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project manual

new project for:

Meramec Ambulance District Station 4

Address: 385 Old Manchester Rd, Pacific, MO 63069

procurement & contracting requirements

specifications

reference table of contents

Proj. Manual 1 of 2

October 16, 2026

Architect Project No.: 25083

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INVITATION TO BID

MERAMEC AMBULANCE DISTRICT

Stations No. 1 & No. 3 Renovations

Station No. 4 New Construction, 385 Old Manchester Road, Pacific, MO 63069

Notice is hereby given that the Meramec Ambulance District is accepting sealed bids for two (2) separate General Construction project packages: (1) renovations to Stations No. 1 and No. 3, and (2) construction of new Station No. 4. Bids shall be submitted on or before **November 13, 2026 at 2:00 PM local time.**

Bids shall be submitted to:

Meramec Ambulance District
Attention: Taz Meyer, Chief
Station No. 3
7390 State Highway O
Robertsville, MO 63072

There will be a public opening of the bids immediately following at:
Pacific Fire Protection District Station No. 2 – Meeting Room
7376 State Highway O
Robertsville, MO 63072

There will be two (2) separate General Construction bid packages. The Stations No. 1 and No. 3 Renovations will be bid as one combined project package. Station No. 4 New Construction will be bid as a separate project package. Bidders may submit a bid for either project package or for both project packages.

The Stations No. 1 and No. 3 Renovations generally include interior and exterior improvements; site, plumbing, electrical, lighting and generator work; finish upgrades; fixtures and equipment; and related renovation work at the two existing ambulance stations. Station No. 4 scope includes site development and construction of a new ambulance base station.

Prospective general contractors and subcontractors are highly encouraged to attend the pre-bid meeting that will be held on **October 28, 2026 at 9:00 AM local time at Meramec Ambulance District Station No. 3 Apparatus Bay, 7390 State Highway O, Robertsville, MO 63072**. The meeting will be followed by walkthroughs of existing Stations No. 3 and No. 1 to review existing conditions. No site walkthrough is scheduled for the Station No. 4 New Construction project.

Bid documents and specifications may be obtained, and questions regarding these projects may be directed to the following persons:

- Matthew Bethel, Archimages, Inc., at mbethel@archimages-stl.com or 913-378-9533.
- Nicole Luedloff, Archimages, Inc., at nluedloff@archimages-stl.com or 314-965-7445.
- Josh Hurford, NAVIGATE, at josh@navigatebuildingsolutions.com or 512-808-9863.

The Meramec Ambulance District reserves the right to reject any and all bids, or to advertise for new bids if deemed necessary.

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SECTION 00 01 07.01
ARCHITECTURAL PROFESSIONAL SEAL

Disclaimer of Responsibility:

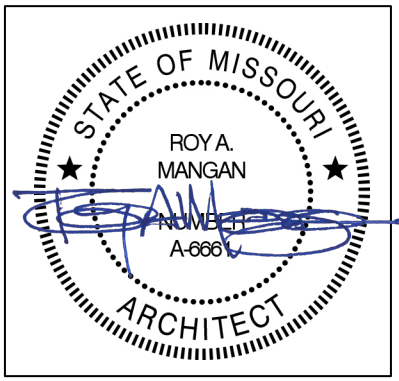
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ARCHITECTURAL PROFESSIONAL SEAL:

NAME: ROY A. MANGAN
MISSOURI LICENSE NO.: A-6661
LICENSE EXPIRES: DECEMBER 31, 2027
DISCIPLINE: ARCHITECTURAL
TITLE: PRINCIPAL, RA
COMPANY NAME: ARCHIMAGES, INC.



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SECTION 00 01 07.02
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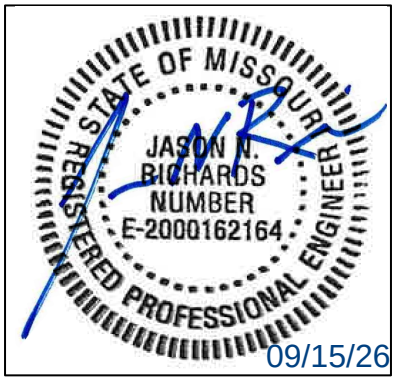
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STRUCTURAL PROFESSIONAL SEAL:

NAME: Jason N. Richards
STATE: MISSOURI
LICENSE NO.: 2000162164
LICENSE EXPIRES: DECEMBER 31, 2026
DISCIPLINE: STRUCTURAL
TITLE: PRINCIPAL
COMPANY NAME: KPFF CONSULTING ENGINEERS



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SECTION 00 01 07.03
FIRE PROTECTION PROFESSIONAL SEAL

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FIRE PROTECTION PROFESSIONAL SEAL:

NAME: Richard Halteman
STATE: Missouri
LICENSE NO.: E-25112
LICENSE EXPIRES: 12/31/2026
DISCIPLINE: FIRE PROTECTION
TITLE: Senior Project Manager
COMPANY NAME: Horner & Shifrin



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SECTION 00 01 07.03
FIRE PROTECTION PROFESSIONAL SEAL

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FIRE PROTECTION PROFESSIONAL SEAL

NAME: Richard Halteman
STATE: Missouri
LICENSE NO.: E-25112
LICENSE EXPIRES: 12/31/2026
DISCIPLINE: PLUMBING
TITLE: Senior Project Manager
COMPANY NAME: Horner & Shifrin



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SECTION 00 01 07.05

HEATING, VENTILATING and AIR CONDITIONING PROFESSIONAL SEAL

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HEATING, VENTILATING and AIR-CONDITIONING PROFESSIONAL SEAL

NAME: Richard Halteman

STATE: Missouri

LICENSE NO.: E-25112

LICENSE EXPIRES: 12/31/2026

DISCIPLINE: HEATING, VENTILATING AND AIR CONDITIONING

TITLE: Senior Project Manager

COMPANY NAME: Horner & Shifrin



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SECTION 00 01 07.06
ELECTRICAL PROFESSIONAL SEAL

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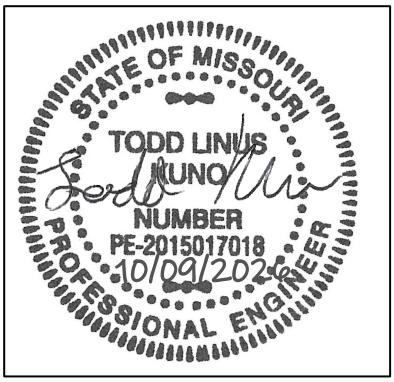
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ELECTRICAL PROFESSIONAL SEAL

NAME: Todd Kuno
STATE: Missouri
LICENSE NO.: PE-2015017018
LICENSE EXPIRES: 12-31-2027
DISCIPLINE: ELECTRICAL
TITLE: Project Manager - Building Services
COMPANY NAME: Horner & Shifrin



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SECTION 00 01 07.07
COMMUNICATIONS PROFESSIONAL SEAL

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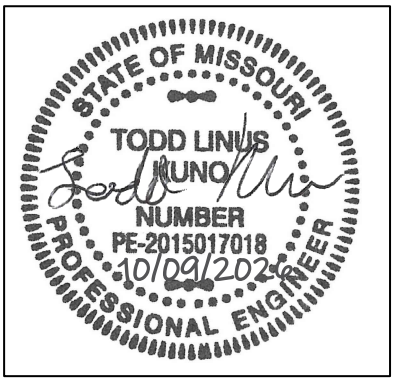
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COMMUNICATIONS PROFESSIONAL SEAL

NAME: Todd Kuno
STATE: Missouri
LICENSE NO.: PE-2015017018
LICENSE EXPIRES: 12-31-2027
DISCIPLINE: COMMUNICATIONS
TITLE: Project Manager - Building Services
COMPANY NAME: Horner & Shifrin



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SECTION 00 01 07.08

ELECTRONIC SAFETY and SECURITY PROFESSIONAL SEAL

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ELECTRONIC SAFETY and SECURITY PROFESSIONAL SEAL:

NAME: Todd Kuno

STATE: Missouri

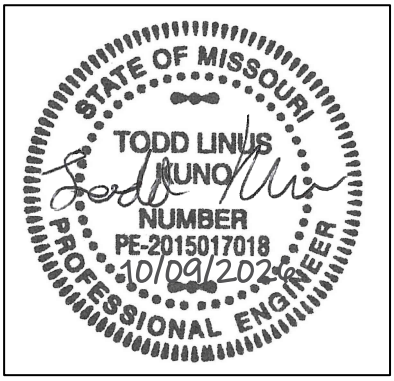
LICENSE NO.: PE-2015017018

LICENSE EXPIRES: 12-31-2027

DISCIPLINE: ELECTRONIC SAFETY and SECURITY

TITLE: Project Manager - Building Services

COMPANY NAME: Horner & Shifrin



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SECTION 00 01 07.09
CIVIL PROFESSIONAL SEAL

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CIVIL PROFESSIONAL SEAL

NAME: BRANDON A. HARP, P.E.
STATE: MISSOURI
LICENSE NO.: E-28650
LICENSE EXPIRES: 12/2027
DISCIPLINE: CIVIL
TITLE: PRESIDENT
COMPANY NAME: CIVIL ENGINEERING DESIGN CONSULTANTS, INC.



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SECTION 00 21 13
INSTRUCTIONS TO BIDDERS

SUMMARY

1.01 DOCUMENT INCLUDES

A. Invitation
   1. Bid Submission
   2. Intent
   3. Work Identified in Contract Documents
   4. Contract Time

B. Bid Documents and Contract Documents
   1. Definitions
   2. Contract Documents Identification
   3. Availability
   4. Examination
   5. Inquiries/Addenda
   6. Product/Assembly/System Substitutions

C. Site Assessment
   1. Site Examination
   2. Prebid Conference

D. Qualifications
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E. Bid Submission
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   2. Bid Ineligibility

F. Bid Enclosures/Requirements
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   4. Fees for Changes in the Work
   5. Bid Form Signature
   6. Additional Bid Information
   7. Selection and Award of Alternates

G. Offer Acceptance/Rejection
   1. Duration of Offer
   2. Acceptance of Offer

1.02 RELATED DOCUMENTS

A. Document 01 10 00 - Summary.

B. Document 00 31 00 - Available Project Information.

C. Document 00 41 00 - Bid Form.

D. Document 00 41 01 - Supplemental Bid Information.

E. Document 00 41 10 Contractor’s Affidavit for Public Construction Projects.

F. Document 00 41 20 Non Collusion Affidavit.

G. Document 00 73 00 - Supplementary Conditions:

BIDDING INSTRUCTIONS

2.01 BID SUBMISSION

A. See 00 01 01 Invitation to Bid for Bid Date, submission location and bid opening information.

2.02 INTENT

A. The intent of this bid request is to obtain an offer(s) to perform work per the Contract Documents to provide New Ambulance Base Facilities, at the location indicated below, for the project named 25083 Meramec Ambulance District - Station 4 for a Stipulated Sum contract, in accordance with Contract Documents.

B. The Work shall be completed within one individual phase as delineated within the drawings and Subsection 2.03, of this Section.

2.03 WORK IDENTIFIED IN THE CONTRACT DOCUMENTS

A. Work of this proposed Contract comprises building construction and site development Work for construction of a new ambulance district station.

B. Project Location:

1. Project Address: 385 Old Manchester Road, Pacific, MO 63069

2.04 CONTRACT TIME

A. Identify Contract Time in the Bid Form. The completion date in the Agreement shall be the Contract Time added to the commencement date.

B. Delays and Liquidated Damages: In the event Substantial Completion of any aspect of the Work is not achieved by dates indicated in the Agreement, the Contractor shall pay the Owner liquidated damages as described in AIA Document A101, Section 4.5.

C. Owner requires that under the work of this contract be completed as quickly as possible and consideration will be given to time of completion when reviewing the submitted bids.

BID DOCUMENTS AND CONTRACT DOCUMENTS

3.01 DEFINITIONS

A. Bid Documents: Contract Documents supplemented with Invitation To Bid, Instructions to Bidders, Information Available to Bidders, Bid Form Supplements To Bid Forms and Appendices identified.

B. Contract Documents: Defined in AIA A201 Article 1 including issued Addenda.

1. AIA Documents A101 and A201, attached in this Project Manual, include modifications from the original text.

C. Bid, Offer, or Bidding: Act of submitting an offer under seal.

D. Bid Amount: Monetary sum identified by the Bidder in the Bid Form.

E. A Bidder is a person or entity who submits a Bid and who meets all requirements set forth within bidding documents. This shall include, but not be limited to, General Contractors, Subcontractors, Subsubcontractors, Venders and Suppliers. All bidders shall be responsible for bidding a complete set of Contract documents.

3.02 CONTRACT DOCUMENTS IDENTIFICATION

A. Contract Documents are identified as Architect's project number Design Professional's Project Number as prepared by Archimages, Inc. These documents also include drawings, specifications and related information from the Architect's engineering consultants as identified in the Table of Contents and Drawing Index.

3.03 AVAILABILITY

A. Digital copies of Contract Documents may be downloaded, at no cost, from Architect by contacting our Office Manager, Nicole Luedloff via email: nluedloff@archimages-stl.com.

B. Bid Documents are made available only for the purpose of obtaining offers for this project. Their use does not grant a license for other purposes.

3.04 EXAMINATION

A. Upon receipt of Bid Documents verify that documents are complete. Notify Architect should the documents be incomplete.

B. Immediately notify Architect upon finding discrepancies or omissions in the Bid Documents.

C. All Bidders shall be responsible for reviewing and including all Work outlined within the Bid Documents, prior to Submitting a Bid.

3.05 INQUIRIES/ADDENDA

A. Direct all bidding questions, requests for clarification, and addenda inquiries in writing to Nicole Luedloff (nluedloff@archimages-stl.com) and Matthew Bethel (mbethel@archimages-stl.com), Archimages, Inc.

B. Addenda may be issued during the bidding period. All Addenda become part of Contract Documents. Include resultant costs in the Bid Amount.

C. Verbal answers are not binding on any party.

D. Clarifications requested by bidders must be in writing not less than 7 days before date set for receipt of bids. The reply will be in the form of an Addendum, a copy of which will be forwarded to known recipients. Said notice shall not be construed as a restriction against discussion of Bid Documents, or an elimination of the Bidders responsibility to notify Architect of any ambiguity inconsistency or errors.

3.06 PRODUCT/ASSEMBLY/SYSTEM SUBSTITUTIONS

A. General Requirements for Substitution Requests:
   1. Project Manual establishes standards for products, assemblies, and systems.
   2. Submit requests only for elements for which substitution is specifically allowed in the Project Manual.
   3. Provide sufficient information to determine acceptability of proposed substitutions.
   4. Provide complete information on required revisions to other work to accommodate each proposed substitution.

B. Substitution Request Time Restrictions:
   1. Where the Bid Documents stipulate a particular product, substitutions will be considered up to 7 days before receipt of bids.

C. Substitution Request Form:
   1. See 01 25 00 Substitution Procedures for procedural requirements for substitutions.

D. Review and Acceptance of Request:
   1. Architect -may approve the proposed substitution and will issue an Addendum to known bidders.
   2. For approved substitutions, include representation of changes in the bid, if any, required in the work and changes to Contract Time and Contract Sum to accommodate such substitutions. A later claim by the bidder for an addition to the Contract Time or Contract Sum because of changes in work necessitated by use of substitutions will not be considered.
   3. Each submission shall provide sufficient information, as required to determine acceptability of said products.
   4. Provide complete information of any and all required revisions, to any related Work, as required to accommodate each proposed substitution.
   5. Provide all products, as specified, unless substitutions have been submitted in this manner and approved.
   6. No substitutions will be considered after Co~~n~~ntract has been awarded, unless specifically provided within the Contract Documents.

E. See also Section 01 60 00 Product Requirements for additional information.

SITE ASSESSMENT

4.01 SITE EXAMINATION

A. Examine the project site before submitting a bid.

B. A visit to the project site has been arranged for bidders as follows: In conjunction with the pre-bid meeting.

4.02 PREBID CONFERENCE

A. A bidders' conference has been scheduled for October 28, 2026 at 9:00 am at Meramec Ambulance District Station No. 3 – Apparatus Bay, 7390 Highway O, Robertsville, MO 63072.

B. All general contract and subcontract, bidders and suppliers are invited.

C. Representatives of Architect and Owner will be in attendance.

D. Summarized minutes of this meeting will be circulated to attendees. These minutes will form part of Contract Documents.

E. Information relevant to the Bid Documents will be recorded in an Addendum, issued to Bid Document recipients which are known to the Architect.

QUALIFICATIONS

5.01 EVIDENCE OF QUALIFICATIONS

A. Complete the questionnaire that is included in Section 00 41 00 Bid Form.

B. To demonstrate qualification for performing the Work of this Contract, bidders may be requested to submit additional information such as written evidence of financial position, previous experience, and current commitments.

5.02 SUBCONTRACTORS/SUPPLIERS/OTHERS

A. Complete the list of proposed subcontractors that is included Section 00 41 01 Supplemental Bid Information.

B. Owner reserves the right to reject a proposed subcontractor for reasonable cause.

BID SUBMISSION

6.01 SUBMISSION PROCEDURE

A. Bidders shall be solely responsible for the delivery of their bids in the manner and time prescribed.

B. Submit of the executed offer on the Bid Forms provided, signed and sealed with the required security in a closed opaque envelope, clearly identified with bidder's name, project name and Owner's name on the outside.

C. Improperly completed information, irregularities in security deposit, may be cause not to open the Bid Form envelope and declare the bid invalid or informal.

D. An abstract summary of submitted bids will be made available to all bidders following bid opening.

E. Prior to submitting Bid Documents, each bidder shall ascertain that they have received all previously issued Addenda and shall acknowledge receipt of same, within Bid Form.

6.02 BID INELIGIBILITY

A. Bids that are unsigned, improperly signed or sealed, conditional, illegible, obscure, contain arithmetical errors, erasures, alterations, or irregularities of any kind, may at the discretion of the Owner, be declared unacceptable.

B. Bid Forms, Appendices, and enclosures that are improperly prepared may, at the discretion of Owner, be declared unacceptable.

C. Failure to provide security deposit, bonding or insurance requirements may, at the discretion of Owner, be waived.

BID ENCLOSURES/REQUIREMENTS

7.01 SECURITY DEPOSIT

A. Bids shall be accompanied by a security deposit as follows:
   1. Bid Bond of a sum no less than 5 percent of the Bid Amount on AIA A310 Bid Bond Form.

B. Endorse the Bid Bond in the name of the Owner as obligee, signed and sealed by the principal (Contractor) and surety.

C. The security deposit will be returned after delivery to the Owner of the required Performance and Payment Bond(s) by the accepted bidder.

D. Include the cost of bid security in the Bid Amount.

E. After a bid has been accepted, all securities will be returned to the respective bidders and other requested enclosures.

F. If no contract is awarded, all security deposits will be returned.

7.02 PERFORMANCE ASSURANCE

A. Accepted Bidder: Provide a Performance and Payment bond as described in 00 52 03 – Exhibit A, Insurance and Bonds.

B. Include the cost of Performance and Payment Bonds in the Bid Amount.

7.03 INSURANCE

A. Provide an executed "Undertaking of Insurance" on a standard form provided by the insurance company stating their intention to provide insurance to the bidder in accordance with the insurance requirements of Contract Documents.

