit may be reopened and modified, or alternatively revoked and reissued to comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
   a. contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
   b. controls any pollutant not limited in the permit.
2. If this permit is reopened, modified or revoked pursuant to this Section, the permittee retains all rights under Chapter 536 and 644 Revised Statutes of Missouri upon the department’s reissuance of the permit as well as all other forms of administrative, judicial, and equitable relief available under law.

STANDARD CONDITIONS

These Standard Conditions incorporate permit conditions as required by 40 CFR 122.41 or other applicable state statutes or regulations. These minimum conditions apply unless superseded by requirements specified in the permit.

1. Other Information: Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the department, it shall promptly submit such facts or information.

2. Duty to Comply: The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Missouri Clean Water Law and Federal Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

3. Duty to Provide Information: The permittee shall furnish to the department, within a reasonable time, any information which the department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the department upon request, copies of records required to be kept by this permit.
4. **Inspection and Entry:** The permittee shall allow the department, or an authorized representative (including an authorized contractor acting as a representative of the department), upon presentation of credentials and other documents as may be required by law, to:
   a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;
   b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
   c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
   d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Federal Clean Water Act or Missouri Clean Water Law, any substances or parameters at any location.

5. **Signatory Requirement:**
   a. All permit applications, reports required by the permit, or information requested by the department shall be signed and certified. (See 40 CFR 122.22 and 10 CSR 20-6.010)
   b. The Federal Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six (6) months per violation, or by both.
   c. The Missouri Clean Water Law provides that any person who knowingly makes any false statement, representation or certification in any application, record, report, plan, or other document filed or required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than ten thousand dollars, or by imprisonment for not more than six months, or by both.
STORMWATER DISCHARGES FROM THIS LAND DISTURBANCE SITE ARE AUTHORIZED BY THE MISSOURI STATE OPERATING PERMIT NUMBER:

______________________________

ANYONE WITH QUESTIONS OR CONCERNS ABOUT STORMWATER DISCHARGES FROM THIS SITE, PLEASE CONTACT THE MISSOURI DEPARTMENT OF NATURAL RESOURCES AT 1-800-361-4827
Missouri Department of Natural Resources
Fact Sheet
MO-R100038

The Federal Water Pollution Control Act [Clean Water Act (CWA)] Section 402 of Public Law 92-500 (as amended) established the National Pollution Discharge Elimination System (NPDES) permit program. This program regulates the discharge of pollutants from point sources into the waters of the United States, and the release of stormwater from certain point sources. All such discharges are unlawful without a permit (Section 301 of the CWA). After a permit is obtained, a discharge not in compliance with all permit terms and conditions is unlawful. Missouri State Operating Permits (permit) are issued by the Missouri Department of Natural Resources (department) under an approved program, operated in accordance with federal and state laws (Federal CWA and Missouri Clean Water Law Section 644 as amended). Permits are issued for a period of five (5) years unless otherwise specified.

Per 40 CFR 124.56, 40 CFR124.8, and 10 CSR 20-6.020(1)(A)2., a Fact Sheet shall be prepared to give pertinent information regarding the applicable regulations, rationale for the development of effluent limitations and conditions, and the public participation process for the permit. A Fact Sheet is not an enforceable part of a permit.

This Fact Sheet is for a:
☐ Major
☐ Minor
☐ Industrial Facility
☐ Variance
☒ Master General Permit
☐ Permit with widespread public interest

Definitions

Common Promotional Plan: A plan undertaken by one (1) or more persons, to offer lots for sale or lease; where land is offered for sale by a person or group of persons acting in concert, and the land is contiguous or is known, designated or advertised as a common unit or by a common name or similar names, the land is presumed, without regard to the number of lots covered by each individual offering, as being offered for sale or lease as part of a common promotional plan.

Immediately: For the purposes of this permit, immediately should be defined as within 24 hours.

Infeasible: Infeasible means not technologically possible, or not economically practicable and achievable in light of best industry practices.

Larger Common Plan of Development or Sale: A contiguous area where multiple separate and distinct construction activities are occurring under one plan.