7.04 BID FORM REQUIREMENTS

A. Complete all requested information in the Bid Form and Appendices.

B. Taxes: Refer to Document 00 52 01 - General Conditions, Document A201-2017 for inclusion and exclusion of taxes.

7.05 BID FORM SIGNATURE

A. The Bid Form shall be signed by the bidder, as follows:
   1. Sole Proprietorship: Signature of sole proprietor in the presence of a witness who will also sign. Insert the words "Sole Proprietor" under the signature. Affix seal.
   2. Partnership: Signature of all partners in the presence of a witness who will also sign. Insert the word "Partner" under each signature. Affix seal to each signature.
   3. Corporation: Signature of a duly authorized signing officer(s) in their normal signatures. Insert the officer's capacity in which the signing officer acts, under each signature. Affix the corporate seal. If the bid is signed by officials other than the president and secretary of the company, or the president/secretary/treasurer of the company, a copy of the by-law resolution of their board of directors authorizing them to do so, must also be submitted with the Bid Form in the bid envelope.
   4. Joint Venture: Each party of the joint venture shall execute the Bid Form under their respective seals in a manner appropriate to such party as described above, similar to the requirements of a Partnership.

7.06 ADDITIONAL BID INFORMATION

A. Submit the following Supplements within 24 hours after bid submission:
   1. Document 00 41 01-Supplemental Bid Information.

7.07 SELECTION AND AWARD OF ALTERNATES

A. Indicate variation of bid price for Alternates listed on the Bid Form. Unless otherwise indicated, indicate Alternates as a difference in bid price by adding to or deducting from the base bid price.

B. Owner reserves the right to accept Alternates in order or combination to determine the final scope and contract amount to be awarded.

OFFER ACCEPTANCE/REJECTION

8.01 DURATION OF OFFER

A. Bids shall remain open to acceptance and shall be irrevocable for a period of sixty (60) days after the bid closing date.

8.02 ACCEPTANCE OF OFFER

A. Owner reserves the right to accept or reject any or all offers.

B. Owner intends to award a Contract based on Bid that, in Owner's sole discretion, is the best, most responsible and the most responsive Bid, that best meets the interests and requirements of Owner. Owner reserves the right, within Owner's sole discretion, to reject any and all bids, waive technicalities or deficiencies in any or all bids, negotiate with any or all bidders or any others for more favorable terms or prices and to award a Contract to other than the Bidder submitting the lowest cost Bid Proposal, with or without negotiation. Owner reserves the right to not open a sole Bid.

C. Owner intends to award a Contract to the Bidder who agrees to award Work and select Subcontractors, who agree to award work, to all Contractors and Subcontractors that adhere to and award Work based upon historical craft jurisdiction.

D. Owner intends to make any investigation of a Bidder, they deem necessary, as required to determine if Bidders have had any prevailing wage violations within the last five (5) years. Bidders shall assist in furnishing said information, regarding their status upon this reasonable request. Owner reserves the right to reject any Bid, if evidence submitted by, or investigation of Bidder fails to satisfy Owner that Bidder has provided services without prevailing wage violations within the last five (5) years.

E. Owner intends to make any investigation of a Bidder, they deem necessary to determine the ability of a Bidder to perform the Work. Bidders shall assist in furnishing said information, regarding their qualifications upon this reasonable request. Owner reserves the right to reject any Bid, if evidence submitted by, or other investigation of, the Bidder fails to satisfy the Owner that the Bidder has the proper qualifications to perform the Work in accordance with the Contract.

F. After acceptance by Owner, Architect on behalf of Owner, will issue to the successful bidder, a written letter of Contract Award.

END OF SECTION

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SCI ENGINEERING, INC.
130 Point West Boulevard
St. Charles, Missouri 63301
636-949-8200
www.sciengineering.com

Geotechnical Report

MERAMEC AMBULANCE DISTRICT - STATION #4
PACIFIC, MISSOURI

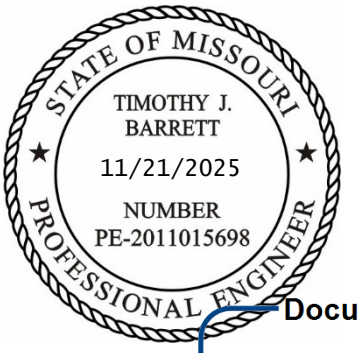
November 2025

MERAMEC AMBULANCE DISTRICT
Owner

NAVIGATE BUILDING SOLUTIONS, LLC
Owner's Representative

CIVIL ENGINEERING DESIGN CONSULTANTS
Civil Engineer

SCI No. 2025-1484.10



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SCI ENGINEERING, INC.
EARTH • SCIENCE • SOLUTIONS
GEOTECHNICAL
ENVIRONMENTAL
NATURAL RESOURCES
CULTURAL RESOURCES
CONSTRUCTION SERVICES

November 18, 2025

Chief Taz Meyer
Meramec Ambulance District
429 East Osage Street
Pacific, Missouri 63069

RE: Geotechnical Report
Meramec Ambulance District - Station #4
Pacific, Missouri
SCI No. 2025-1484.10

Dear Chief Taz Meyer:

Attached is SCI Engineering, Inc.'s *Geotechnical Report*, dated November 2025. It should be read in its entirety, and our recommendations applied to the design and construction of the project. Selected excerpts from the report are highlighted below:

- Auger refusal on limestone bedrock was encountered in seven of the eight borings at depths of 3.5 to 18 feet (approximate elevations 810.5 to 794). Based on the finished floor elevation of 814, rock is not anticipated to be encountered during foundation excavations; however, rock excavation may likely be necessary for utilities at least in the vicinity of B-402. Chipping or blasting will likely be required for bedrock below the auger refusal depths.

- Fat clay was encountered within the native soils throughout the site. Where bearing soil consists of clays with a liquid limit (LL) of 45 or higher, we recommend they be removed to a minimum depth of 2 feet beneath the bearing level of the perimeter building foundations, and 3 feet beneath the bottom of the floor slab. Based a FFE of 814 for the station, expansive clay remediation should be anticipated beneath the floor slab and foundations near B-402, B-404, B-405, and the foundations near B-406. The actual need for and extents of expansive soil remediation should be delineated by SCI personnel in the field during construction.

- Shallow spread footings bearing on remediated fat clay, or newly placed, low-plastic structural fill may be sized for a maximum net allowable bearing pressure of 2,500 pounds per square foot (psf) for continuous wall footings and 3,000 psf for isolated spread footings.

- Seismic Site Class C should be used for the project, with seismic design parameters as follows: $F_a = 1.30$, $F_v = 1.50$, $S_{DS} = 0.32$, and $S_{D1} = 0.15$, which results in a Seismic Design Category (SDC) of C for Risk Categories I, II, or III, or a SDC of D for Risk Category IV.

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We appreciate the opportunity to be of service and look forward to working with you during the remainder of the project. If you have any questions or comments, please do not hesitate to contact us.

Respectfully,

SCI ENGINEERING, INC.

Gabrielle M. Kowalik, E.I.
Staff Engineer

Timothy J. Barrett, P.E., CFM
Geotechnical Services Manager

GMK/TJB/tlw

Enclosure
Geotechnical Report

C: Stevie Schneider; Meramec Ambulance District
Dustin Roberts; Navigate Building Solutions, LLC
Collette Kescielski; Navigate Building Solutions, LLC
Roy Mangan; Archimages
Brandon Harp; Civil Engineering Design Consultants

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APPENDIX

Appendix A – Boring Log Legend and Nomenclature, Boring Logs

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Geotechnical Report

MERAMEC AMBULANCE DISTRICT - STATION #4
PACIFIC, MISSOURI

1.0 INTRODUCTION

At the request of Chief Taz Meyer of the Meramec Ambulance District, SCI Engineering, Inc. (SCI) performed a geotechnical study for the proposed ambulance base station. The purpose of our exploration was to characterize and evaluate the subsurface conditions, provide recommendations for foundations and pavements, and address other geotechnical aspects. Our services were provided in general accordance with our proposal, dated September 5, 2025, and authorized on October 3, 2025, by you.

2.0 SITE AND PROJECT DESCRIPTION

A new ambulance base station (Station #4) is planned for a site located at 385 Old Manchester Road in Pacific, Missouri. The location of the site is shown on the *Vicinity and Topographic Map*, Figure 1. The site is developed with a residence in the north-central portion of the site with a detached garage to the east. A gravel drive lane is oriented north to south through the property and connects the residence and garage to Old Manchester Road. The remainder of the site is grass-covered with a few mature trees throughout. Topography across the site slopes downwards from the center of the site to the east and west with maximum relief on the order of 55 feet. The existing site conditions are shown on the *Aerial Photograph*, Figure 2.

Based on our site observations, the exterior of the existing structures appear to be performing satisfactorily, with no significant tilting, bowing, or cracking observed, and we are unaware of any performance issues. We understand the northern structure will remain while the detached garage will be demolished to accommodate the new construction. Historic aerial imagery indicates a second residence was previously located in the central portion of the site but appears to have been demolished between 2021 and 2022. The previous building footprint is included on the *Aerial Photograph* and *Site Plan*, Figures 2 and 3.

Based on the *Site and Grading Plan*, prepared by Civil Engineering Design Consultants (CEDC), dated September 2025, the new construction will consist of an approximate 5,300-square-foot (sf) ambulance house/station. Two future additions planned to the east and west of the structure. Drive lanes will surround the station to the south, west, and north, with parking to the north of the station. An entrance/exit will be located off Manchester Road. A detention basin (assumed to be “dry”) will be located to the west of the station and will have a depth of 1 foot. A septic field is planned to the east of the station. The proposed construction is shown on the *Site Plan*, Figure 3.

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Structural loads were not available at the time of this proposal; however, we assume column loads of less than 150 kips and wall loading of less than 5 kips per linear foot. The station will have a finished floor elevation (FFE) of 814, requiring maximum cuts and fills of 1 and 4 feet, respectively. Cuts and fills throughout the remainder of the site will be on the order of 3 feet or less.

3.0 SUBSURFACE CONDITIONS

Eight borings (designated B-401 through B-408) were drilled at the approximate locations shown on the *Aerial Photograph* and *Site Plan*, Figures 2 and 3. The borings were staked in the field by SCI personnel using a handheld global positioning system (GPS) unit. Approximate ground surface elevations at the boring locations were interpolated from the *Site and Grading Plan* prepared by CEDC. Detailed information regarding the nature and thickness of the soils and rock encountered, and the results of the field sampling and laboratory testing, are shown on the *Boring Logs* contained in Appendix A.

3.1 Surficial Material

Surficial material consisting of 8 inches of crushed rock was encountered in B-403, B-406, and B-407.

3.2 Native Soils

The native soils generally consisted of interbedded layers of fat and lean clay (CL and CH in accordance with the Unified Soil Classification System and ASTM D 2488-06) with varying amounts of gravel to the depths of clayey gravel (GC) encountered at a depth of 8 feet or auger refusal at 3.5 to 13.5 feet. The clayey gravel extended to depths of 9.5 to 12.5 feet, where it was underlain by shaley fat clay (CH) to the depth of weathered limestone at 13.5 feet, or auger refusal at depths of 15 to 18 feet.

Standard Penetration Tests (SPTs) within the clays generally resulted in N-values that ranged from 7 to 69 blows per foot (bpf), averaging 20 bpf, which indicate the consistency of the clays ranged from medium stiff to hard, and were generally very stiff. As an exception split spoon refusal (SSR), where 50 hammer blows do not penetrate 6 inches, was encountered in the shaley fat clay at a depth of 13.5 in B-405. Moisture contents within the clays ranged from 7 to 39 percent, averaging 18 percent. SPTs within the clayey gravel resulted in N-values ranging from 42 bpf to 50 blows per 5.5 inches of penetration, indicating they were dense to very dense.

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3.3 Site Geology

Documented geology, including the *Bedrock Geologic Map of the St. Louis Quadrangle*, Missouri and Illinois indicates that bedrock at the site consists of the Keokuk and Burlington Limestone, which are medium to coarsely crystalline limestone with erratically stratified layers of chert and fossils.

Auger refusal was encountered in seven of the eight borings at depths ranging from 3.5 to 18 feet as shown in Table 3.1. Auger refusal was not encountered in B-407 which terminated at a depth of 10 feet. Auger refusal is a designation applied to any material that cannot be further penetrated by the drill rig without extraordinary effort and is indicative of a very hard or very dense material, usually boulders or bedrock. Weathered limestone was encountered in B-408 at a depth of 13.5 feet. Weathered limestone was not encountered in any of the remaining borings.

Table 3.1 – Auger Refusal Summary

Boring	Approximate Ground Surface Elevation (feet)	Approximate Weathered Limestone Depth (feet)	Approximate Weathered Limestone Elevation (feet)	Approximate Auger Refusal Depth (feet)	Approximate Auger Refusal Elevation (feet)
B-401	815	NE	---	10.5	804.5
B-402	814	NE	---	3.5	810.5
B-403	810	NE	---	13.5	796.5
B-404	815	NE	---	18	797
B-405	815	NE	---	15	800
B-406	811	NE	---	17	794
B-407	809	NE	---	NE	---
B-408	815	13.5	801.5	16	799

3.4 Groundwater

Groundwater was not observed during drilling at any of the eight boring locations. The groundwater level depends on seasonal and climatic variations and may be present at different depths in the future. In addition, without extended periods of observation, accurate groundwater level measurements may not be possible, particularly in low permeability soils.

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4.0 DESIGN RECOMMENDATIONS

4.1 Shallow Rock

Auger refusal on limestone bedrock was encountered at depths of 3.5 to 18 feet, approximate elevations (Els.) 794 to 810.5. **Based on the finished floor elevation of 814, rock is not anticipated to be encountered during foundation excavations; however, rock excavation will likely be necessary for utilities in the vicinity of B-402 at a minimum.** Chipping or blasting will likely be required for bedrock below the auger refusal depths. If blasting will be performed at the site, SCI should be contacted for further consultation regarding peak velocities, a pre-blast survey of the surrounding structures, and vibration monitoring considerations.

Due to the significant difference in the compressibility of soil and bedrock, differential settlement will occur if all the foundations of the building are not bearing on similar subgrade materials (i.e., all engineered fill bearing or all rock-bearing). Significant differential settlement can affect the serviceability of the building and poses the potential for cracks to develop within the foundations if mitigation measures are not considered during construction. **If bedrock is encountered in the foundation excavations it is recommended that the rock should be overexcavated to a minimum depth of one foot below the foundations and backfilled with compacted minus gradation limestone.**

4.2 Expansive Clay

Fat clay was encountered within the native soils throughout the site. Fat clay is susceptible to excessive volume change with variations in moisture content, which can lead to movement of concrete slabs and foundations of lightly loaded structures. Where bearing soil consists of clays with a liquid limit (LL) of 45 or higher, we recommend they be removed to a minimum depth of 2 feet beneath the bearing level of the perimeter building foundations, and 3 feet beneath the bottom of the floor slab, as shown on the *Expansive Clay Remediation Detail*, Figure 4. **Based a FFE of 814 for the station, expansive clay remediation should be anticipated beneath the floor slab and foundations near B-402, B-404, B-405, and the foundations near B-406.** The actual need for and extents of expansive soil remediation should be delineated by SCI personnel in the field during construction.

The overexcavation should extend at least 2 feet beyond the outside edge of the footings and addition footprint to facilitate uniform compaction of the replacement materials and may require additional widening at building corners to allow equipment access for proper compaction. The overexcavation should be

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backfilled with properly compacted low plastic soil or 1-inch minus crushed limestone. The footings and floor slab would then be constructed on the newly placed fill. As an alternate, footing overexcavations may be backfilled with lean concrete. With this option, widening of the footing excavation is not required.

As an alternative to overexcavation and replacement, the expansive soils may be remediated by the addition of lime in combination with a recompaction operation or during fill placement for general site grading. If lime stabilization is performed, we recommend thoroughly mixing in "Code L" (a locally available calcium oxide by-product also known as lime kiln dust) at a rate of 7 percent, or approximately 8 pounds of Code L per cubic foot of soil, to the depths and lateral limits described in the preceding paragraph. Water may need to be added during mixing to allow for proper hydration of the lime. Pulverizing and tilling equipment, such as “gators,” are preferred for mixing the lime into the soil. The treated soil should be placed in compacted lifts as discussed in Section 5.2.

The methods of treatment described above are based on generally accepted standards in the local engineering community; however, swell pressures and volume change potential greater than can be mitigated by this method may exist. Consequently, the owner should recognize that there is an inherent, but reduced risk that foundation and floor slab damage may occur, even after remedial treatment of the subgrade soil.

4.3 Shallow Foundation Recommendations

Shallow spread footings bearing on native lean clay, remediated fat clay, or newly placed, low plastic structural fill are appropriate for support of the proposed building. Shallow foundations can be sized for a maximum net allowable bearing pressure of 2,500 pounds per square foot (psf) for continuous wall footings and 3,000 psf for isolated spread footings. The footings may be designed with an ultimate coefficient of friction of 0.3 between the base of the concrete footing and the soil subgrade.

If encountered, inadequate bearing materials should be undercut and replaced with properly compacted, low-plastic soil or 1-inch minus crushed limestone following the methods provided in Sections 5.1 and 5.2 of this report.

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Exterior footings, as well as foundations in unheated areas of the facility, should be provided with at least 30 inches of soil cover for frost protection. Interior footings in heated areas can be located at nominal depths below the finished floor. For footings designed and constructed in accordance with our recommendations, total settlement should be less than 1 inch, and differential settlement between adjacent footings should be less than ¾ inch.

4.4 Seismic Considerations

Ground shaking at the foundation of structures and liquefaction of the soil under the foundations are the principle seismic hazards to be considered in design of earthquake-resistant structures. Liquefaction occurs when a rapid buildup in water pressure, caused by the ground motion, pushes sand particles apart, resulting in a loss of strength and later densification as the water pressure dissipates. This loss of strength can cause bearing capacity failure, while the densification can cause excessive settlement. Potential earthquake damage can be mitigated by structural and/or geotechnical measures or procedures common to earthquake resistant design.

4.4.1 International Building Code Site Classification

Seismic design parameters, as determined from data provided by the 2018 International Building Code (IBC 2018) and the United States Geological Survey (USGS) National Seismic Hazard Mapping Project are shown in Table 4.1.

Table 4.1 – Seismic Design Parameters

Site Class	C
M_W	7.52
PGA	0.20
F_{PGA}	1.21
Site Modified PGA_M	0.24
S_S	0.36
S_1	0.15
F_a	1.30
F_v	1.50
S_{DS} (Design Spectral Acceleration at 0.2 sec)	0.32
S_{D1} (Design Spectral Acceleration at 1.0 sec)	0.15
Seismic Design Category (Risk Categories I, II, and III)	C
Seismic Design Category (Risk Category IV)	D

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4.4.2 Liquefaction Potential Analysis

The liquefaction potential analysis for the site was conducted using data from the field exploration and laboratory test results and the techniques outlined in the National Center for Earthquake Engineering (NCEER) Technical Report NCEER-97-0022. Based on our analyses, the soils at the project site have sufficient strength values to resist liquefaction and/or plasticity index that make the threat of liquefaction minimal during the design earthquake. While the amount of the seismically induced settlement is dependent on the magnitude and distance from the seismic event, we estimate that the settlements from the design earthquake will be negligible and relatively uniform in nature, so liquefaction mitigation techniques are not required.

4.5 Floor Slab

The following recommendations assume average uniform floor slab load of 150 psf or less. If sections of the floor slab will support loads greater than the assumed floor slab load, then we should be provided the opportunity to review the final design plans and specifications to determine if the underlying subsurface soils can adequately support the loads. Proofrolling, as discussed in Section 5.1, should be accomplished to identify soft or unstable soils that should be removed from the floor slab area prior to fill placement and/or floor slab construction.

We recommend that the floor slab be designed using a modulus of subgrade reaction, *k* value, of 150 pounds per cubic inch, based on values typically obtained from 1-foot by 1-foot plate load tests. This value assumes the slab will bear on newly placed, low plastic structural fill, or remediated expansive clay. Depending on how the slab load is applied, the value will have to be geometrically modified. The value should be adjusted for larger areas using the following expression for cohesive and cohesionless soil:

Modulus of Subgrade Reaction, $k_s = (\frac{k}{B})$ for cohesive soil; and

$k_s = k\left(\frac{B+1}{2B}\right)^2$ for cohesionless soil.

Where: k_s = coefficient of vertical subgrade reaction for loaded area;
k = coefficient of vertical subgrade reaction for 1x1 square foot area; and
B = width of area loaded, in feet.

The floor slab should be supported on a minimum 4-inch-thick layer of crushed stone. This will help to distribute concentrated loads and equalize moisture conditions beneath the slab.

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It is generally preferable to maintain structural separation between the floor slab and the foundation walls and column pads using isolation joints. We also suggest that joints be placed in the floor slab with spacing (in feet) equal to approximately three times the thickness of the slab (in inches) in both directions. Such joints permit slight movements of the independent elements and help reduce random cracking that might otherwise be caused by restraint of shrinkage, slight rotations, heave, or settlement.

Where occupied space or moisture sensitive floor coverings are planned, we recommend a 6-mil-thick polyethylene sheeting be placed immediately beneath the floor slab and above the crushed rock or gravel to reduce the transfer of capillary moisture to the slab. However, without careful attention to curing of the floor slab, the polyethylene sheeting can cause excessive shrinkage cracking and "curling".

The precautions listed below should be followed for construction of slab-on-grade pads. These details will not reduce the amount of movement, but are intended to reduce potential damage, should some settlement of the supporting subgrade take place. Some increase in moisture content is inevitable as a result of development and associated landscaping. However, extreme moisture content increases can be largely controlled by proper and responsible site drainage, building maintenance and irrigation practices.

- Cracking of slab-on-grade concrete is normal and should be expected. Cracking can occur not only as a result of heaving of the supporting soil, but also as a result of concrete curing stresses. The occurrence of concrete shrinkage cracking, and problems associated with concrete curing may be reduced and/or controlled by limiting the slump of the concrete, proper concrete placement, finishing, curing, and by the placement of crack control joints at frequent intervals, particularly where re-entrant slab corners occur.

- Areas supporting slabs should be properly moisture conditioned and compacted. Backfill in all interior and exterior water and sewer line trenches should be carefully compacted to reduce the shear stress in the concrete extending over these areas.

Exterior slabs should be isolated from the station. These slabs should be reinforced to function as independent units. Movement of these slabs should not be transmitted to the stations' foundations or superstructure.

4.6 Pavements

Selection of the pavement section is dependent on the design life, traffic loads, subgrade strength, drainage characteristics, and the desired level of maintenance. Neither California Bearing Ratio testing nor formal pavement design was a part of our scope for this project. However, for planning purposes, the following recommendations typically result in pavements that perform satisfactorily on similar subgrades. They are

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intended to roughly provide a pavement requiring routine maintenance for a 5-year period, minor repair and maintenance during the 5- to 10-year life of the pavement, and possibly major repairs and restoration after a 10-year service life.

4.6.1 Flexible Pavement

A flexible pavement section may be used for automobile and light truck parking, and entrance and truck areas. The following sections are recommended for the different loading conditions. Asphalt mixes and Aggregate base gradations are referenced to the *Missouri Standard Specifications for Highway Construction* (MoDOT specs).

Table 4.2 – Recommended Flexible Pavement Thickness

Traffic Category	Asphaltic Concrete Surface Course (BP-1) (inches)	Asphaltic Concrete Base Course (BB) (inches)	Aggregate Base Thickness (Type 5) (inches)	Total Thickness (inches)
Drives for Automobiles, Light Trucks	3	--	8	11
Entrance and Drives for Ambulance	2	2	8	12
Parking stalls	3	--	6	9

Care should be taken to provide drains or drainable transitions at locations where pavement sections of varying thickness abut, as to not trap water within the crushed stone base, which could saturate and soften the subgrade.

4.6.2 Rigid Pavement

Alternately, a rigid concrete pavement section may be used with less anticipated long-term maintenance. The recommended rigid pavement sections are shown in Table 4.3.

Table 4.3 – Recommended Rigid Pavement Thickness

Traffic Category	Portland Cement Concrete (inches)	Type 5 Aggregate Base Thickness (inches)	Total Thickness (inches)
Dumpster Pad	8	4	12
Entrance and Drives for Ambulance, Automobiles and Light Trucks	6	4	10
Parking Stalls	5	4	9

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To provide resistance against salt and freeze-thaw cycles, we recommend the concrete have a minimum 28-day compressive strength of 4,000 pounds per square inch (psi) and air entrainment of 5 to 7 percent by volume. We also recommend that the maximum joint spacing be approximately 15 feet.

4.6.3 Pavement Subgrade Considerations

Care should be taken to provide drains or drainable transition at locations where pavement sections of varying thickness abut, so as not to trap water within the crushed stone base, which could saturate and soften the subgrade.

The fat clay could cause some distress in the pavement. To reduce long-term maintenance, consideration could be given to remediating the upper 12 inches of subgrade in paved areas. Options include removal and replacement with crushed stone or low plastic soil, lime treatment, geogrid reinforcement in combination with crushed rock, or use of thicker pavement sections. At a minimum, the pavement subgrade should be proofrolled under SCI's observation and any soft areas repaired prior to the placement of the aggregate base. Any soft areas identified during the proofroll should be removed to firmer soils and backfilled with engineered fill material in accordance with Sections 5.1 and 5.2.

Pavement subgrades may be subjected to construction traffic and exposure to weather for an extended period, and significant problems may be incurred.

4.7 Site Grading and Drainage

Positive site drainage should be provided to reduce surface water infiltration around the perimeter of the building and beneath the floor slab. All grades should be sloped away from the building. Roof and surface drainage should be collected and discharged such that water is not permitted to infiltrate the backfill of the addition.

Large trees and shrubs should be planted away from exterior footings as they may cause drying and shrinkage of the foundation soils and, with the passage of time, potentially detrimental settlement of the floor slab and foundations. A minimum distance of 20 feet or the mature tree's dripline, whichever is greater, is suggested.

We recommend that all final slopes have a maximum inclination of 3 horizontal to 1 vertical (3H:1V), and that a crest of at least 10 feet in width or a distance equivalent to the total height of the slope, whichever is less, be provided around the building before the surface slopes down and away.

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4.8 Underground Utilities

Underground utilities can provide a pathway for water to migrate below the floor slab. Drain and utility pipes beneath the floors should have tight joints to prevent leakage. If utility excavations are backfilled with free-draining granular materials, then cutoffs should be provided at the exterior walls to reduce the potential for water to migrate beneath the building. Impermeable cutoffs may consist of a 3-foot-long "plug" of cohesive soil or bentonite soil mix, or a 1-foot-long plug of lean concrete. Soil may be used for the balance of the backfill.

Depending on the proposed utility alignments and depths, it is possible that rock excavation will be required for the placement of deeper site utilities, particularly in the vicinity of B-402, and should be brought to the attention of the installation contractor. Rock excavation methods are discussed in Section 4.1.

Groundwater is not anticipated to impact construction. In most situations, small amounts of groundwater seepage into shallow excavations can be handled by means of gravity ditching and a sump pump. If greater flows are experienced, SCI should be retained to provide additional consultation.

Except for individual service lines to the facility that intersect foundations perpendicularly, below-grade utilities should not be located within the stress influence zone of the building foundations. Accordingly, below-grade utilities should be located outside a zone extending 45 degrees downward and outward from the edge of the footings.

4.9 Detention Basin Recommendations

A detention basin approximately 1 foot in depth is planned for the southwestern perimeter of the site. The basin will be "dry" (i.e., will not have a permanent normal pool elevation). Based on the *Grading Plan* provided, the slopes of the detention basin embankments will be sloped at a 3 horizontal to 1 vertical (3H:1V).

The entire embankments should consist of cohesive soils with a plasticity index (PI) of at least 20. Sandy, rocky, organic soils or high silt content soils are not suitable for the construction of the embankments because of their potential for erosion and piping. We anticipate suitable soils will be encountered. However, if any unsuitable soils are encountered, we recommend that unsuitable soil within the embankment areas be removed and replaced with at least 2 feet of cohesive soil with a plasticity index (PI) of at least 20, and less than 15 percent sand or gravel.

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Rock bedding should not be used for the outlet piping of the detention basin. Instead, the outlet pipe should be placed on a cohesive soil subgrade shaped to fit the pipe barrel, and the trench backfilled with properly compacted cohesive soil. Alternately, the trench can be backfilled to the springline of the pipe with lean concrete or flowable fill. A filter diaphragm should be incorporated around the outlet pipe.

5.0 SITE DEVELOPMENT AND CONSTRUCTION CONSIDERATIONS

5.1 Site Preparation

The detached garage and any below-grade components should be properly demolished, and the debris removed from the site. Existing foundation walls and footings, floor slabs, pavements, septic fields, and utilities, as well as their associated backfill, should be removed from below and at least 10 feet beyond the proposed station footprint. As an exception, deep utilities, such as existing sewers, may be grouted in place rather than being removed. However, the existing backfill associated with deep utilities should be removed. Outside of the station footprint, existing foundation walls and footings deeper than 3 feet below the proposed subgrade may be left in place. Excavations resulting from the removal of existing improvements should be backfilled with engineered fill in accordance with Section 5.2.

Areas to be cut, or to receive fill, should be stripped of surface vegetation and organic topsoil. The strippings should be removed and stockpiled for later placement in landscaped areas.

After removal of the existing site features, the station footprint should be checked for fat clay and remediated in accordance with Section 4.2. The site should then be proofrolled by systematically passing over the subgrade to achieve complete coverage with proper compaction or loaded construction equipment, and observing the subgrade for pockets of excessively soft, wet, or disturbed soil, or otherwise unacceptable materials.

Disturbed areas should be undercut and replaced with properly compacted structural fill. Soft areas or otherwise unacceptable materials, if encountered, should be removed and replaced with structural fill or stabilized prior to placing additional fill. If removal of soft soils is impractical due to their excessive depth, they should be stabilized or “bridged over” in a manner approved by SCI. “Bridging” of the soft soils can often be accomplished by placing a geofabric, such as RS380i, or a geogrid such as Tensar HX-145, or equivalents, then placing compacted crushed minus gradation rock. The thickness and gradation of the crushed rock should be evaluated by SCI personnel in the field on a case-by-case basis; however, thicknesses of 1 to 2 feet are common.

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Slopes to receive fill, which are steeper than 5 horizontal to 1 vertical (5H:1V), should be benched prior to the placement of fill. Benching will provide level surfaces for compaction and reduce the potential for development of inclined planes of weakness between the natural soil and newly compacted fill. The benches should be spaced such that the height of the cut at the up-slope end of the bench is less than 5 feet.

5.2 Fill Materials and Compaction

Prior to fill placement and compaction, the upper 8 inches of the exposed subgrade should be scarified, moisture conditioned and recompacted. Structural fill should be placed in maximum 8-inch-thick loose lifts and mechanically compacted in accordance with Table 5.1. We recommend that any fill placed in building areas have a LL less than 45 and a plasticity index (PI) less than 25. If higher plasticity soils are placed within 3 feet of the floor slab subgrades, or 2 feet of the bottom of the footings, then remediation will be required. Acceptable non-organic fill soils include materials designated CL, ML, CL-ML, GC, GM, GC-GM by ASTM D 2487-11. Demolished concrete is typically suitable for use as structural fill provided the materials are processed as described below and placed as approved by SCI.

Table 5.1 – Typical Compaction Requirements for Fill

Material Tested	Proctor Type	Minimum Percentage Dry Density
Structural Fill (Cohesive)	Modified (ASTM D 1557)	90
	Standard (ASTM D 698)	95
Structural Fill (Granular)	Modified	95
	Standard	98
Landscaped Areas (Non-load Bearing)	Modified	88
	Standard	92
Utility Trench Backfill	Modified	90
	Standard	95

Prior to compaction, the soil may require moisture adjustment. During warm weather, moisture reduction can generally be accomplished by disking or otherwise aerating the soil. When air drying is not feasible, a moisture reducing chemical additive, such as hydrated lime, could be incorporated into the soil. During dry weather, some addition of moisture may be required to facilitate compaction. This should also be done in a controlled manner using a tank truck with a spray bar. The moistened soil should be thoroughly

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blended with a disk or pulverizer to produce a uniform moisture content. If construction is performed during the winter season, fill materials should be carefully observed to see that no frozen soil is placed as fill or remains in the base materials upon which fill is placed.

Rubble fill, such as concrete from demolition activities or excavated bedrock, may be used as fill material; however, to the maximum extent practicable, reinforcing steel should be removed from the concrete. Rubble fill placed within 3 feet from the proposed finished grade, or within 3 feet of the bottom of footings, the floor slab, and utilities should be broken down to a 4-inch minus gradation. The rubble should have sufficient fines to fill voids around the rubble particles. For mixtures of soil and rock, the moisture content of the soil portion should be compatible with the desired results, i.e., approximately the same as would be required to obtain the recommended compaction if rock were not present. If the mixture is soil-dominated, a sheepsfoot roller will likely be most efficient in achieving compaction. If the mixture is rubble-dominated, compaction can often be better achieved with a vibratory roller or heavy tracked equipment.

If 4-inch-minus rubble is used as fill it should be placed in horizontal lifts not exceeding 12 inches in thickness, and compacted with a D8 dozer, heavy vibratory roller, or other equipment acceptable to SCI. Compaction testing of these materials will not be practical using conventional methods (i.e., nuclear density gauge or drive tubes), due to the particle size; therefore, compaction is usually based on a performance guideline in the field. Poorly compacted areas can generally be detected by observing the fill subgrade during the passing of a loaded scraper or compactor over the fill area and should be recompacted with additional passes or removed and replaced with more stable material. As a guide, we would anticipate that a minimum of four tracked passes of a D8 dozer, or equivalent, would be required to achieve proper compaction.

Backfill for foundation walls may consist of lean clay, 1-inch minus crushed limestone, or controlled low strength material. We advise performing field density tests on at least every other lift to monitor compaction. As an alternate, we suggest using 1-inch clean crushed limestone to provide improved drainage and to reduce lateral pressures on the walls. Due to a slight risk of migration of soil fines into the clean rock, a synthetic filter fabric, such as Mirafi 140N or equivalent, should be placed between the soil face of the excavation and the crushed limestone. If clean rock is used, it may be placed in 2-foot-thick lifts and tamped or tracked to achieve adequate densification. Exterior clean rock backfill should be capped with cohesive soil to reduce the potential for surface water infiltration and should also be drained to daylight, or to a sump with a pump.

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Backfill placed next to walls should be compacted with hand operated equipment and not large, self-propelled or machine operated equipment, which could result in potential overcompaction and higher lateral pressures. Compaction should be reduced within approximately 1 foot of the walls, and the walls should be observed periodically for signs of movement. If movement is detected, it may be necessary to provide bracing and/or change backfill procedures.

In addition to the minimum density requirements listed above, the soil must be stable, i.e., not "pumping" or rutting excessively under construction traffic, prior to placing additional fill or constructing foundations, floor slab, or pavements. Field density tests should be performed on each lift of fill to document that proper compaction is achieved.

5.3 Shallow Foundation Excavations

SCI should observe all footing and floor slab excavations for problem areas, such as fat clay, shallow rock, or otherwise unsuitable material, prior to placing new fill or concrete. Evaluation of the soil subgrade present at the bearing elevation of the foundations should be performed by geotechnical personnel utilizing a hand auger to verify soil conditions. Excessive disturbance of siltier soils in footing excavations should be avoided and could complicate construction. The potential for such disturbance will increase during wetter times of the year. Footing excavations that have been excessively disturbed should be overdeepened to approved undisturbed soils. Overexcavation and replacement with structural fill should be performed where inadequate bearing materials are present in footing excavations.

The base of all excavations should be clean, free of loose soil or uncompacted fill, relatively dry, and maintained near their optimum moisture content. Excavations should be protected from extreme temperatures, precipitation, and construction disturbances. To reduce the possibility of desiccation or saturation of the foundation soils, we recommend that the concrete be placed as soon as possible after excavations are made.

Groundwater is not anticipated to impact shallow excavations during construction. Small amounts of groundwater seepage into the excavations for footings and can be handled by means of gravity ditching and a sump pump. If greater flows are experienced, SCI should be retained to provide additional consultation.

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5.4 Subgrade Considerations

The floor slab and pavement subgrades may be subjected to construction traffic and exposure to weather for an extended period and significant problems may be incurred. It will likely be necessary to proofroll the subgrade in both cut and fill areas and recompact the subgrade immediately prior to placing base rock for the floor slab or pavement. In addition, subgrades covered with base rock may be very slow to dry if precipitation occurs after placing the base rock. Therefore, we recommend that proofrolling and placement of the base rock be done as close to the time of pouring the floor slab or paving as is practical. Proofroll passes should be limited, particularly on silty subgrades, to reduce the potential for pumping of moisture from deeper within the soil profile.

Special measures may be required to facilitate construction during wet or cold weather, or where excessive areas of soft/loose soils are identified. These measures may include, but are not limited to, the addition of lime to the subgrade soils for drying purposes, or the removal of soft spongy soils and their replacement with crushed limestone. Soft areas should be selectively undercut and backfilled with properly compacted cohesive soil. A geotechnical stabilization fabric, such as RS380i, Tensar HX-145, or equivalent, may be used to help stabilize particularly soft areas. Where possible, the subgrade should be sloped to provide drainage.

5.5 Excavation Bracing Requirements

In the *Federal Register*, Volume 54, No. 209 (October 1989), the United States Department of Labor, OSHA amended its "Construction Standards for Excavations, 29 CFR, Part 1926, Subpart P". This document was issued to provide for the safety of workers entering excavations, including utility trenches, basements, footings, and others. All operations should be performed under the supervision of qualified site personnel in accordance with OSHA regulations.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor's "responsible person", as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, sloped inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations.

SCI does not assume responsibility for construction site safety or the contractor's or other party's compliance with local, state, and federal safety or other regulations.

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5.6 Erosion Control and Land Disturbance Monitoring Program

Appropriate erosion and sediment control measures, such as proper contouring during site grading activities, the installation of siltation fences, and/or inlet protection, should be used during construction to keep eroded materials from being carried into adjacent waterbodies. Depending on the length of time the subgrade is exposed and the amount of siltation that occurs, it may be necessary to periodically remove materials collected by the sediment control systems. Timely sodding and/or seeding of sloped surfaces will help reduce this potential problem.

SCI recommends following the procedures detailed in the Stormwater Pollution Prevention Plan (SWPPP). Any site disturbing more than one acre of ground must obtain a Land Disturbance Permit from the Missouri Department of Natural Resources. As part of the permit compliance procedures, weekly and rain-event site observations must be performed to document the changing site conditions and maintenance of control measures.

6.0 CONSTRUCTION MONITORING PROGRAM

The following list summarizes SCI's recommendations for a construction monitoring program. These services are recommended to provide quality assurance in assessing design assumptions and to document earth-related construction procedures for compliance with plans, specifications, and good engineering practice. SCI should be retained to:

- Participate in a formal preconstruction meeting with the Owner's Representative, Civil Engineer, and Contractor, prior to construction at the site;
- Observe site preparation activities prior to construction, including demolition of the existing site features, stripping, and proofrolling;
- Conduct and document weekly and rain-event observations at the site, maintain and update on-site paperwork, and provide submittals required by the SWPPP and Land Disturbance Permit;
- Assess the suitability of potential fill materials, including both on-site and off-site sources;
- Monitor placement and compaction of structural fill and backfill;
- Observe the foundation excavations and floor slab subgrade to assess the impact of expansive clay, shallow rock, or other unsuitable material, and to recommend the extent of remedial measures;
- Observe footing excavations for adequacy of bearing materials;
- Observe the floor slab subgrade prior to placing base rock;

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- Monitor placement and compaction of backfill for below-grade utilities;
- Observe pavement subgrade preparation and provide observation and testing services for the base course and pavement section;
- Check the thickness of pavement sections and, for asphaltic concrete, its density; and
- Provide quality assurance testing of structural concrete and pavement materials.