Non-structural Best Management Practice: Institutional, educational or pollution prevention practices designed to limit the amount of stormwater runoff or pollutants that are generated in the landscape. An example includes ordinance development.

Ordinary High Water Mark: The line on the shore established by fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation and/or the presence of litter and debris.

Peripheral: For the purposes of this permit, peripheral should be defined as the outermost boundary of the area that will be disturbed.

Permanently: For the purposes of this permit, permanently should be defined as any activity that has been
ceased without any intentions of future disturbance.

Structural Best Management Practice: Physical controls working individually or as a group, appropriate to the source, location, and area climate for the pollutant to be controlled. Examples include moving earth for sedimentation basin and planting vegetation.

Waters of the state: Section 644.016.1(27), RSMo defines waters of the state as, “All waters within the jurisdiction of this state, including all rivers, streams, lakes and other bodies of surface and subsurface water lying within or forming a part of the boundaries of the state which are not entirely confined and located completely upon lands owned, leased or otherwise controlled by a single person or by two or more persons jointly or as tenants in common.”

**Part I – Facility Information**

Facility Type: Industrial Stormwater  
Facility Description: Construction or land disturbance activity (e.g., clearing, grubbing, excavating, grading, filling, and other activities that result in the destruction of the root zone and/or land disturbance activity that is reasonably certain to cause pollution to waters of the state).

This permit establishes a SWPPP requirement to minimize pollutants of concern from this type of facility or for all facilities covered under this permit. 10 CSR 20-6.200(6)(A)7. specifies that “general permits shall contain BMP requirements and/or monitoring and reporting requirements to keep the stormwater from becoming contaminated.” Local conditions are not considered when developing conditions for a general permit. A facility may apply for a site-specific permit if they desire a review of local conditions.

While drafting this permit for renewal, the department hosted four public meetings on January 27, February 24, April 18, and May 19, 2016, which allowed stakeholders to voice concerns about conditions within the permit and submit comments during the period of initial involvement. These concerns were taken into consideration when drafting the permit.

**Part II – Receiving Stream Information**

**APPLICABLE DESIGNATIONS OF WATERS OF THE STATE:**  
Per Missouri Effluent Regulations (10 CSR 20-7.015), the waters of the state are divided into seven (7) categories. This permit applies to facilities discharging to the following water body categories:

- ☑ Missouri or Mississippi River [10 CSR 20-7.015(2)]
- ☑ Lakes or Reservoirs [10 CSR 20-7.015(3)]
- ☑ Losing Streams [10 CSR 20-7.015(4)]
- ☑ Metropolitan No-Discharge Streams [10 CSR 20-7.015(5)]
- ☑ Special Streams [10 CSR 20-7.015(6)]
- ☑ Subsurface Waters [10 CSR 20-7.015(7)]
- ☑ All Other Waters [10 CSR 20-7.015(8)]

Missouri Water Quality Standards (10 CSR 20-7.031) defines the Clean Water Commission water quality objectives in terms of "water uses to be maintained and the criteria to protect those uses." The receiving stream and/or 1st classified receiving stream’s beneficial water uses shall be maintained in accordance with 10 CSR 20-7.031(4). The BMP requirement established by this permit are intended to be protective of all streams that fall within the categories of receiving water bodies indicated above. A general permit does not take into consideration site-specific conditions.
Part III – Applicability

Condition number 5 includes support activities. Those support activities are to become part of the land disturbance permitted area and included in the acreage calculations, whether the support activities are located adjacent to, on-site or off-site from the main land disturbance construction area. For example, if the main land disturbance site is 0.6 acres and the project needs fills that is gathered from a borrow site specific to this project which equals 0.5 acres, then the total acreage for this project is an acre or more and the conditions of this permit apply to both the main construction area and the borrow area.

Condition number 14 was expanded to include a more comprehensive list of state and federal requirements that must be taken into consideration.