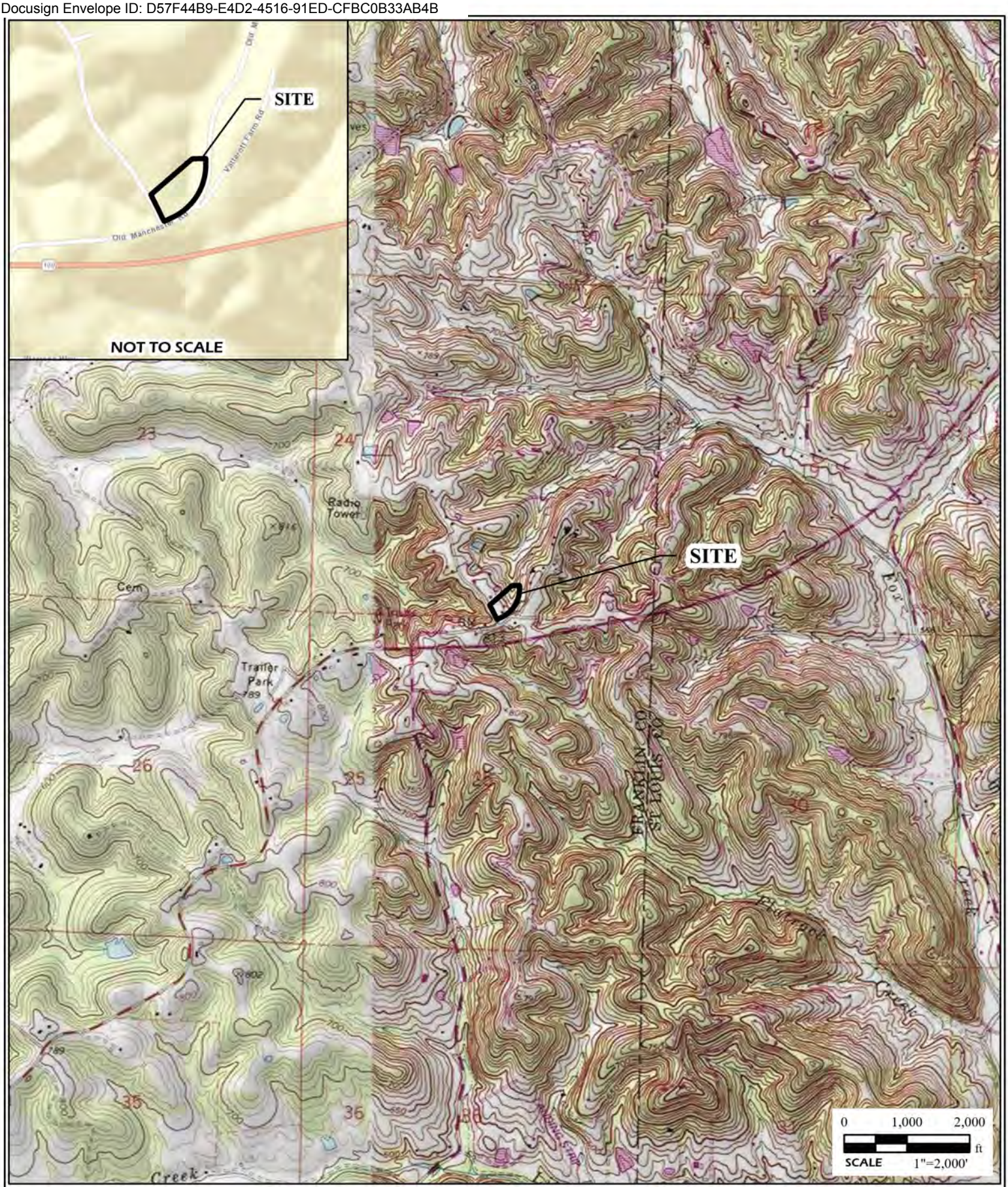
7.0 LIMITATIONS

The recommendations provided herein are for the exclusive use of Meramec Ambulance District (MAD); Navigate Building Solutions, LLC (Navigate); CEDC; or as otherwise provided in the Agreement between the parties. It is imperative that SCI be contacted by any third-party interests to evaluate the applicability of this report relative to use by anyone other than MAD; Navigate, or CEDC. Our recommendations are specific only to the project described and are not meant to supersede more stringent requirements of local ordinances. They are based on subsurface information obtained at eight widely spaced boring locations within the project area, our understanding of the project as presented in Section 2.0, “Site and Project Description”, and geotechnical engineering practice consistent with the standard of care. No other warranty is expressed or implied. SCI should be contacted if conditions encountered are not consistent with those described.

We should also be provided with a set of development plans, once they are available, to review whether our recommendations have been understood and applied correctly, and to assess the need for additional exploration or analysis. Failure to provide these documents to SCI may nullify some or all of the recommendations provided herein. In addition, any changes in the planned project or changed site conditions may require revised or additional recommendations on our part.

The final part of our geotechnical service should consist of direct observation during construction to observe that conditions actually encountered are consistent with those described in this report and to assess the appropriateness of the analyses and recommendations contained herein. SCI cannot assume responsibility or liability for the adequacy of its recommendations without being retained to observe construction.

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PROJECT NAME				GENERAL NOTES
MERAMEC AMBULANCE DISTRICT - STATION #4 PACIFIC, MISSOURI				USGS TOPOGRAPHIC MAP LABADIE, MISSOURI QUADRANGLE DATED 1972 20' CONTOURS EUREKA, MISSOURI QUADRANGLE DATED 1954, PHOTO REVISED 1993 10' CONTOURS
VICINITY AND TOPOGRAPHIC MAP				STREET MAP HTTP://GOTO.ARCGISONLINE.COM/MAPS/WORLD_STREET_MAP
DRAWN BY	RCV	FIGURE DATE	JOB NUMBER	FIGURE
CHECKED BY	GMK	10/21/2025	2025-1484.10	1

Docusign Envelope ID: D57F44B9-E4D2-4516-91ED-CFBC0B33AB4B



GENERAL NOTES

APPROXIMATE SOIL BORING LOCATIONS

AERIAL PHOTOGRAPH OBTAINED FROM ARCGIS ONLINE, WORLD IMAGERY.

DIMENSIONS AND LOCATIONS ARE APPROXIMATE; ACTUAL MAY VARY. DRAWING SHALL NOT BE USED OUTSIDE THE CONTEXT OF THE REPORT FOR WHICH IT WAS GENERATED.

PROJECT NAME

MERAMEC AMBULANCE DISTRICT - STATION #4
PACIFIC, MISSOURI

AERIAL PHOTOGRAPH

JOB NUMBER 2025-1484.10

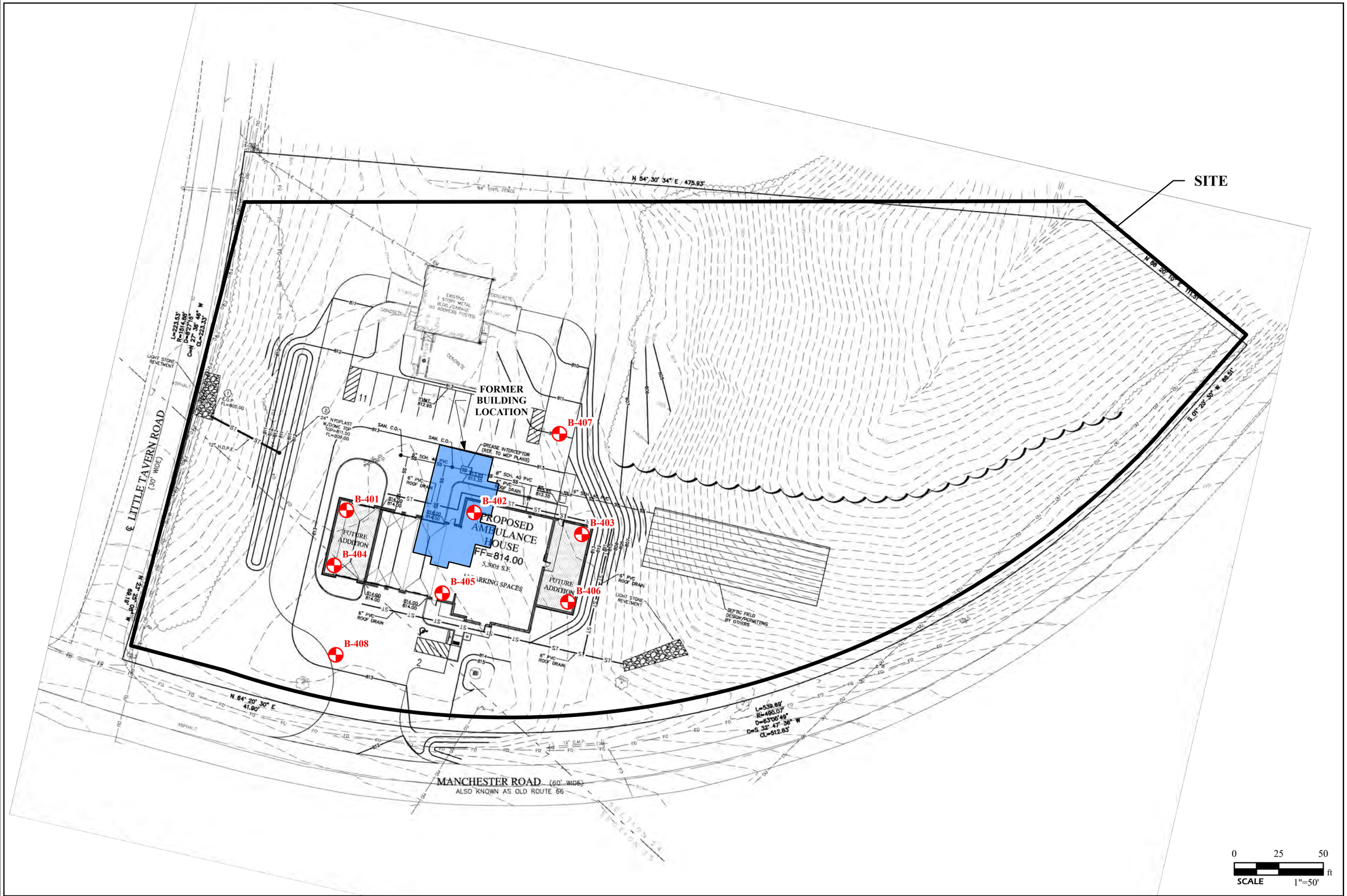
FIGURE DATE 11/18/2025

DRAWN BY RCV

CHECKED BY GMK

FIGURE 2

Docusign Envelope ID: D57F44B9-E4D2-4516-91ED-CFBC0B33AB4B



GENERAL NOTES

APPROXIMATE SOIL BORING LOCATIONS

PLAN DATED 9/2025 BY CEDC.

DIMENSIONS AND LOCATIONS ARE APPROXIMATE; ACTUAL MAY VARY. DRAWING SHALL NOT BE USED OUTSIDE THE CONTEXT OF THE REPORT FOR WHICH IT WAS GENERATED.

PROJECT NAME

MERAMEC AMBULANCE DISTRICT - STATION #4
PACIFIC, MISSOURI

SITE PLAN

JOB NUMBER 2025-1484.10

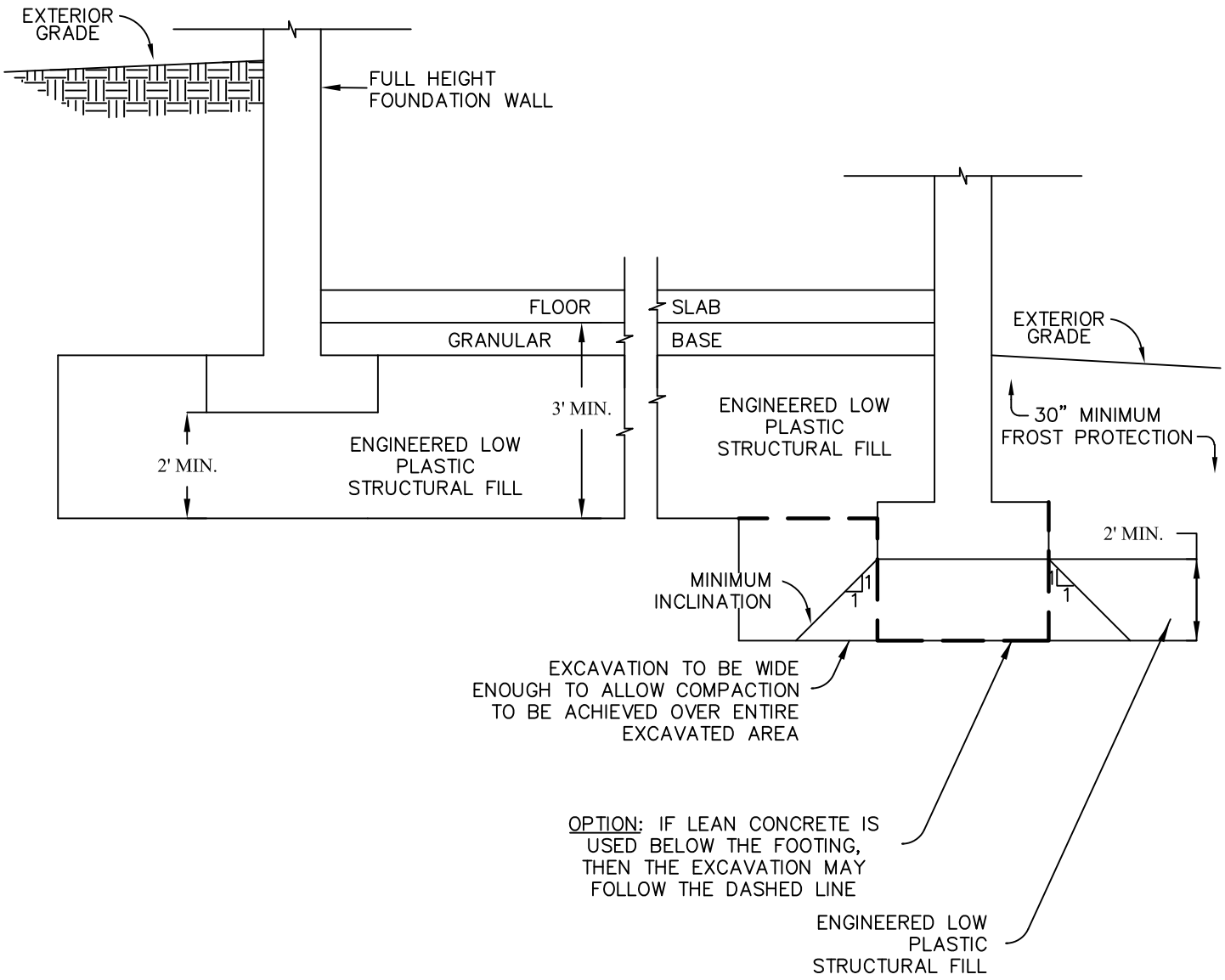
FIGURE DATE 11/18/2025

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CHECKED BY GMK

FIGURE 3

Docusign Envelope ID: D57F44B9-E4D2-4516-91ED-CFBC0B33AB4B



PROJECT NAME: MERAMEC AMBULANCE DISTRICT - STATION #4 PACIFIC, MISSOURI		General Notes/Legend	
EXPANSIVE CLAY REMEDIATION DETAIL			
DRAWN BY: ACV	FIGURE DATE: 11/12/2025	JOB NUMBER: 2025-1484.10	SCALE: N. T. S
CHECKED BY: GMK			FIGURE: 4

Docusign Envelope ID: D57F44B9-E4D2-4516-91ED-CFBC0B33AB4B

Appendix A

Docusign Envelope ID: D57F44B9-E4D2-4516-91ED-CFBC0B33AB4B

SCI ENGINEERING, INC.
130 Point West Boulevard
St. Charles, Missouri 63301
636-949-8200
www.sciengineering.com

BORING LOG LEGEND AND NOMENCLATURE

Depth is in feet below ground surface. **Elevation** is in feet in reference to sea level, site datum, or as otherwise noted.

Sample Type

- **SS** Split-spoon sample, disturbed, obtained by driving a 2-inch-O.D. split-spoon sampler (ASTM D 1586).
- **NX** Diamond core bit, nominal 2-inch-diameter rock sample (ASTM D 2113).
- **NQ** Diamond core bit, nominal 1 7/8-inch diameter rock sample
- **ST** Thin-walled (Shelby) tube sample, relatively undisturbed, obtained by pushing a 3-inch-diameter, tube (ASTM D 1587).
- **CS** Continuous sample tube system, relatively undisturbed, obtained by split-barrel sampler in conjunction with auger advancement.
- **SV** Shear vane, field test to determine strength of cohesive soil by pushing or driving a 2-inch-diameter vane, and then shearing by torquing soil in existing and remolded states (ASTM D 2573).
- **BS** Bag sample, disturbed, obtained from cuttings.
- **MC** Modified California Sampler, disturbed, obtained by driving a 2.5-inch O.D. ring-lined split-barrel sampler (ASTM D 3550).

Recovery is expressed as the sample length recovered / the total length pushed, driven, or cored.

Blows Numbers indicate blows per 6 inches of split-spoon sampler penetration when driven with a 140-pound hammer falling freely 30 inches. The number of total blows obtained for the second and third 6-inch increments is the N value (Standard Penetration Test or SPT) in blows per foot (ASTM D 1586). Practical refusal is considered to be 50 or more blows without achieving 6 inches of penetration and is expressed as a ratio of 50 to actual penetration, e.g., 50/2 (50 blows for 2 inches).

For analysis, the N value is used when obtained by a cathead and rope system. When obtained by an automatic hammer, the N value may be increased by a factor of 1.3.

Vane Shear Strength is expressed as the peak strength (existing state) / the residual strength (remolded state).

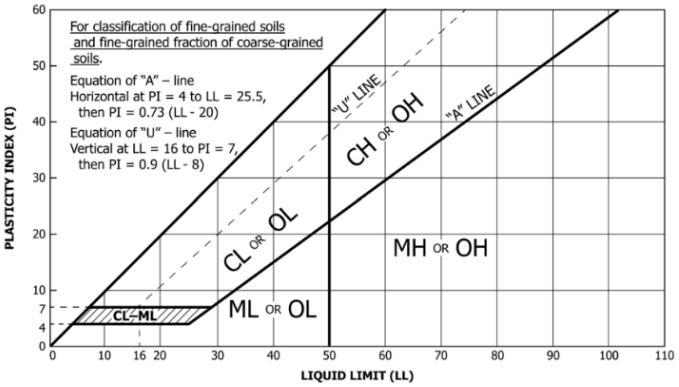
Description indicates soil constituents and other classification characteristics (ASTM D 2488) and the Unified Soil Classification (ASTM D 2487).

SOIL GRAIN SIZE

Soil Component	Particle Size Range
Boulders	> 12 in.
Cobbles	12 in. -3 in.
Gravel	3 in. - #4 sieve (4.75 mm)
Coarse Gravel	3 in. - ¾ in.
Fine Gravel	¾ in. - #4 sieve (4.75 mm)
Sand	#4 sieve (4.75 mm) - #200 sieve (0.075 mm)
Coarse Sand	#4 sieve (4.75 mm) - #10 sieve (2 mm)
Medium Sand	#10 sieve (2 mm) - #40 sieve (0.425 mm)
Fine Sand	#40 sieve (0.425 mm) - #200 sieve (0.075 mm)
Fines (Silt & Clay)	< #200 sieve (0.075 mm)

in – inches
mm – millimeters

PLASTICITY CHART



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BORING LOG LEGEND AND NOMENCLATURE

Strength of Cohesive Soils		
Consistency	*N-Value*	*Unconfined Comp. Strength (ksf)*
Very Soft	0 – 2	< 0.50
Soft	3 – 4	0.50 – 1.00
Medium Stiff	5 – 8	1.0 – 2.0
Stiff	9 – 15	2.0 – 4.0
Very Stiff	16 – 30	4.0 – 6.0
Hard	Over 30	> 8.0

Density of Granular Soils	
Descriptive Term	*N-Value*
Very Loose	0 – 4
Loose	5 – 10
Medium Dense	11 – 29
Dense	30 – 49
Very Dense	Over 50

ksf – kips per square foot

USCS SOIL CLASSIFICATION

		Major Divisions		Group Symbol	Typical Names
Coarse-Grained Soils (Less than 50% Passing the #200 Sieve)	Gravels	Clean Gravels		GW	Well graded gavels, gravel-sand mixture
				GP	Poorly graded gravels, gravel-sand mixture
		Gravels with fines	Limits plot below "A" line on plasticity chart	GM	Silty gravels, gravel-sand-silt mixture
			Limits plot above "A" line on plasticity chart	GC	Clayey gravels, gravel-sand-clay mixture
	Sands	Clean Sands		SW	Well graded sands, gravelly sands
				SP	Poorly graded sands, gravelly sands
		Sands with fines	Limits plot below "A" line on plasticity chart	SM	Silty sands, sand-silt mixture
			Limits plot above "A" line on plasticity chart	SC	Clayey sands, sand-clay mixture
Fine-Grained Soils (50% or More Passing #200 Sieve)	Silts	Silts of low plasticity (LL<50)		ML	Inorganic silts, clayey silts
		Silts of high plasticity (LL≥50)		MH	Inorganic silts, elastic silts
	Clays	Clays of low plasticity (LL<50)		CL	Inorganic lean clays, sandy and silty clays
		Clays of high plasticity (LL≥50)		CH	Inorganic fat clays, sandy clays
	Organic Silts and Clays	Organic silts and clays of low plasticity (LL<50)		OL	Organic silts and lean clays
		Organic silts and clays of high plasticity (LL≥50)		OH	Organic silts and fat clays
Organic Soils		Primarily organic matter		PT	Peat

*Table per Unified Soil Classification System (USCS)

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BORING LOG LEGEND AND NOMENCLATURE

SECONDARY SOIL CONSTITUENT RELATIVE COMPOSITION

If Primary Soil Constituent is	Clay or Silt		Sand or Gravel	
	Trace	0-5%	Trace	0-5%
	Few	6-15%	With	6-12%
	With	>15%	Silty/Clayey/Gravelly/Sandy	>12%
	Sandy/Gravelly	>30%		

Stratigraphic Breaks may be observed or interpreted and are indicated by a dashed line (inferred) or solid line (observed). Transition between described materials may be gradual.

Laboratory Test Results

- Natural moisture content (ASTM D 2216) in percent.
- Dry density in pounds per cubic foot (pcf).
- Hand penetrometer value of apparently intact cohesive sample in kips per square foot (ksf).
- Unconfined compressive strength (ASTM D 2166) in ksf.
- Liquid and Plastic Limits (ASTM D 4318) in percent.

Rock Quality Designation (RQD) is the ratio between the total length of core segments 4 inches or more and the total length of core drilled. RQD indicates in-situ rock quality as follows:

Excellent	90 - 100%
Good	75 – 90%
Fair	50 – 75%
Poor	25 – 50%
Very Poor	0 – 25%

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BORING LOG

PROJECT Meramec Ambulance District - Station #4 **BORING NUMBER** B-401
LOCATION Pacific, Missouri **SHEET** 1 **of** 1
DRILLER Midwest Drilling, Inc. **HAMMER** Automatic **PROJECT NO.** 2025-1484.10
EQUIPMENT CME-750 w/CFA **ELEVATION** 815± **DATE DRILLED** 10/15/2025

DEPTH (ft)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE RECOVERY (in/in)	SAMPLE BLOWS (per 6 in)	DESCRIPTION (UNIFIED SOIL CLASSIFICATION)	GRAPHIC	SEE REMARK NO.	LAB: MOISTURE CONTENT (%)	LAB: DRY DENSITY (pcf)	LAB: HAND PENETROMETER (ksf)	LAB: UNCONFINED COMPRESSIVE STRENGTH (ksf)	LAB: LIQUID LIMIT	LAB: PLASTICITY INDEX	ELEVATION (ft)
					LEAN CLAY (CL): Brown									
	1	SS	9/18	4 6 5				19		4.0				813
3														
	2	SS	17/18	5 5 7	Becomes brown and gray			22		5.0				810
6														
	3	ST	22/24					21	112.3		2.6	32	13	807
9	4	SS	7/18	15 24 36	GRAVELLY LEAN CLAY (CL): Brown, gravel is fine to coarse			10		--				
					Auger refusal on limestone at 10.5 feet.									804
12														
														801
15														
														798
18														

WATER LEVEL:

X **NONE OBSERVED WHILE DRILLING**
_____ ft **WHILE DRILLING**
_____ ft ____ **HRS AFTER DRILLING**
_____ ft ____ **DAYS AFTER DRILLING**

REMARKS:

Docusign Envelope ID: D57F44B9-E4D2-4516-91ED-CFBC0B33AB4B

BORING LOG

PROJECT Meramec Ambulance District - Station #4 **BORING NUMBER** B-402
LOCATION Pacific, Missouri **SHEET** 1 **of** 1
DRILLER Midwest Drilling, Inc. **HAMMER** Automatic **PROJECT NO.** 2025-1484.10
EQUIPMENT CME-750 w/CFA **ELEVATION** 814± **DATE DRILLED** 10/15/2025

DEPTH (ft)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE RECOVERY (in/in)	SAMPLE BLOWS (per 6 in)	DESCRIPTION (UNIFIED SOIL CLASSIFICATION)	GRAPHIC	SEE REMARK NO.	LABORATORY TEST RESULTS: MOISTURE CONTENT (%)	DRY DENSITY (pcf)	HAND PENETROMETER (ksf)	UNCONFINED COMPRESSIVE STRENGTH (ksf)	LIQUID LIMIT	PLASTICITY INDEX	ELEVATION (ft)
					FAT CLAY (CH): Brown with gray, trace fine to coarse gravel									814
	1	SS	7/18	3 5 6				16		>9.0		51	31	813
3														
	2	SS	1/1	50/1"	Auger refusal on limestone at 3.5 feet.									810
6														807
9														804
12														801
15														798
18														795

WATER LEVEL:

X	NONE OBSERVED WHILE DRILLING
	ft WHILE DRILLING
	ft ___ HRS AFTER DRILLING
	ft ___ DAYS AFTER DRILLING

REMARKS:

Docusign Envelope ID: D57F44B9-E4D2-4516-91ED-CFBC0B33AB4B

BORING LOG

PROJECT Meramec Ambulance District - Station #4 **BORING NUMBER** B-403
LOCATION Pacific, Missouri **SHEET** 1 **of** 1
DRILLER Midwest Drilling, Inc. **HAMMER** Automatic **PROJECT NO.** 2025-1484.10
EQUIPMENT CME-750 w/CFA **ELEVATION** 810± **DATE DRILLED** 10/15/2025

DEPTH (ft)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE RECOVERY (in/in)	SAMPLE BLOWS (per 6 in)	DESCRIPTION (UNIFIED SOIL CLASSIFICATION)	GRAPHIC	SEE REMARK NO.	LABORATORY TEST RESULTS: MOISTURE CONTENT (%)	DRY DENSITY (pcf)	HAND PENETROMETER (ksf)	UNCONFINED COMPRESSIVE STRENGTH (ksf)	LIQUID LIMIT	PLASTICITY INDEX	ELEVATION (ft)
					8" CRUSHED ROCK									
					LEAN CLAY (CL): Brown									
	1	SS	7/18	4 5 5	FAT CLAY (CH): Brown			17		9.0				
3					LEAN CLAY (CL): Brown with gray									807
	2	ST	24/24					23	105.2		5.0	37	17	
6														804
	3	SS	11/18	3 4 5				23		3.0				
					FAT CLAY (CH): Brown to reddish-brown, with fine to coarse gravel									
9	4	SS	14/18	16 6 7				27		5.5				801
12														798
					Auger refusal on limestone at 13.5 feet.									
15														795
18														792

WATER LEVEL:

X	NONE OBSERVED WHILE DRILLING
ft	WHILE DRILLING
ft	HRS AFTER DRILLING
ft	DAYS AFTER DRILLING

REMARKS:

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BORING LOG

PROJECT Meramec Ambulance District - Station #4 **BORING NUMBER** B-404
LOCATION Pacific, Missouri **SHEET** 1 **of** 1
DRILLER Midwest Drilling, Inc. **HAMMER** Automatic **PROJECT NO.** 2025-1484.10
EQUIPMENT CME-750 w/CFA **ELEVATION** 815± **DATE DRILLED** 10/15/2025

DEPTH (ft)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE RECOVERY (in/in)	SAMPLE BLOWS (per 6 in)	DESCRIPTION (UNIFIED SOIL CLASSIFICATION)	GRAPHIC	SEE REMARK NO.	LAB: MOISTURE CONTENT (%)	LAB: DRY DENSITY (pcf)	LAB: HAND PENETROMETER (ksf)	LAB: UNCONFINED COMPRESSIVE STRENGTH (ksf)	LAB: LIQUID LIMIT	LAB: PLASTICITY INDEX	ELEVATION (ft)
					LEAN CLAY (CL): Brown and gray									
	1	SS	8/18	6 6 5				12		9.0		47	26	813
3														
	2	SS	14/18	11 12 15				18		9.0				810
6														
	3	SS	15/18	3 3 4				23		3.5				
														807
					CLAYEY GRAVEL (GC): Brown, fine to coarse, clay is lean										
9	4	SS	10/18	25 30 12										
														804
12					SHALEY FAT CLAY (CH): Tan with gray, some fine to coarse gravel									
	5	SS	15/18	5 8 22				18		7.5				801
15														
														798
18					Auger refusal on limestone at 18 feet.									

WATER LEVEL:

X **NONE OBSERVED WHILE DRILLING**
_____ ft **WHILE DRILLING**
_____ ft ____ **HRS AFTER DRILLING**
_____ ft ____ **DAYS AFTER DRILLING**

REMARKS:

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BORING LOG

PROJECT Meramec Ambulance District - Station #4 **BORING NUMBER** B-405
LOCATION Pacific, Missouri **SHEET** 1 **of** 1
DRILLER Midwest Drilling, Inc. **HAMMER** Automatic **PROJECT NO.** 2025-1484.10
EQUIPMENT CME-750 w/CFA **ELEVATION** 815± **DATE DRILLED** 10/15/2025

DEPTH (ft)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE RECOVERY (in/in)	SAMPLE BLOWS (per 6 in)	DESCRIPTION (UNIFIED SOIL CLASSIFICATION)	GRAPHIC	SEE REMARK NO.	LABORATORY TEST RESULTS: MOISTURE CONTENT (%)	DRY DENSITY (pcf)	HAND PENETROMETER (ksf)	UNCONFINED COMPRESSIVE STRENGTH (ksf)	LIQUID LIMIT	PLASTICITY INDEX	ELEVATION (ft)
					LEAN CLAY (CL): Brown with gray									
	1	SS	8/18	7 7 5	FAT CLAY (CH): Brown with gray			9		9.0				813
3														
	2	SS	17/18	4 4 7				25		5.5				810
					becomes Brown, trace fine to coarse gravel									
6	3	SS	18/18	3 4 5			1	7		3.0				807
					CLAYEY GRAVEL (GC): Brown, fine to coarse, clay is fat									
9	4	SS	13/18	22 46 23										804
12					SHALEY FAT CLAY (CH): Tan with brown, with fine to coarse gravel									
	5	SS	13/18	15 24 50/5.5"				11		>9.0				801
15					Auger refusal on limestone at 15 feet.									
														798
18														

WATER LEVEL:

X	NONE OBSERVED WHILE DRILLING
	ft WHILE DRILLING
	ft ___ HRS AFTER DRILLING
	ft ___ DAYS AFTER DRILLING

REMARKS:

1) Percent passing the number 200 sieve: 95.9%

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BORING LOG

PROJECT Meramec Ambulance District - Station #4 **BORING NUMBER** B-406
LOCATION Pacific, Missouri **SHEET** 1 **of** 1
DRILLER Midwest Drilling, Inc. **HAMMER** Automatic **PROJECT NO.** 2025-1484.10
EQUIPMENT CME-750 w/CFA **ELEVATION** 811± **DATE DRILLED** 10/15/2025

DEPTH (ft)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE RECOVERY (in/in)	SAMPLE BLOWS (per 6 in)	DESCRIPTION (UNIFIED SOIL CLASSIFICATION)	GRAPHIC	SEE REMARK NO.	LAB: MOISTURE CONTENT (%)	LAB: DRY DENSITY (pcf)	LAB: HAND PENETROMETER (ksf)	LAB: UNCONFINED COMPRESSIVE STRENGTH (ksf)	LAB: LIQUID LIMIT	LAB: PLASTICITY INDEX	ELEVATION (ft)
					8" CRUSHED ROCK									
					FAT CLAY (CH): Brown									810
	1	SS	10/18	4 5 7				20		6.0				
3					LEAN CLAY (CL): Brown and gray									
	2	SS	15/18	5 6 6				24		5.0				807
					FAT CLAY (CH): Brown and gray									
6	3	SS	18/18	4 4 4				22		3.5		62	37	804
					CLAYEY GRAVEL (GC): Brown, fine to coarse, clay is lean									
9	4	SS	14/18	24 13 7	FAT CLAY (CH): Brown to reddish-brown, trace fine- to coarse-grained sand, trace fine to coarse gravel			39		5.0				801
12					SHALEY FAT CLAY (CH): Tan with gray, with fine chert gravel									798
	5	SS	16/18	5 13 14				16		9.0				
15														795
18					Auger refusal on limestone at 17 feet.									792

WATER LEVEL:

X	NONE OBSERVED WHILE DRILLING
	ft WHILE DRILLING
	ft ___ HRS AFTER DRILLING
	ft ___ DAYS AFTER DRILLING

REMARKS:

Docusign Envelope ID: D57F44B9-E4D2-4516-91ED-CFBC0B33AB4B

BORING LOG

PROJECT Meramec Ambulance District - Station #4 **BORING NUMBER** B-407
LOCATION Pacific, Missouri **SHEET** 1 **of** 1
DRILLER Midwest Drilling, Inc. **HAMMER** Automatic **PROJECT NO.** 2025-1484.10
EQUIPMENT CME-750 w/CFA **ELEVATION** 809± **DATE DRILLED** 10/15/2025

DEPTH (ft)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE RECOVERY (in/in)	SAMPLE BLOWS (per 6 in)	DESCRIPTION (UNIFIED SOIL CLASSIFICATION)	GRAPHIC	SEE REMARK NO.	LAB: MOISTURE CONTENT (%)	LAB: DRY DENSITY (pcf)	LAB: HAND PENETROMETER (ksf)	LAB: UNCONFINED COMPRESSIVE STRENGTH (ksf)	LAB: LIQUID LIMIT	LAB: PLASTICITY INDEX	ELEVATION (ft)
					8" CRUSHED ROCK									
	1	SS	6/18	4 10 7	FAT CLAY (CH): Brown			16		9.0				807
3	2	SS	17/18	4 4 5	LEAN CLAY (CL): Brown with gray			23		5.5				804
6	3	SS	15/18	10 15 26	GRAVELLY LEAN CLAY (CL): Brown, gravel is fine to coarse			13		--				801
9	4	SS	10/18	8 9 15	GRAVELLY FAT CLAY (CH): Reddish-brown, gravel is fine to coarse			9		--				
					Boring terminated at 10 feet.									798
12														795
15														792
18														

WATER LEVEL:

X	NONE OBSERVED WHILE DRILLING
ft	WHILE DRILLING
ft ___	HRS AFTER DRILLING
ft ___	DAYS AFTER DRILLING

REMARKS:

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BORING LOG

PROJECT Meramec Ambulance District - Station #4 **BORING NUMBER** B-408
LOCATION Pacific, Missouri **SHEET** 1 **of** 1
DRILLER Midwest Drilling, Inc. **HAMMER** Automatic **PROJECT NO.** 2025-1484.10
EQUIPMENT CME-750 w/CFA **ELEVATION** 815± **DATE DRILLED** 10/15/2025

DEPTH (ft)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE RECOVERY (in/in)	SAMPLE BLOWS (per 6 in)	DESCRIPTION (UNIFIED SOIL CLASSIFICATION)	GRAPHIC	SEE REMARK NO.	LAB: MOISTURE CONTENT (%)	LAB: DRY DENSITY (pcf)	LAB: HAND PENETROMETER (ksf)	LAB: UNCONFINED COMPRESSIVE STRENGTH (ksf)	LAB: LIQUID LIMIT	LAB: PLASTICITY INDEX	ELEVATION (ft)
					LEAN CLAY (CL): Brown with gray									
	1	SS	13/18	4 5 5				9		9.0				
3					FAT CLAY (CH): Brown and gray									813
	2	SS	12/18	7 10 13				17		>9.0				
					LEAN CLAY (CL): Brown and gray									810
6	3	SS	15/18	8 9 15				15		8.5				
					CLAYEY GRAVEL (GC): Brown, fine to coarse, clay is lean									807
9	4	SS	3/5	50/5"										
														804
12					SHALEY FAT CLAY (CH): Brown, with fine to coarse gravel									
	5	SS	6/6	50/5.5"	WEATHERED LIMESTONE: With chert			20		--				801
15														
					Auger refusal on limestone at 16 feet.									798
18														

WATER LEVEL:

X **NONE OBSERVED WHILE DRILLING**
_____ ft **WHILE DRILLING**
_____ ft ____ **HRS AFTER DRILLING**
_____ ft ____ **DAYS AFTER DRILLING**

REMARKS:

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Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, you can benefit from a lowered exposure to problems associated with subsurface conditions at project sites and development of them that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed herein, contact your GBA-member geotechnical engineer. Active engagement in GBA exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Understand the Geotechnical-Engineering Services Provided for this Report

Geotechnical-engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical-engineering services is typically a geotechnical-engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical-engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

Geotechnical-Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

Likewise, geotechnical-engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical-engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will not be adequate to develop geotechnical design recommendations for the project.