If the proposed project encounters and will potentially affect a species of concern, please report it to the Missouri Department of Conservation and the United States Fish and Wildlife Service. For more information about requirements of the Endangered Species Act, please visit the following links:

1. To determine the potential for species of concern within or near a project, please visit the United States Fish and Wildlife Services’ “Information, Planning and Conservation” website at http://ecos.fws.gov/ipac/.

2. If there are listed species in the county or township, check to see if critical habitat has been designated and if that area overlaps or is near the project area. Critical habitat designations and associated requirements may also be found at 50 CFR Parts 17 and 226. For additional information, use the map view tool at http://criticalhabitat.fws.gov/criticalhabitat/ to find data specific to the state and county.

The Missouri Department of Conservation’s internet site for the Natural Heritage Review may be very helpful and can be found at the following link, https://naturalheritagereview.mdc.mo.gov/.

Part IV – Exemptions

Condition Number 2 was added to cite all state exemptions from permitting requirements, combining several previous cited exemptions into one condition and reference. This includes an exemption for linear construction where the entire disturbance, including clearing of land to access the linear disturbance, is less than two feet in width.

Condition Number 3 was added to cite federal regulations that exclude land disturbance projects related to the installation or maintenance work for oil and gas related activities.

Part V – Rationale of Technology Based Limitations & Permit Conditions

303(d) LIST & TOTAL MAXIMUM DAILY LOAD (TMDL):
Section 303(d) of the Federal CWA requires that each state identify waters that are not meeting Water Quality Standards and for which adequate water pollution controls have not been required. Water Quality Standards protect such beneficial uses of water as whole body contact, maintaining fish and other aquatic life, and providing drinking water for people, livestock, and wildlife. The 303(d) list helps state and federal agencies keep track of waters that are impaired but not addressed by normal water pollution control programs.

ANTI-BACKSLIDING:
A provision in the Federal Regulations [CWA Section 303(d) (4); CWA Section 402(c); 40 CFR Part 122.44(I)] that requires a reissued permit to be as stringent as the previous permit with some exceptions.

Applicable: Backsliding proposed in this permit conforms to the anti-backsliding provisions of Section 402(o) of the CWA and 40 CFR 122.44. The department has determined that technical mistakes were made in the previous permit [CWA 402(o)(2)(B)(ii)]. The Department has determined that technical mistakes or mistaken interpretations of law were made in issuing the
permit under section 402(a)(1)(b).

**Settleable Solids:** The Settleable Solids limitation was removed since has been determined to not be a statewide technology or water quality based limitation given a variability of soil type in the state. Increased technology based best management practices have been included and are a more appropriate technology based requirement.

**Water Quality Standard Narrative Prohibitions:** The previous permit contained language which referenced narrative compliance with the water quality standards found in 10 CSR 20-7.031. In order to comply with 40 CFR 122.44(d)(1), the permit writer has conducted reasonable potential determinations for each general and applicable specific criterion and established numeric effluent limitations where reasonable potential exists. While the removal of the previous permit language creates the appearance of backsliding, the permit writer has evaluated discharges associated with this general permit as to whether reasonable potential to cause excursions of specific or general criteria on a statewide level and found that no reasonable potential exists given the proper implementation of a Stormwater Pollution Prevention Plan and associated best management practices and that the requirements of this permit are equally protective as compared to the previous permit. Therefore, given this new information, and the fact that the previous permit special condition was not consistent with 40 CFR 122.44(d)(1), an error occurred in the establishment of the general criteria as a special condition of the previous permit.

**ANTIDEGRADATION:**
Antidegradation policies ensure protection of water quality for a particular water body on a pollutant by pollutant basis to ensure Water Quality Standards are maintained to support beneficial uses such as fish and wildlife propagation and recreation on and in the water. This also includes special protection of waters designated as an Outstanding National Resource Water or Outstanding State Resource Water [10 CSR 20-7.031(3) (C)]. Antidegradation policies are adopted to minimize adverse effects on water. The department has determined that the best avenue forward for implementing the Antidegradation requirements into general permits is by requiring the appropriate development and maintenance of a SWPPP. The SWPPP must identify all Best Management Practices (BMPs) that are reasonable and effective, taking into account environmental impacts and costs. This analysis must document why no discharge or no exposure options are not feasible at the facility. This selection and documentation of appropriate control measures will then serve as the analysis of alternatives and fulfill the requirements of the Antidegradation Rule and Implementation Procedure 10 CSR 20-7.031(3) and 10 CSR 20-7.015(9)(A)5.