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project or purpose;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read the report in its entirety. Do not rely on an executive summary. Do not read selective elements only. *Read and refer to the report in full.*

You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project or site changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept*

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responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface using various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing is performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgement to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team through project completion to obtain informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are not final, because the geotechnical engineer who developed them relied heavily on judgement and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* exposed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a continuing member of the design team, to:

- confer with other design-team members;
- help develop specifications;
- review pertinent elements of other design professionals' plans and specifications; and
- be available whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction-phase observations.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for information purposes only.* To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer's services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration. Confront the risk of moisture infiltration*** by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are not building-envelope or mold specialists.***



Telephone: 301/565-2733
e-mail: info@geoprofessional.org www.geoprofessional.org

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2 Richard Mark Way
Collinsville, IL 62234
Phone: (314) 421-0600
Fax: (314) 421-0234

Your Sole Provider of Environmental Health & Safety Services

POLARIZED LIGHT MICROSCOPY ANALYSIS REPORT

(Method : EPA/600/R-93/116)

Project No. : 23490 | Received Date: 2/18/2026 | Customer: Meramec Ambulance District
Report No. : 26-02-0028 | Analyzed Date: 2/18/2026 | Project Name: Station #4
Contact : Dustin Robert | Customer PO: N/A | Project Address: 285 Old Manchester Rd, Pacific, MO 63069

Sample Info		Client Provided Information		Analytical Info			Non-Asbestos		Asbestos
Sample ID	Lab ID	Sample Description	Material Type	Appearance	Texture	Color	% Non-Fibrous	% Fibrous	% Type
23490-JC-1A	0345	Joint Compound Filler by Interior Windows and Garage Door	Miscellaneous	Homogeneous, Non-Fibrous	Rough	Gray	>95% Other	1-5% Cellulose	None Detected
23490-JC-2A	0346	Joint Compound Filler by Interior Windows and Garage Door	Miscellaneous	Homogeneous, Non-Fibrous	Rough	Off-White	>95% Other	1-5% Cellulose	None Detected
23490-JC-3A	0347	Joint Compound Filler by Interior Windows and Garage Door	Miscellaneous	Homogeneous, Non-Fibrous	Rough	Gray	>95% Other	1-5% Cellulose	None Detected

ANALYST: E Nelson

REVIEWED BY: Robert L Hill II

Samples 3 SAMPLES ANALYZED

Laboratory Disclaimer:
The test data only pertains to the items tested. No assumptions or conclusions should be made to materials or samples not analyzed in this report.
SITEX maintains liability limited to cost of analysis.
Interpretation and uses of test results are the responsibility of the client.
This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by SITEX.
SITEX participates in the American Industrial Hygiene Association (AIHA) Bulk Asbestos Proficiency Analytical Testing (BAPAT) Program , Participant Number 286604.

CHAIN OF CUSTODY / LABORATORY WORK REQUEST

~~Page 1 of 2~~ Page 1 of 1

EDW 18FEB2026

SITEX Environmental Inc.
1525 S. Broadway
St. Louis, MO 63104-4014

Phone: (314) 421-0600
FAX: (314) 421-0234

Project Name: Miramar Ambulance Dist
Project Address: Station #4
285 Old Manchester
Pacific, MO 63069.
Project # : 23490
Client Contact: Dustin Robert
E-Mail: dustin@navigatebuildingsolutions.com

Invoice to:
Date :
P.O. # :

Sample ID	Description	Date/Time Sampled	# of Cont	Type	Matrix: Bulk	Air	Water	Soil	Sludge	Preservative: Unpres.	HNO_3	NaOH	H_2SO_4	HCl	Cold	Analysis Required: PLM / DS
23490-JC-1A	Joint compound	2/13/26 12pm		Bagger	X											X
" " 2A	filler by interior	"			"											"
" " 3A	windows & Garage door.	"			"											

Comments:

Turn Around Time

- ___ 1 hour
- ___ 2-3 hour
- ___ 6-8 Hours
- ✓ 24 Hour
- ___ Same Day
- ___ 48 Hours
- ___ 3-5 Day

Samples Taken By: MB.

26-02-0028
EDW
18FEB2026

Relinquished By	Date/Time	Received By	Date/Time
Matthew Bethel	~~2/16/26~~ 2/16/26 12:51pm	E Nelson	18FEB2026 12:38 PM

McCRONE RESEARCH INSTITUTE

certifies that

Elizabeth Nelson

has successfully completed an intensive course of instruction in

Microscopical Identification of Asbestos

given by the McCrone Research Institute

Presented this 11th day of October, 2024

Course Date: October 7-11, 2024

McCRONE RESEARCH INSTITUTE

certifies that

Robert H. Hill, II

has successfully completed an intensive course of instruction in

"Microscopical Identification of Asbestos"

given by the McCrone Research Institute

Presented this 13th *day of* Jan. 1989

3.5 CEU's
4.5 ABIH CM

Robert D. McCrone

John G. Delly

Phase I Environmental Site Assessment Report

Meramec Ambulance District
385 Old Manchester Road
Pacific, MO 63069



Prepared by
SITEX, Inc
1525 South Broadway
St. Louis, MO 63104

Prepared for
Meramec Ambulance District

,

December 25, 2025
Project # 23490

December 25, 2025

Taz Meyer
Chief of Meramec Ambulance District
Meramec Ambulance District
3279 Highway 100
Villa Ridge, Missouri 63089

Re: Environmental Site Assessment, Phase I - Meramec Ambulance District Station #4

Dear Meramec Ambulance District:

Please find enclosed the final report of the Phase I Environmental Site Assessment of 385 Old Manchester Road in Pacific, Missouri. This investigation was conducted in general accordance with the scope and limitations set forth in the ASTM E 1527-21 and US EPA 40 C.F.R pt. 312. This investigation was conducted exclusively for Meramec Ambulance District in conformance with the scope and limitations of the contract dated 11/17/2025, estimate 16694, authorized by Taz Meyer and Dustin Roberts.

Please contact us if you have any questions or comments. We appreciate the opportunity to be of service to you.

Sincerely,

Mackenzie Wagner
Industrial Hygienist

Robert H. Hill II, CHMM
Senior IH/Environmental Project Manager

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EXECUTIVE SUMMARY

A cursory summary of Phase I ESA findings is provided below. However, details were not included or fully developed in this section, and the report must be read in its entirety for a comprehensive understanding of the items contained herein.

SITEX has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of the ASTM Practice E1527-21 of 385 Old Manchester Road within the city limits of Pacific, Missouri (Subject Property). Any exceptions to, or deletions from, this practice are described in Section 1.3 of this report. This assessment identified no Recognized Environmental Conditions associated with the Subject property.

Description

The subject property is located west of U.S. Bicycle Route 66 at the intersection of Little Tavern Road and U.S. Bicycle Route 66. The subject property is identified by Assessor's Parcel Number 08-6-24.0-0-000-040.000. The area consists of approximately 3.2 acres at an elevation of 803 feet above sea level.

The subject property is located within an area of residential buildings. The subject property is bounded to the north by residential, to the east by wooded area, to the south by residential, and to the west by a road and wooded area.

The subject property is currently has a gravel road with a garage and an old shed. The garage will remain untouched and the old shed will be torn down to make room for the new ambulance district building. The house that was on the property before was torn down and all that remains is evidence of septic tank and a well.

No foundations, ruins, or indications of previous structures were observed.

No evidence of RECs in connection with the property was identified during the site reconnaissance.

Conclusions and Recommendations

The following describes potential liabilities which do not constitute "recognized environmental conditions" as defined in ASTM Designation: E 1527-21. Although the potential liabilities are not considered to be RECs, however, SITEX recommends that they be addressed.

2.17 Vapor Encroachment Concerns

Due to the distance from the property and being up gradient from the Subject Property; PlasmaDyn USA located at 3688 Bassett Woods Drive, Pacific, MO 63069 is unlikely a potential VEC.

6.5 Lead-Based Paint

Paints manufactured before 1960 were heavily leaded. Lead content was tapered off until 1978 when lead was banned from use in household paint. Lead is toxic to humans, especially children because of their size and weight. High concentrations of lead are believed by some medical authorities to cause mental retardation, seizures, coma, and death in children. Adults may suffer severe nervous disorders but are less likely to die from acute lead exposure. Lead-based paint (LBP) in good condition is not usually a problem except in places where painted surfaces rub against each other and create dust, such as the friction surfaces of a painted window.

The US EPA does not publish a guideline or threshold limit specifically for lead in paint for private housing; however, the LBP Poisoning Prevention Act requires public housing projects to be inspected for LBP. Under the statute, LBP is defined as paint containing at least 0.5% lead by weight. Lead concentrations above this limit must be managed with an Operations and Maintenance (O&M) Program or be abated if in poor condition. The 0.5% threshold is equivalent to 5,000 mg/kg (parts per million) of lead.

Based on the apparent age of the shed, SITEX took Lead Paint XRF samples on the exterior of the shed. The west wall window was found positive for lead based paint.

This means an Missouri Certified Lead contractor would need to remove any lead based paint before any type of work is done.

Shelf Life Summary

The standard ASTM E1527-21 states that a Phase I ESA is generally valid for 180 days from the date of the earliest component's completion to satisfy the requirements for "all appropriate inquiries" under CERCLA. However, if the report is updated within one year with specific components, it may still be considered valid for certain purposes. from the date of issuance pending no improvements, petroleum spills or releases to the environment, or changes as to the use of the Subject Property

1.0 INTRODUCTION

The following three sections present descriptions of the purpose, scope, and limitations of this Phase I Environmental Site Assessment.

1.1 Purpose

The purpose of this Phase I ESA is to identify, to the extent feasible pursuant to the ASTM Practice E1527-13 and AAI, Final Rule 40 CFR Part 312, recognized environmental conditions (REC) in connection with the subject property.

The ASTM Standard was created "...in an effort to define good commercial and customary practice in the United States of America for conducting an environmental site assessment...." REC means "*the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment*." The term is not intended to include de minimis conditions that generally do not present a material risk of harm to public health or the environment and that generally would not subject the subject property to an enforcement action if brought to the attention of appropriate governmental agencies.

A historical REC (HREC) is defined as "*a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted residential use criteria established by a regulatory authority, without subjecting the property to any required controls (e.g., property use restrictions, activity and use limitations [AUL], institutional controls, or engineering controls). Before calling the past release an HREC, the Environmental Professional (EP) must determine whether the past release is a REC at the time the Phase I ESA is conducted (e.g., if there has been a change in the regulatory criteria).*" (ASTM 2013).

A controlled REC (CREC) is defined as "*a REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (e.g., as evidenced by the issuance of a no further action [NFA] letter or equivalent, or meeting risk-based criteria established*

*by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (e.g., property use restrictions, AULs, institutional controls, or engineering controls).*â¡"

This practice is intended to permit a user to satisfy one of the requirements to qualify for the innocent landowner defense to Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) liability: that is, the practices that constitute "all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice" as defined in 42 USC 9601(35)(B).

SITEX understands that the subject property is either being bought, sold, or refinanced and that the Phase I ESA is being performed to satisfy the requirement for CERCLA "innocent purchaser" defense or to secure financing.

Pursuant to ASTM E 1527-13, an ESA meeting or exceeding this practice and for which the information was collected or updated within one year prior to the date of acquisition of the property or the date of the intended transaction may be used provided that the following components of the inquiries were conducted or updated within 180 days of the date of purchase or the date of the intended transaction:

(i) interviews with owners, operators, and occupants;
(ii) searches for recorded environmental cleanup liens;
(iii) reviews of federal, tribal, state, and local government records;
(iv) visual inspections of the property and of adjoining properties; and
(v) the declaration by the environmental professional responsible for the assessment or update.

1.2 Scope

To facilitate the understanding of this report, the Scope-of-Services are divided into several tasks; the physical setting data, the historical information review, regulatory records review, site and adjoining property reconnaissance, and findings and conclusions.

Physical setting data are typically consulted when conditions have been identified in which potentially hazardous materials or petroleum related products are likely to migrate to the subject property, from the subject property, or within the subject property into the groundwater or soil. Typical concerns include contaminated soil, groundwater, surface water, and vapor. At a minimum, a current United States Geological Survey (USGS) 7.5 Minute Topographic Map detailing the subject property area is evaluated. As noted by the ASTM standard, other physical setting sources, revealing additional hydrogeologic, hydrologic, and soil conditions, may be included as necessary to meet assessment objectives.

The historical information review portion is performed in order to develop a history of the site and adjoining properties to identify past uses suggesting RECs that may pose an environmental concern to the subject property. In general accordance with ASTM guidelines, obvious uses of the subject property are researched from the present, back to the subject property's first developed use, or back to 1940, whichever is earlier. This task involves discretionary review of as many of the ASTM standard historical sources as necessary and reasonably ascertainable to meet this objective.

Federal and state databases compiled by an environmental database company are reviewed to identify registered or documented facilities which may present an environmental concern to the subject property. Reasonably ascertainable standard regulatory sources are reviewed for the subject property and vicinity within minimum search distances, as detailed in the ASTM standard. At the discretion of the EP, pertinent regulatory files and/or records associated with listings for the subject property and adjoining properties are reviewed.

Additionally, record sources may be reviewed to enhance or supplement the federal and state database information. Reasonably ascertainable and practically reviewable sources may include city and/or county department of health records, local fire department records, local planning and building inspection records, local regional pollution control or environmental agency records, city, county or state water agency files, and local electric utility records.

A site reconnaissance is performed to obtain and record obvious and apparent visual evidence suggesting RECs to the extent not obstructed by bodies of water, adjoining

buildings, or other external or interior barriers or obstacles. Site features, such as readily accessible adjoining public thoroughfares and on site roads and paths and accessible common areas expected to be used by occupants or the public, are identified. Inspections of large tracts of land are performed utilizing grid patterns or systematic approaches, and assessments of developed sites include a visual inspection of a representative sample of occupied spaces. Current site uses are documented, paying particular attention to uses involving the treatment, storage, disposal or generation of hazardous substances or petroleum products. Apparent evidence of past or present underground storage tanks (UST) or aboveground storage tanks (AST), surface stains, distressed vegetation, electrical transformers, land scars, drums, pits, ponds, lagoons, solid waste, waste water, septic systems, wells or obvious evidence of improper use or disposal of toxic or hazardous materials are documented. The reconnaissance includes observations of adjoining properties to identify general land use and apparent potential RECs. These observations are made from public access right-of-ways.

SITEX personnel makes reasonable attempts to interview owners and occupants of the subject property, past owners to the extent that they have been identified, as well as local government personnel, to obtain information suggesting RECs which may present concerns to the subject property.

In addition to ASTM E1527-13, Company recognizes ASTM Standard Guide for Vapor Encroachment Screening (VES) on Property Involved in Real Estate Transactions (ASTM E2600-10) as an industry accepted guideline for using Phase I ESA-type information to determine if a Vapor Encroachment Condition (VEC) exists at the subject property. Information compiled through completion of the above describe tasks (current and past property information, chemical use, government records, contaminated plume migration, significant subsurface conduits, groundwater depth and flow direction, and soil, geological, and contaminant characteristics) is used to conduct the VES.

VES consists of reviewing the Phase I ESA-type information combined with the application of professional judgment. SITEX evaluates regulatory databases to determine if there are known or suspect contaminated sites within a minimum search distance of the target property. Further, SITEX attempts to determine whether soil

and/or groundwater has been impacted within the critical distance. Again, this screen is conducted using information available from the Phase I ESA investigation.

This Phase I ESA was prepared by SITEX specifically for use by the Client. Use of or reliance upon this information by any other party without express written permission granted by SITEX and the Client is not authorized and is completely at the risk of the user.

1.3 Limitations and Expectations

LIMITATIONS

As stated in ASTM Designation: E 1527-21…"Performance of this practice…is intended to reduce, but not eliminate, uncertainty regarding the potential for recognized environmental conditions in connection with a property." SITEX certifies that it has used accepted and standard professional practices in conducting this assessment. Beyond this, SITEX makes no warranties regarding the conclusions presented herein.

The information in this report has been compiled from sources believed to be reliable. However, we cannot guarantee the accuracy of information supplied by others. All references to previous reports conducted by other environmental firms are presented for informational purposes only and should not be relied upon, except to the extent described in these reports, if allowed at all.

The information presented in this report was based solely upon the conditions, operations, and practices as observed on the date of the site visit and the additional sources detailed above.

SITEX was not able to enter the old shed to do any additional testing such as visual, lead paint, and asbestos.

RELIANCE

This report and the findings contained herein shall not, in whole or in part, be altered, dispersed, or disclosed to any other party. This report is intended solely for the use of SITEX. No other party may rely on the information presented here in without the written permission of SITEX.

2.0 SITE RECONNAISSANCE

SITEX environmental specialists performed the site reconnaissance on XXX, 2025. The site visit was to visually inspect and/or determine if there was any evidence of environmental impairment from current or previous activities at the Subject Property.

2.1 Location

The subject property is located within the city limits of Pacific, Missouri. It is located west of U.S. Bicycle Route 66 and Old Route 66.

A site map is presented in Appendix A.

2.2 Owner, Property Manager, and Occupant Information

According to the EDR Records the subject property of 385 OLD MANCHESTER ROAD located in Pacific, Missouri is approximately 3.2 acres. This parcel ID number is 08-6-24.0-0-000-040.000.

The legal description for parcel 08-6-24.0-0-000-040.000 is MERAMEC AMBULANCE DIST. HOUSE #4PT SW SE SEC 24&PT NW NE SEC 25, with current owner listed as MERAMEC AMBULANCE DISTRICT. The mailing address is stated as 3279 HIGHWAY 100 VILLA RIDGE, MO 63089.

2.3 Site Characteristics

The Subject property is described as a vacant lot with a garage that will be used for future ambulance storage and an old shed that will be torn down. This property is located at 385 Old Manchester Road within the city limits of Pacific, Missouri.

The Subject Property has a gravel parking lot, septic tank, and a well.

2.4 Vicinity Characteristics

SITEX performed an area reconnaissance to identify obvious visual indications of present or past activities that have or could have contaminated the subject property. The area reconnaissance was conducted by automobile, and/or on foot, unless otherwise noted.

The Subject Property is located at 385 Old Manchester Road is approximately 3.2 acres according to the Assessors Records.

The following adjoining properties were observed:

The north adjacent property is a residential property.

The east adjacent property is a wooded area

The south adjacent property is a residential property.

The west adjacent property is a road and a wooded area.

There are no manufacturing operations, gas stations, commercial printing facilities, dry cleaners, welding, photo developing facilities, salvage yard/landfills, or storage, disposal, processing or recycling facilities located on the subject or adjoining properties.

2.5 Topographic, Geologic, & Hydrologic Site Conditions

The subject property's physical setting is researched using a USGS 7.5 Minute Topographic Quadrangle Map relevant to the subject property. The USGS 7.5 Minute Quadrangle Map has an approximate scale of one inch equals 2000 feet, and shows physical features such as wetlands, roadways, mines, and buildings. The USGS 7.5 Minute Quadrangle Map is used as the Standard Physical Setting Source, and is sufficient as a single reference. An excerpt of this map is included as the Site Location Map.

On the USDA 2022 Quadrangle Map, showed the Subject Property Elevation of approximately 803 feet above sea level.

No mines are noted in the immediate area of the subject property.

Three wells are less than 1/4 of a mile away from the Subject property. Eight other wells are found between 1/4 to a 1/2 mile away from the Subject Property. Lastly, there are fourteen wells found between 1/2 mile to 1 mile of the Subject Property.

There are multiple small national wetland inventory areas found are the Subject Property. The overview map depicting these are found within the Summary Radius in Appendix B.

2.6 Site Inspection

Mackenzie Wagner of SITEX, Inc conducted a visual inspection of the Subject Property on December 17, 2025. The site inspection consisted of walking the Subject Property and inspecting for any observable environmental conditions as well driving around the Property.

No evidence of material threats, chemical spills or dumping, stressed vegetation or unusual odors was observed on or adjacent to the Subject Property during the assessment. No evidence of hazardous waste, monitoring wells, dumping, PCB concerns, or landfills was observed on the Subject Property.

A photographic log documenting areas during the inspection is presented for review in Appendix C

2.7 Current Use

The subject property is currently a vacant lot with a old shed and a garage.

2.8 Evidence of Past Use

An old farm shed as found onsite. A lead paint survey and Asbestos assessment was conducted since the shed is going to be torn down before construction of the new ambulance building.

Based on the apparent age of the shed, SITEX took Lead Paint XRF samples on the exterior of the shed. The west wall window was found positive for lead based paint.

This means an Missouri Certified Lead contractor would need to remove any lead based paint before any type of work is done.

This presents a Recognized Environmental Condition.

2.9 Hazardous Substances in Connection with Identified Uses

There were no hazardous substances found onsite in connection with identified uses of the Subject Property.

2.10 Other Hazardous Substance Containers

No unidentified substance containers were observed on the subject property at the time of SITEX's site reconnaissance.

2.11 Petroleum Storage Tanks (PSTs)

Aboveground Storage Tanks (ASTs)
No above ground storage tanks were observed at the time of the site reconnaissance

Underground Storage Tanks (USTs)
No other obvious evidence of USTs such as fill ports, vent pipes or man ways observed on the Subject Property at the time of the inspection.

2.12 Polychlorinated Biphenyls

Electrical transformers are a potential source of environmental concern due to the possible presence of polychlorinated biphenyl (PCB)-containing cooling oils used in some units. Equipment containing hydraulic oil may also be PCB-containing. No transformers were observed on the subject property. No other potential sources of PCB-containing equipment (i.e. hydraulic equipment such as automotive lifts, trash compactors, or elevators) were observed on the subject property at the time of SITEX's site reconnaissance.

The adjacent property to the north had a electrical wire with a transformer on it

2.13 Waste Generation, Collection, and Discharge

Dumpsters were not observed on the subject property.

There were no waste generation, collection, or discharge activities observed that are considered to represent a Recognized Environmental Condition in connection with the Subject Property at this time.

2.14 Property Grounds

SITEX observed no evidence of stressed vegetation or unusual odors at the Subject Property on the day of the site inspection. There was no obvious evidence of run-off onto the Subject Property from off-site sources that constitutes a Recognized Environmental Condition.

Landfills

SITEX did not observe any obvious evidence of landfills. No earth moving activities were observed at the Subject Property on the day of the site reconnaissance.

Pesticides

Pesticides were not observed on the Subject Property on the day of the site inspection.

Drinking Water Sources and Water Wells

No wells were observed on the Subject Property on the day of the site inspection.

Oil/Gas Wells and Pipe Line Easements

No oil/gas well was observed on the Subject Property on the day of the site inspection.

2.15 Current Adjoining Property Use

Inspection of adjoining properties was restricted to visual observations made from the boundaries of the Subject Property and public right-of-ways.

The adjoining properties are all either residential or wooded areas.

There are no manufacturing operations, commercial printing facilities, dry cleaners, photo developing facilities, salvage yard/landfills, or storage, disposal, processing or recycling facilities located on adjoining properties.

No observed or reported uses of adjoining properties on the day of the site inspection are considered to represent a Recognized Environmental Condition to the Subject Property.

2.16 Evidence of Past Adjoining Property Use

There was no visual or physical evidence of past uses on adjoining properties observed during the site visit that represents a Recognized Environmental Condition.

2.17 Vapor Encroachment Concerns

Vapor Encroachment Screening

Based on SITEX's professional judgment of the facilities located within the Area Of Concern (AOC) surrounding the subject site, which includes consideration of the anticipated groundwater flow direction beneath the site (southwest), topographic/hydrogeologic considerations, and review of available regulatory status of each facility.

Due to the distance from the property and being upgradient from the Subject Property; PlasmaDyn USA located at 3688 Bassett Woods Drive, Pacific, MO 63069 is a potential VEC.

3.0 HISTORICAL REVIEW

SITEX reviewed reasonably ascertainable standard historical sources related to the Subject Property and immediate surrounding area. The purpose of the historical review is to identify obvious past use of the Subject Property and surrounding area and to evaluate the potential for Recognized Environmental Conditions related to the past use of the Subject Property and surrounding area.

JPMCB - Minimum Historical Sources:

- City Directories
- Fire Insurance Maps
- Sanborn Maps
- Aerial Photographs - minimum of 3 (oldest, newest and significant change/evidence of environmental concern)
- USGS 7.5 minute Topo Maps

Site boundaries must be clearly outlined. Historic use of adjacent/surrounding properties within a 1/8 mile of the subject property should be summarized.

Secondary sources: Building/Zoning/Land Dept; Interviews; Tax Assessor; Newspaper; directories; Internet resources; Company/facility files; Local Historical Societies.

Based on the information reviewed, it appears that the historical review has not identified evidence of RECs in connection with the subject property's historical use.

3.1 Historical Aerial Photographs

Aerial photographs were reviewed in an effort to determine historical land use and to identify evidence of surface anomalies indicative of possible fill areas, oil and gas exploration activities, and industrial development that may have included storage and/or disposal activities at the Subject Property.

Aerial photographs for the years 2022, 2018, 2014, 2010, 2007, 1996, 1990, 1986, 1980, 1974, 1970, 1968, 1965, 1958, 1953, and 1945 were obtained for review from EDR. The aerial photography review was generally restricted to areas on and immediately adjacent to the Subject Property.

The 1945 aerial photograph shows the Subject Property as undeveloped. The adjacent properties to the south east and south west have a residential home. A paved road bounds the property to the east, south and west.

The 1953 aerial photograph shows the Subject Property being developed with a small structure on it. The adjacent properties to the south east and south west have a residential home. A paved road bounds the property to the east, south and west.

The 1958, 1965, 1968, 1970, & 1974 aerial photographs shows a small structure on the Subject Property. The adjacent properties to the south, east, and north all have structures. A paved road bounds the property to the east, south and west.

The 1980 aerial photograph is extremely blurry and the outline of the Subject Property is skewed to the left. We cannot discern much from this photograph other than the paved road bounds the property to the east, south and west.

The 1986, 1990 &1996 aerial photographs shows two small structures on the Subject Property. The adjacent properties on all sides have structures. A paved road bounds the property to the east, south and west.

The 2007, 2010 & 2014 aerial photographs show multiple structures on the Subject Property. The adjacent properties on all sides have structures. A paved road bounds the property to the east, south and west.

The 2018 & 2022 aerial photographs show show multiple structures on the Subject Property. The adjacent properties on all sides have structures. The property to the southeast has expanded with a large parking lot with vehicles. A paved road bounds the property to the east, south and west.

Photographic resolution was insufficient to accurately determine small scale details in these photographs; however, review of historical aerial photographs revealed there maybe facilities (such as a gas station or mechanic), that may indicate the storage or disposal of potentially hazardous materials or any other negative environmental impact to the site.

Copies of the aerial photographs are presented for review in Appendix C.

3.2 Historical Topographic Maps

The following United States Geological Survey (USGS) 7.5', 15' and 30' Topographic Quadrangle Maps were reviewed for indications of Recognized Environmental Conditions associated with the Subject Property and surrounding properties.

7.5 minute Topographic Maps
Eureka: 2021, 2017, 2015, 1993, 1982, 1979, 1974, 1968, 1954, 1944, 1940, & 1938
Labadie: 2021, 2017, 2015, 1980, & 1972

15 Minute Topographic Maps
Augusta: 1949, & 1948

30 Minute Topographic Maps
O'Fallon: 1903

The 1903 historical topographic map shows a part of a small structure on the west side of the Subject Property. The Property is bound by a paved road to the south, west and east.

The 1938, 1940, & 1944 historical topographic maps shows no structure on the Subject property. The Property is bound by a paved road to the south, west and east.

The 1948 & 1949 historical topographic maps are half unmapped and doesn't show the Subject property.

The 1954 historical topographic map shows a structure on the property. The adjacent properties to the south and east also show structures. The Property is bound by a paved road to the south, west and east.

The 1968, 1972, & 1974 historical topographic maps show two structures on the Subject Property. The adjacent properties to the south and east also show structures. The Property is bound by a paved road to the south, west and east.

The 1979 historical topographic map looks more like an aerial photograph. It is hard to discern but there appears to be a structure on the Subject Property. The Property is bound by a paved road to the south, west and east.

The 1980, 1982, & 1993 historical topographic maps show two structures on the Subject Property. The adjacent properties to the south and east also show structures. The Property is bound by a paved road to the south, west and east.

The 2015, 2017, & 2021 historical topographic maps show no structures on the Subject Property or adjacent properties. The Property is bound by a paved road to the south, west and east. All roads are named as they are today.

No Recognized Environmental Conditions to the Subject Property are apparent as a result of the review of the historic topographic maps.

Copies of the historical topographic maps are presented for review in Appendix A.

3.3 City Directories

EDR Digital Archive found information for the year 2022.

EDR found the years 2022, 2017, 2014, 2010, 2005, 2000, 1995, and 1992 in Cole Information

EDR found years 1987, 1982, 1979, 1975, 1969, 1965, and 1963 were found in the Haines Criss-Cross Directory.

In 2022, 2017, 2014 the Subject Property was not listed.
In 2010 the Subject Property is listed as Occupant Unknown

In 2005 the Subject Property is listed as Manhart, Virgil J
In 2000 the Subject Property is listed as Null, Steven L
In 1995, 1992 the Subject Property is listed as Jabin, Julius

None of the City Directory listings represent a Recognized Environmental Condition to the Subject Property.

Search results are presented in Appendix B.

3.4 Sanborn Maps

The no coverage statement for a fire insurance map is attached in Appendix A.

3.5 Other Historical Sources

SITEX reviewed other historical sources as summarized below:

National Register of Historic Places

According to the National Information System's (NRIS) National Register of Historic Places website, the Subject Property was not listed as having historical significance.

4.0 INTERVIEWS AND USER-PROVIDED INFORMATION

The objective of conducting interviews is to obtain information indicating the presence or absence of Recognized Environmental Conditions to the Subject Property. Reasonable attempts were made to conduct interviews and obtain answers provided in good faith.

Owner questionnaire and user questionnaire were emailed to Dustin Roberts on 12/10/25 to have them forwarded and filled out by whoever necessary. Dustin Roberts emailed back the answers on 12/19/25.

The property data sheet and user questionnaire that was completed by Taz Meyer, the Chief of Meramec Ambulance District.

The owner questionnaire and a additional user questionnaire was Taz Meyer, the Chief of Meramec Ambulance District.

4.1 Interviews

User Questionnaire

The user/client, Taz Meyer, the Chief of Meramec Ambulance District, has no knowledge of chemicals present or historically present at the Subject Property. The user/client was unaware if there were any water wells present on the Subject Property. The user/client had no knowledge of spills or other chemical releases, environmental cleanups, underground storage tanks or structures on the Subject Property. The user/client had no knowledge of any obvious indicators pointing to the presence or likely presence of contamination at the Subject Property. The user/client reported no knowledge of property value reduction due to contamination known or believed to be present at the Subject Property or nearby properties. A copy of the User Questionnaire is presented in Appendix D.

Owner Questionnaire

The owner/user, Taz Meyer, the Chief of Meramec Ambulance District, has no knowledge of chemicals present or historically present at the Subject Property. The owner/user was unaware if there were any water wells present on the Subject Property. The owner/user had no knowledge of spills or other chemical releases,

environmental cleanups, underground storage tanks or structures on the Subject Property. The user/client had no knowledge of any obvious indicators pointing to the presence or likely presence of contamination at the Subject Property. The owner/user reported no knowledge of property value reduction due to contamination known or believed to be present at the Subject Property or nearby properties. A copy of the Owner/User Questionnaire is presented in Appendix D.

4.2 Environmental Liens or Activity and Use Limitations

According to the client/user, no environmental liens or Activity and Use Limitations (AULs), such as engineering controls, land use restrictions, or institutional controls, against the Subject Property filed or recorded under federal, tribal, state, or local law were reported by the client/user. SITEX did not conduct a title or lien search for the Subject Property. Therefore, no additional information is included in this section.

4.3 Reason For Conducting the Phase I ESA

The purpose for conducting the Phase I ESA is renovation of the Meramec Ambulance Station #4.

5.0 REGULATORY RECORDS REVIEW

SITEX's review of the EDR regulatory database report indicated that the subject property is not listed on researched regulatory databases and did not identify nearby sites deemed to have a potential to pose an environmental impact to the subject property.

5.1 Federal Records

The following paragraphs summarizes each respective federal regulatory listed site identified within the ASTM specified search distance:

No facilities were found within the search for Federal records for the Subject Property.

5.2 State Records

The following paragraphs summarizes each respective state and tribal regulatory listed site identified within the ASTM specified search distance:

No facilities were found within the search for State records for the Subject Property.

5.3 Local Records

Following is a discussion of record searches performed at local government agencies made which provided information relevant to the subject property.

SITEX used the EDR database for the purpose of conducting a records search of past or current environmental concerns associated with the subject property. Using the fire and emergency records in 2013 on the Subject Property there were fires in structures other than in a building. Cause was from mechanical failure and was controlled.

The adjacent property to the south had two cases of fires; one was unauthorized burning in 2012 and trashing burning in 2007.

The adjacent property to the north had authorized controlled burning in 2014.

No other other confirmed local records have been found.

6.0 NON-ASTM BUSINESS ENVIRONMENTAL RISKS

Certain conditions are beyond the scope of ASTM Phase I ESA and are therefore outside the scope of this assessment, unless specifically addressed in this report. Those conditions include but are not limited to:

- Historic Places
- Wetlands
- Radon
- Asbestos-Containing-Materials
- Lead-based Paint
- Lead in Drinking Water
- Indoor Air Quality
- Mold
- High Voltage Power Lines and Electromagnetic Fields (EMF)

6.1 Historical Places

The National Register of Historic Places is the nation's official list of cultural resources worthy of preservation. Authorized under the National Historic Preservation Act of 1966, the National Register is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect our historic and archaeological resources. Properties listed in the Register include districts, sites, buildings, structures, and objects that are significant in American history, architecture, archaeology, engineering, and culture. The National Park Service, which is part of the U.S. Department of the Interior, administers the National Register.

The Subject Property was not listed in the registry.

6.2 Wetlands

According to the United States Department of Interior, US Fish and Wildlife Service (USFWS), a wetland must meet three (3) criteria, which includes hydric soils, wetland type vegetation, and saturation for a minimum number of days during the growing seasons to be considered. Additionally, the U.S. Army Corps of Engineers has indicated that suspected or isolated wetland areas must exhibit a known nexus to

commerce (connection to navigable water) in order to be subject to Section 404 of the Clean Water Act or require a fill permit by the Department of the Army.

During the site reconnaissance, SITEX did not observe hydric soils or plants species indicative of wetlands area

6.3 Radon

Radon is a colorless, odorless, naturally occurring, radioactive gas originating from the breakdown of uranium in the subsurface. Radon is a known carcinogen implicated as a cause of lung cancer. The US EPA has published a Map of Radon Zones in the United States, which indicates the Subject Property is in a Zone 3 potential for radon gas. Zone 3 has a predicted average indoor radon screening level of less than 2.0 Picocuries per liter (pCi/L). The US EPA recommends additional testing and investigation when radon levels are greater than 4.0 pCi/L.

SITEX did not take any samples since it was not within the scope of work.

6.4 Asbestos-Containing Materials

Asbestos is an incombustible, chemical-resistant, carcinogenic, fibrous mineral. Asbestos containing materials (ACM) have been used extensively in fireproofing, electrical insulation, building materials, brake linings, and chemical filters.

SITEX's scope of work concerning ACM on the property was designed solely to identify the potential for contamination from the most obvious and common suspect ACMs. The determination of exact quantities and locations of all ACMs was beyond the scope of this ESA. Only readily accessible building materials were observed. Inaccessible areas are not included in our observations since they are normally investigated prior to building renovation or demolition work. Inaccessible areas include, but are not limited to, roofs, pipe chases behind solid walls and ceilings, concealed floor coverings, the interior of machinery and equipment, brake pads, clutch pads, electrical systems, and the water and sewer system.

A material is considered to be asbestos-containing if it contains greater than one percent asbestos as analyzed by polarized light microscopy (PLM) coupled with

dispersion staining techniques. Friable ACM, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. Non-friable ACM can be crumbled, pulverized, or reduced to powder during machining, cutting, drilling, or other abrasive procedures. Friable ACM is more likely to release fibers when disturbed or damaged than non-friable ACM.

Based on the apparent age of shed it maybe likely asbestos containing materials are present. SITEX took two samples of the asphalt shingle and the window caulking on the outside of the shed to test for asbestos. The inside of the shed was locked and SITEX was unable to gain access.

Both samples came back negative for containing any asbestos.

The lab report is attached in Appendix D. Correspondence.

6.5 Lead-Based Paint

Paints manufactured before 1960 were heavily leaded. Lead content was tapered off until 1978 when lead was banned from use in household paint. Lead is toxic to humans, especially children because of their size and weight. High concentrations of lead are believed by some medical authorities to cause mental retardation, seizures, coma, and death in children. Adults may suffer severe nervous disorders but are less likely to die from acute lead exposure. Lead-based paint (LBP) in good condition is not usually a problem except in places where painted surfaces rub against each other and create dust, such as the friction surfaces of a painted window.

The US EPA does not publish a guideline or threshold limit specifically for lead in paint for private housing; however, the LBP Poisoning Prevention Act requires public housing projects to be inspected for LBP. Under the statute, LBP is defined as paint containing at least 0.5% lead by weight. Lead concentrations above this limit must be managed with an Operations and Maintenance (O&M) Program or be abated if in poor condition. The 0.5% threshold is equivalent to 5,000 mg/kg (parts per million) of lead.

Based on the apparent age of the shed, SITEX took Lead Paint XRF samples on the exterior of the shed. The west wall window was found positive for lead based paint.

This means an Missouri Certified Lead contractor would need to remove any lead based paint before any type of work is done.

Lead Paint Survey is attached in Appendix D: Correspondence

6.6 Lead in Drinking Water

Lead in drinking water is regulated by the EPA under 40 CFR Part 141 Subpart I. The regulation applies to community systems and non-transient, non-community water systems. The regulations reflect the concern about the public health effects of lead in the human body. Although rarely the sole cause of lead poisoning, lead in drinking water can add significantly to total lead exposure. The EPA estimates that drinking water can make up to 20 percent or more of this exposure. The EPA has established an action level of 15 micrograms/liter (ug/L) for lead in drinking water.

SITEX did not take any samples of the drinking water, since it was not within the scope of work.

6.7 Indoor Air Quality

Air Quality/Air Emissions

There were no strong, pungent, or noxious odors noted on the Subject Property during the site inspection. Also, no obvious evidence of activity on the Subject Property requiring air permitting was observed.

6.8 Mold

Molds can be found almost anywhere and will grow on virtually any organic substance as long as moisture and oxygen are present. There are molds that grow on wood, paper, carpet, foods, and insulation. When excessive moisture accumulates in buildings or on building materials, mold growth will often occur, particularly if the moisture source remains undiscovered, untreated, or ignored. It is impossible to eliminate all molds and mold spores in the indoor environment; however, mold growth can be controlled indoors in most cases by controlling the amount of moisture available. Moisture issues can result from many causes, including uncontrolled humidity, leaking roofs, plumbing or piping issues, condensation on water lines, etc. Delayed or insufficient maintenance practices are usually associated with moisture

problems in commercial-use and multi-family residential buildings. Molds reproduce by propagating spores that usually cannot be seen without magnification. Mold spores continuously travel though the air and, after landing on a damp surface, begin to grow. Mold growth occurs through digestion of the parent material, which is destroyed as a result of this process.

No obvious evidence of mold was observed on the Subject Property on the day of the site inspection.

6.9 High Tension Power Lines

No high-tension power lines were observed on the Subject Property on the day of the site inspection.

The adjacent property to the north has a high tension power line with a transformer on top. The pole and transformer seem to be in good working condition.

REFERENCES

American Society for Testing and Materials (ASTM) 2005. Practice E 1527-05 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.

Environmental Data Resources, Inc. (EDR). 2013. Aerial Photo Decade Package, Meramec Ambulance District, 285 Old Manchester Road Pacific, MO.

EDR. 2013. Certified Sanborn Map Report, Meramec Ambulance District, 285 Old Manchester Road Pacific, MO.

EDR. 2013. City Directory Abstract Meramec Ambulance District, 285 Old Manchester Road Pacific, MO.

EDR. 2013. Historical Topographic Map Report, Meramec Ambulance District, 285 Old Manchester Road Pacific, MO.

EDR. 2013. Radius Map Report, Meramec Ambulance District, 285 Old Manchester Road Pacific, MO.