Any facility seeking coverage under this permit, which undergoes expansion or discharges a new pollutant of concern, must update their SWPPP and select new BMPs that are reasonable and cost effective. New facilities seeking coverage under this permit are required to develop a SWPPP that includes this analysis and documentation of appropriate BMPs. Renewal of coverage for a facility requires a review of the SWPPP to assure that the selected BMPs continue to be appropriate.

☐ Applicable: The main pollutant of concern in this permit is sediment. Compliance with the technology-based limitations established in this permit for the protection of General Criteria, along with the evaluation and implementation of BMPs as documented in the SWPPP, meets the requirements of Missouri's Antidegradation Review [10 CSR 20-7.031(3), 10 CSR 20-7.031 Table A, and 10 CSR 20-7.015(9)(A)5].

**STORMWATER POLLUTION PREVENTION PLAN (SWPPP):**
In accordance with 40 CFR 122.44(k)(k) Best Management Practices (BMPs), BMPs are implemented to control or abate the discharge of pollutants when: (1) Authorized under Section 304(e) of the CWA for the control of toxic pollutants and hazardous substances from ancillary industrial activities; (2) Authorized under Section 402(p) of the CWA for the control of stormwater discharges; (3) Numeric effluent limitations are infeasible; or (4) The practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA.
In accordance with Developing Your Stormwater Pollution Prevention Plan, a Guide for Construction Sites (EPA 833-R-06-004; https://www3.epa.gov/npdes/pubs/sw_swppp_guide.pdf) published by the United States Environmental Protection Agency (EPA) in May 2007, BMPs are measures or practices used to reduce the amount of pollution entering waters of the state. BMPs may take the form of a process, activity, or physical structure. EPA developed resources and tools related to construction stormwater along with the BMPs to control and minimize stormwater (https://www.epa.gov/npdes/stormwater-discharges-construction-activities). Along with EPA’s resources and tools, the International Stormwater BMP database (www.bmpdatabase.org/index.htm) may provide guidance on BMPs appropriate for specific industries.

Additionally in accordance with Stormwater Management, a SWPPP is a series of steps and activities to (1) identify sources of pollution or contamination, and (2) select and carry out actions which prevent or control the pollution of stormwater discharges.

☑ Applicable: A SWPPP shall be developed and implemented for each site and shall incorporate required practices identified by the department with jurisdiction, incorporate erosion control practices specific to site conditions, and provide for maintenance and adherence to the plan.

The new permit has been revised to allow permittees to store SWPPP documents electronically as long as they can be provided in an expedient manner.

Release of a hazardous substance must be reported to the department in accordance with 10 CSR 24-3.010. If the spill occurs outside of normal business hours, or if the permit holder cannot reach regional office staff for any reason, the permit holder is instructed to report the spill to the department’s 24 hour Environmental Emergency Response hotline at (573) 634-2436 at the earliest practicable moment after discovery. Leaving a message on a department staff member voice-mail does not satisfy this reporting requirement.

WATER QUALITY STANDARDS:
Per 10 CSR 20-7.031(4), General Criteria shall be applicable to all waters of the state at all times, including mixing zones. Additionally, 40 CFR 122.44(d)(1) directs the department to include in each NPDES permit conditions to achieve water quality established under Section 303 of the CWA, including state narrative criteria for water quality.

SPECIFIC CRITERIA CONSIDERATIONS:
An evaluation of discharges associated with land disturbance activities has been conducted to determine if any pollutants discharged under this general permit would have reasonable potential to cause or contribute toward an excursion of specific water quality criterion. Pollutants discharged from land disturbance activities are not commonly associated with pollutants listed as specific criteria in the Missouri Water Quality Standards; therefore, reasonable potential to cause an excursion of a specific criterion does not exist.

GENERAL CRITERIA CONSIDERATIONS:
In accordance with 40 CFR 122.44(d)(1), effluent limitations shall be placed into the permit for those pollutants which have been determined to cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality. The rule further states that pollutants which have been determined to cause, have the reasonable potential to cause, or contribute to an excursion above a narrative criterion within an applicable State water quality standard, the permit shall contain a numeric effluent limitation to protect that narrative criterion. In order to comply with this regulation, the permit writer will complete reasonable potential determinations on whether the discharge will violate any of the general criteria listed in 10 CSR 20-7.031(4). These specific requirements are listed below followed by derivation and discussion [the lettering matches that of the rule itself, under 10 CSR 20-7.031(4)]. It should also be noted that Section 644.076.1, RSMo states that it shall be unlawful for any person to cause or permit any discharge of water contaminants from any water contaminant or point source located in Missouri that is in violation of sections 644.006 to 644.141 of the Missouri Clean Water Law or any
standard, rule or regulation promulgated by the commission.

(a) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses. The SWPPP requires implementation of best management practices to store, prevent, or minimize stormwater and/or any related land disturbance activity discharges (namely sediment). If one follows their SWPPP and other permit conditions including timely inspections, no reasonable potential to cause an excursion of this narrative exists. Additionally, there had been no indication to the Department that a stream has had issues maintaining beneficial uses as a result of the controlled and managed stormwater discharges per the SWPPP. Therefore, based on the information reviewed during the drafting of this permit, no reasonable potential to cause or contribute to an excursion of this criterion exists.

(b) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses. Please see (a) above as justification is the same.

(c) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses. Please see (a) above as justification is the same.

(d) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life. This permit addresses discharges from land disturbance activities and if not expected to include an toxic pollutants. Best management practices are to be addressed in the SWPPP should any toxic pollutant of concern be on-site.

(e) There shall be no significant human health hazard from incidental contact with the water. Please see (a) above as justification is the same.

(f) There shall be no acute toxicity to livestock or wildlife watering. Please see (d) above as justification is the same.

(g) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community. Please see (a) above as justification is the same.

(h) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247. Please see (a) above. Additionally, any solid wastes received or produced at this facility are wholly contained in appropriate storage facilities, are not discharged, and are disposed of offsite. Therefore, this discharge does not have reasonable potential to cause or contribute to an excursion of this criterion.

The settleable solids requirement was removed from this permit and was replaced with additional, more specific BMP requirements. The settleable solids limit was determined not to be protective of all waters across the state, therefore, it was removed. Examples of these BMPs include requirements to:

- Install and maintain perimeter controls along areas of the site that will receive pollutant discharges;
- Minimize sediment track-out from the site;
- Provide storage for runoff up to and including a 2-year, 24-hour storm event when designing sedimentation basins; and
- Direct stormwater to vegetated areas.

The minimum buffer width was increased from 25 feet to 50 feet. Studies have shown that a 50 foot vegetative buffer more adequately treats sediment from stormwater discharges. This appears to be standard in EPA’s permit as well as in many other states. A literature review was conducted to assess the effectiveness of buffer widths in relation to sediment removal. In an early literature review on grass buffers in agricultural settings, Dosskey (2001) concluded that 40 -100% of sediment entering from cultivated fields was removed using buffer strips 0.5 to 20 meters. Liu et al. (2008) conducted an analysis of 85 estimates of sediment removal by vegetated buffers. They found that sediment removal efficiency ($E_s$, the percentage of inflowing sediment trapped within a buffer) increased with buffer width according to the relationship: $E_s = 13.4 \log_e (w) + 56.9$ in
which \( w \) (m) is buffer width. This equation predicts that \( E_s \) increases from 78% for a 5 meter wide buffer to 88% and 97% at widths of 10 meters and 20 meters, respectively. Yaun et al. (2009; 93 estimates) and Zhang et al. (2010; 81 estimates) garnered similar results to Liu et al.

In order to design controls that match the sediment removal efficiency of a 50-foot buffer, first the permittee must know what this efficiency is for the site. The sediment removal efficiencies of natural buffers vary according to a number of site-specific factors, including precipitation, soil type, land cover, slope length, width, steepness, and the types of sediment controls used to reduce the discharge of sediment prior to the buffer.

Sediment removal efficiencies are based on the U.S. Department of Agriculture’s RUSLE2 (Revised Universal Soil Loss Equation 2) model for slope profiles using a 100-foot long exposed slopes.

Sediment removal is defined as the annual sediment delivered at the downstream end of the 50-foot natural buffer (tons/yr/acre) divided by the annual yield from cleared area (tons/yr/acre).

Sediment removal is in part a function of (1) a perimeter control (i.e., silt fence) located between the disturbed portion of the site and the upland edge of the natural buffer and (2) stormwater flows traveling through a 50-foot buffer of undisturbed natural vegetation.

Additional guidance may be found at https://www.epa.gov/sites/production/files/2017-02/documents/2017_cdp_final_appendix_g_-_buffer_reqs_508.pdf.

Inspection frequencies: Site inspection frequencies have been changed from the previous permit based upon guidance from the USEPA and from stakeholder discussions. These frequencies will allow flexibility but will still allow for frequent enough inspections to ensure that all BMPs are adequately functioning.

Part VI – Effluent Limitations Determination

In this general permit, Technology-Based Effluent Limitations are established through the SWPPP and BMP requirements. Effective BMPs may have to be designed on a site-specific basis. The implementation of monitoring provides a tool for each facility to evaluate the effectiveness of BMPs to ensure protection of water quality.

Part VII – Land Purchase and Change of Ownership

A “larger common plan of development or sale” is a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under one plan. This term is used in conjunction with common promotional plan, as defined in §644, RSMo.

Any portion of a project that is sold to a developer is still considered part of a larger common plan of development or sale and will require a permit.

If a portion of a site is sold to an individual for the purpose of building his or her private residence:

- A permit is required if the portion of land sold is equal to or greater than one acre.
- A permit is not required if the portion of land sold is less than one acre.

Part VIII – Termination

The word ‘plant density’ was removed from the first paragraph since the department determined that percent of vegetative cover more accurately describes the vegetative requirements of this permit. This decision was made after discussion within the department and with stakeholders.

It is preferable that temporary BMPs such as sediment fence be removed prior to permit termination to
eliminate potential solid waste issues that may occur as a result of unnecessary and unmaintained BMPs.

Additional options for winter site stabilization as part of the vegetation requirement may exist, such as using a seeded erosion control blanket.

**Part IX – Duty to Reapply**

This section has been revised to reflect the current applicable statutes which require applicants to submit an application for coverage 30 days prior to expiration of this permit. Currently, a paper application if required; however, applicants are to submit an application for coverage electronically as soon as they are made available by the director. The department will announce the availability status of the new permit and the process to reapply at least 60 days prior to the expiration of the existing permit.

**Part X – Standard Conditions**

This section was revised to only include the standard conditions that specifically apply to this permit. All other conditions have been removed.

**Part XI – Administrative Requirements**

On the basis of preliminary staff review and applicable standards and regulations, the department, as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions contained herein and within the permit. The proposed determinations are tentative pending public comment.

**Public Notice:**
The department shall give public notice that a draft permit has been prepared and its issuance is pending. Additionally, public notice will be issued if a public hearing is to be held because of a significant degree of interest or because of water quality concerns related to a draft permit. No public notice is required when a request for a permit modification or termination is denied; however, the requester and facility must be notified of the denial in writing.

The department must give public notice of a pending permit or of a new or reissued Missouri State Operating Permit. The public comment period is a length of time not less than thirty (30) days following the date of the public notice, during which interested persons may submit written comments about the proposed permit.

For persons wanting to submit comments regarding this proposed permit, please refer to the Public Notice page located at the front of this draft permit. The Public Notice page gives direction on how and where to submit appropriate comments.

☑ The Public Notice period seeking comments on this permit occurred from March 31 to May 1, 2017.

**DATE OF FACT SHEET: 06/16/2017**

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