U.S. Environmental Protection Agency. 2005. "Standards and Practices for All Appropriate Inquiries; Final Rule" (40 Code of Federal Regulations Part 312). Federal Register Vol. 70, No. 210. November 1.

A.

Maps

Meramec Ambulance District
385 Old Manchester Road
Pacific, MO 63069

Inquiry Number: 8194693.3
December 08, 2025

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

12/08/25

Site Name:

Meramec Ambulance District
385 Old Manchester Road
Pacific, MO 63069
EDR Inquiry # 8194693.3

Client Name:

Sitex Environmental, Inc.
1525 South Broadway
Saint Louis, MO 63104
Contact: Mackenzie Wagner

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The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # 01BA-45A4-AAEF

PO # NA

Project 23490

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results

Certification #: 01BA-45A4-AAEF

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

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Meramec Ambulance District
385 Old Manchester Road
Pacific, MO 63069

Inquiry Number: 8194693.4
December 08, 2025

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

12/08/25

Site Name:

Meramec Ambulance District
385 Old Manchester Road
Pacific, MO 63069
EDR Inquiry # 8194693.4

Client Name:

Sitex Environmental, Inc.
1525 South Broadway
Saint Louis, MO 63104
Contact: Mackenzie Wagner

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Search Results:

P.O.# NA
Project: 23490

Coordinates:

Latitude:	38.535213 38° 32' 7" North
Longitude:	-90.742696 -90° 44' 34" West
UTM Zone:	Zone 15 North
UTM X Meters:	696747.75
UTM Y Meters:	4267615.96
Elevation:	799.77' above sea level

Maps Provided:

2021	1954
2017	1949
2015	1948
1993	1944
1980, 1982	1940
1979	1938
1974	1903
1968, 1972	

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Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2021 Source Sheets



Eureka
2021
7.5-minute, 24000



Labadie
2021
7.5-minute, 24000

2017 Source Sheets



Eureka
2017
7.5-minute, 24000



Labadie
2017
7.5-minute, 24000

2015 Source Sheets



Eureka
2015
7.5-minute, 24000



Labadie
2015
7.5-minute, 24000

1993 Source Sheets



Eureka
1993
7.5-minute, 24000
Aerial Photo Revised 1990

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1980, 1982 Source Sheets



Labadie
1980
7.5-minute, 24000
Aerial Photo Revised 1970



Eureka
1982
7.5-minute, 24000
Aerial Photo Revised 1979

1979 Source Sheets



Eureka
1979
7.5-minute, 24000
Aerial Photo Revised 1979

1974 Source Sheets



Eureka
1974
7.5-minute, 24000
Aerial Photo Revised 1974

1968, 1972 Source Sheets



Eureka
1968
7.5-minute, 24000
Aerial Photo Revised 1968



Labadie
1972
7.5-minute, 24000
Aerial Photo Revised 1970

Topo Sheet Key

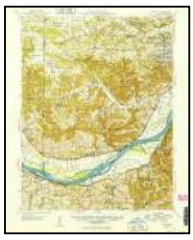
This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1954 Source Sheets



Eureka
1954
7.5-minute, 24000
Aerial Photo Revised 1952

1949 Source Sheets



Augusta
1949
15-minute, 62500
Aerial Photo Revised 1945

1948 Source Sheets



Augusta
1948
15-minute, 62500
Aerial Photo Revised 1945

1944 Source Sheets



Eureka
1944
7.5-minute, 24000

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1940 Source Sheets



Eureka
1940
7.5-minute, 24000

1938 Source Sheets



EUREKA
1938
7.5-minute, 24000

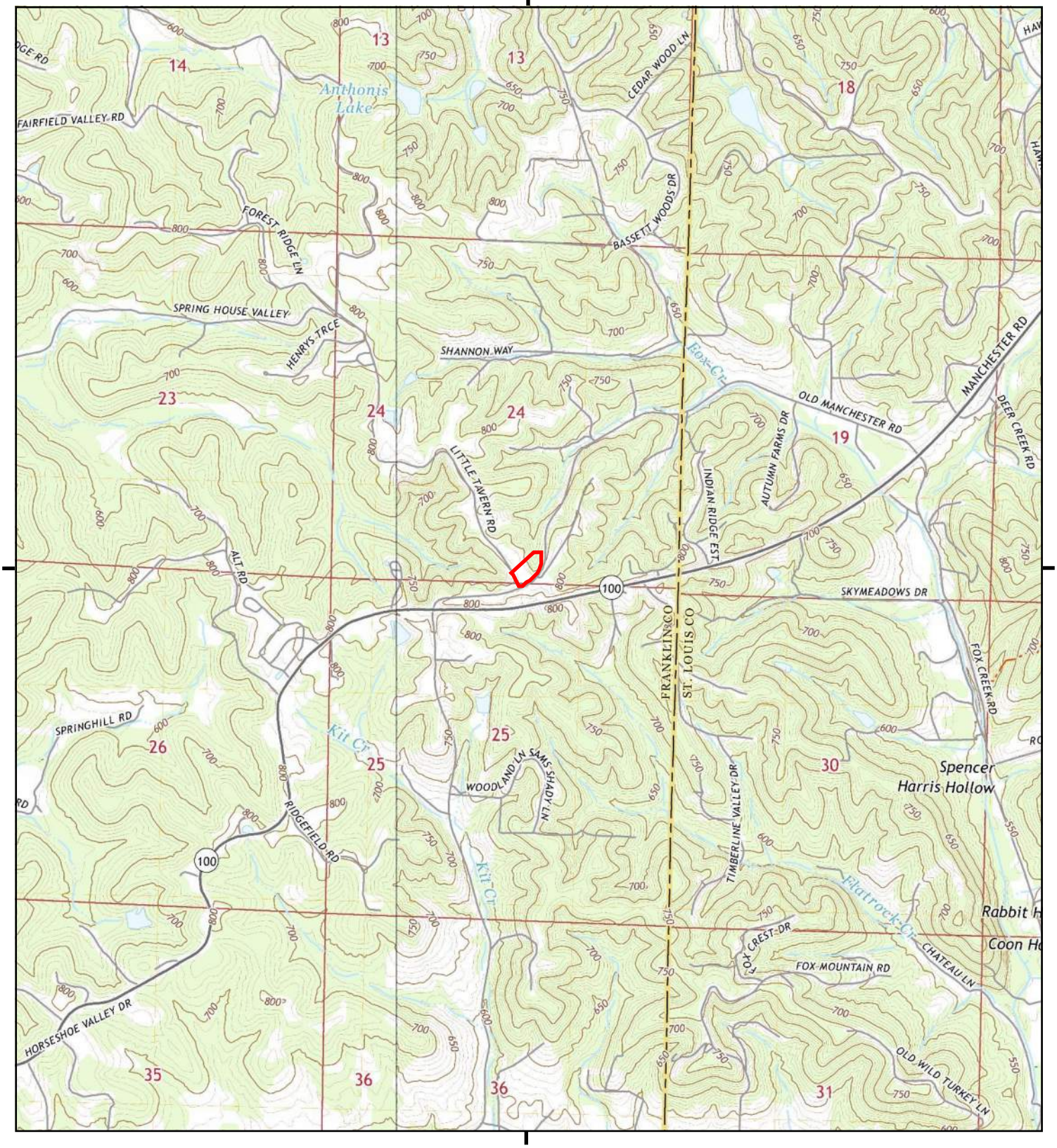
1903 Source Sheets



O'Fallon
1903
30-minute, 125000

Historical Topo Map

2021



This report includes information from the following map sheet(s).

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NW N NE
W E
SW S SE

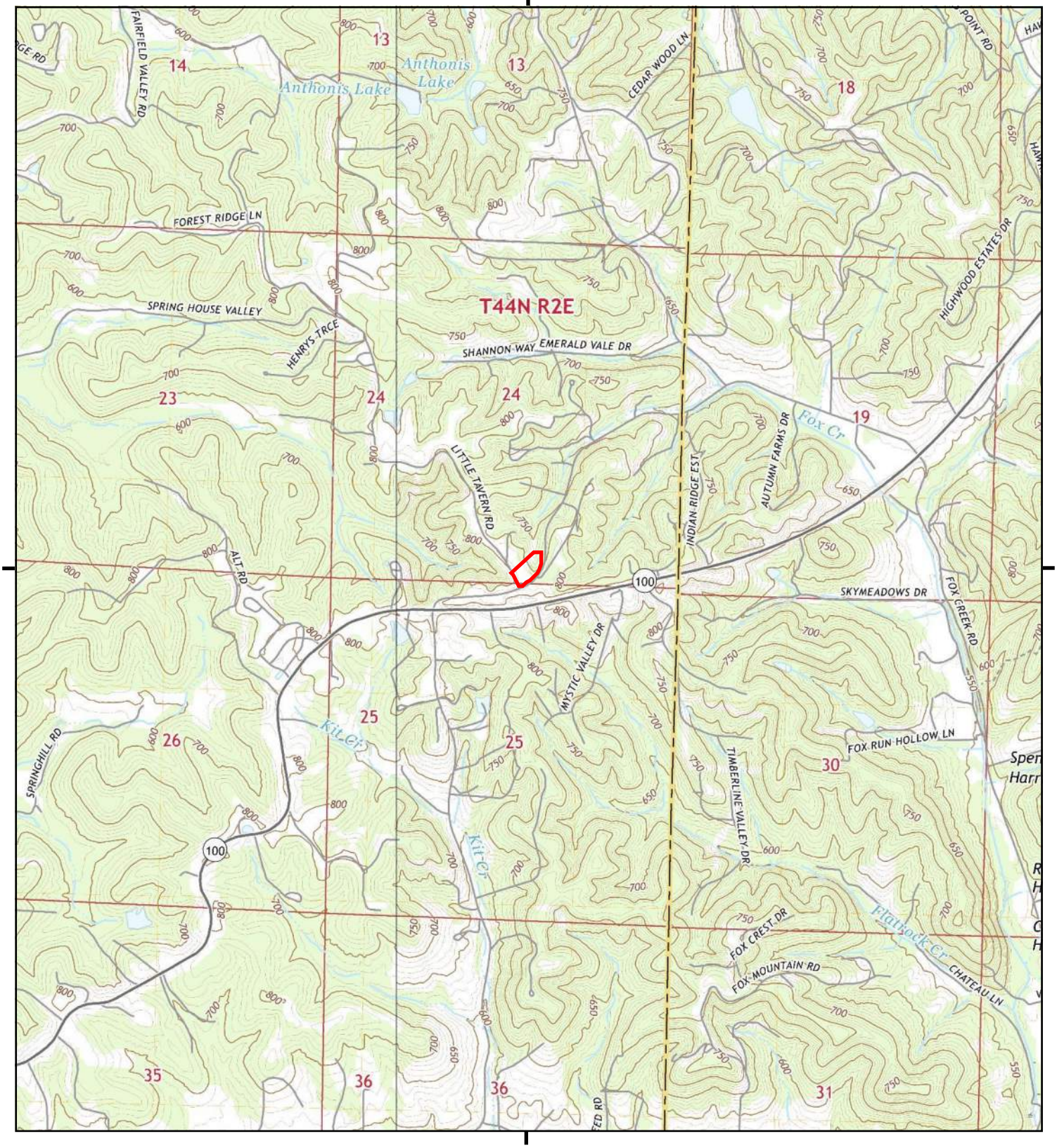
TP, Eureka, 2021, 7.5-minute
NW, Labadie, 2021, 7.5-minute

SITE NAME: Meramec Ambulance District
ADDRESS: 385 Old Manchester Road
Pacific, MO 63069
CLIENT: Sitex Environmental, Inc.

N

Historical Topo Map

2017



This report includes information from the following map sheet(s).

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W E
SW S SE

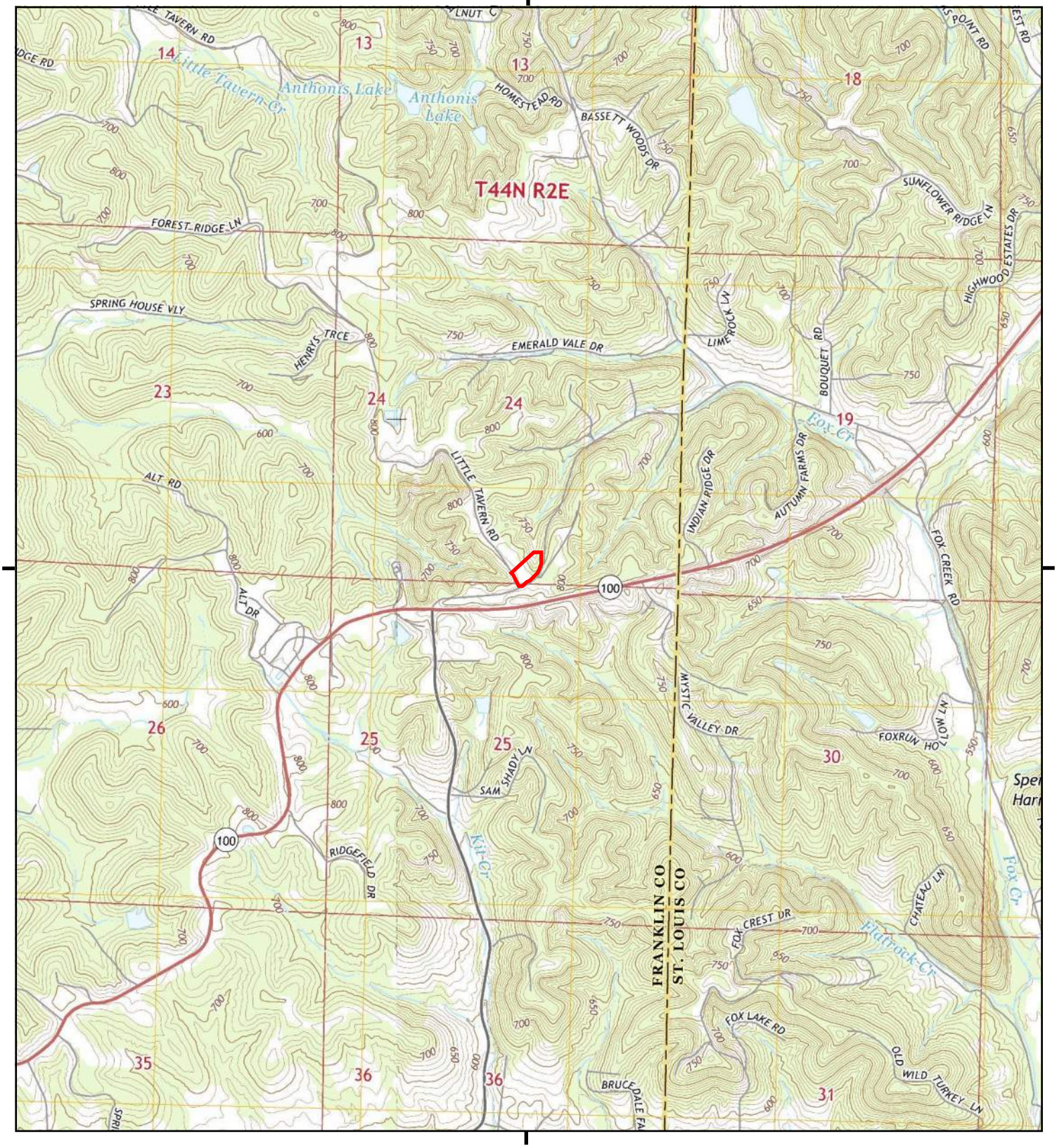
TP, Eureka, 2017, 7.5-minute
NW, Labadie, 2017, 7.5-minute

SITE NAME: Meramec Ambulance District
ADDRESS: 385 Old Manchester Road
Pacific, MO 63069
CLIENT: Sitex Environmental, Inc.

N

Historical Topo Map

2015



This report includes information from the following map sheet(s).

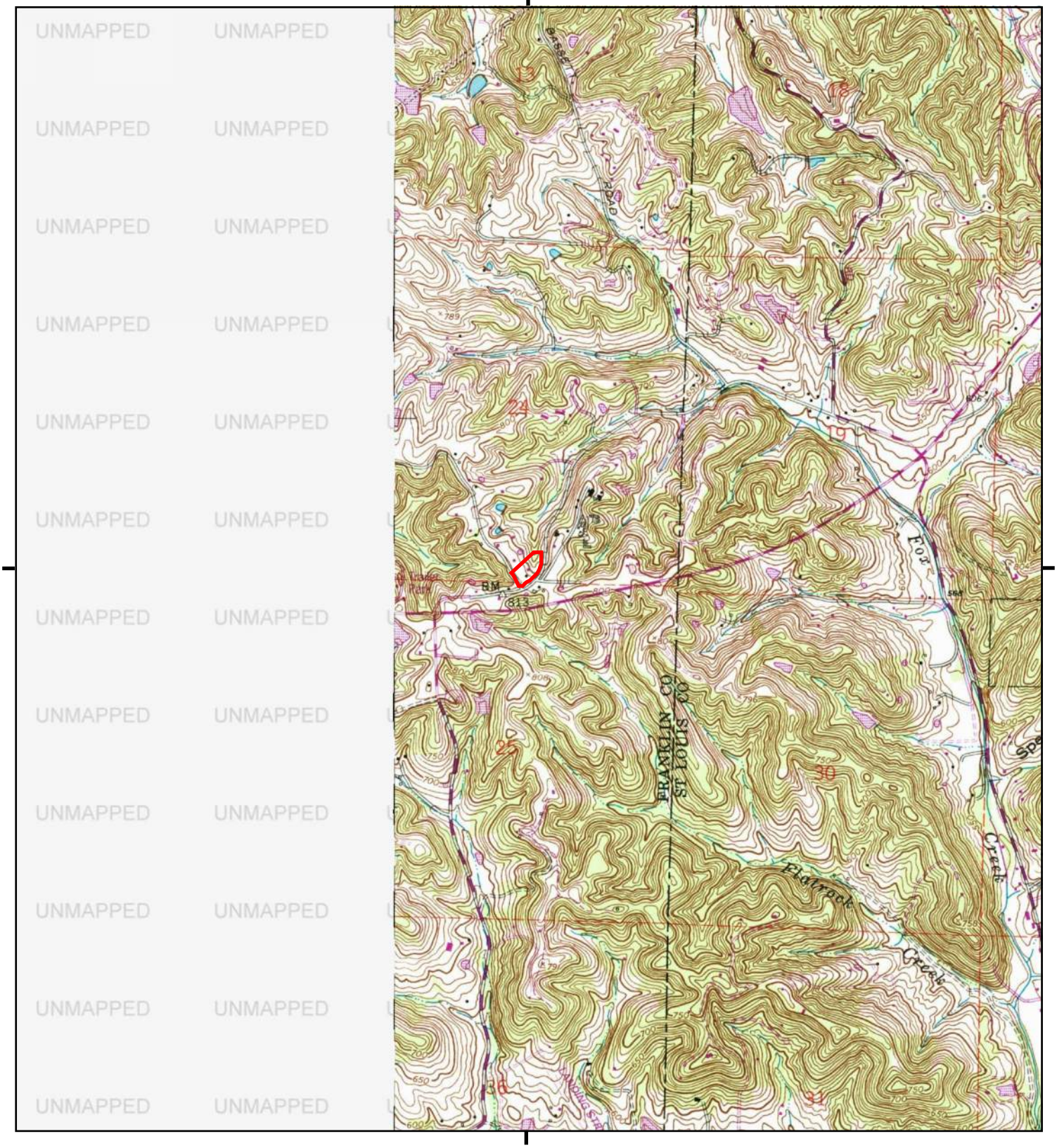
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Eureka, 2015, 7.5-minute
NW, Labadie, 2015, 7.5-minute

SITE NAME: Meramec Ambulance District
ADDRESS: 385 Old Manchester Road
Pacific, MO 63069
CLIENT: Sitex Environmental, Inc.

N



This report includes information from the following map sheet(s).

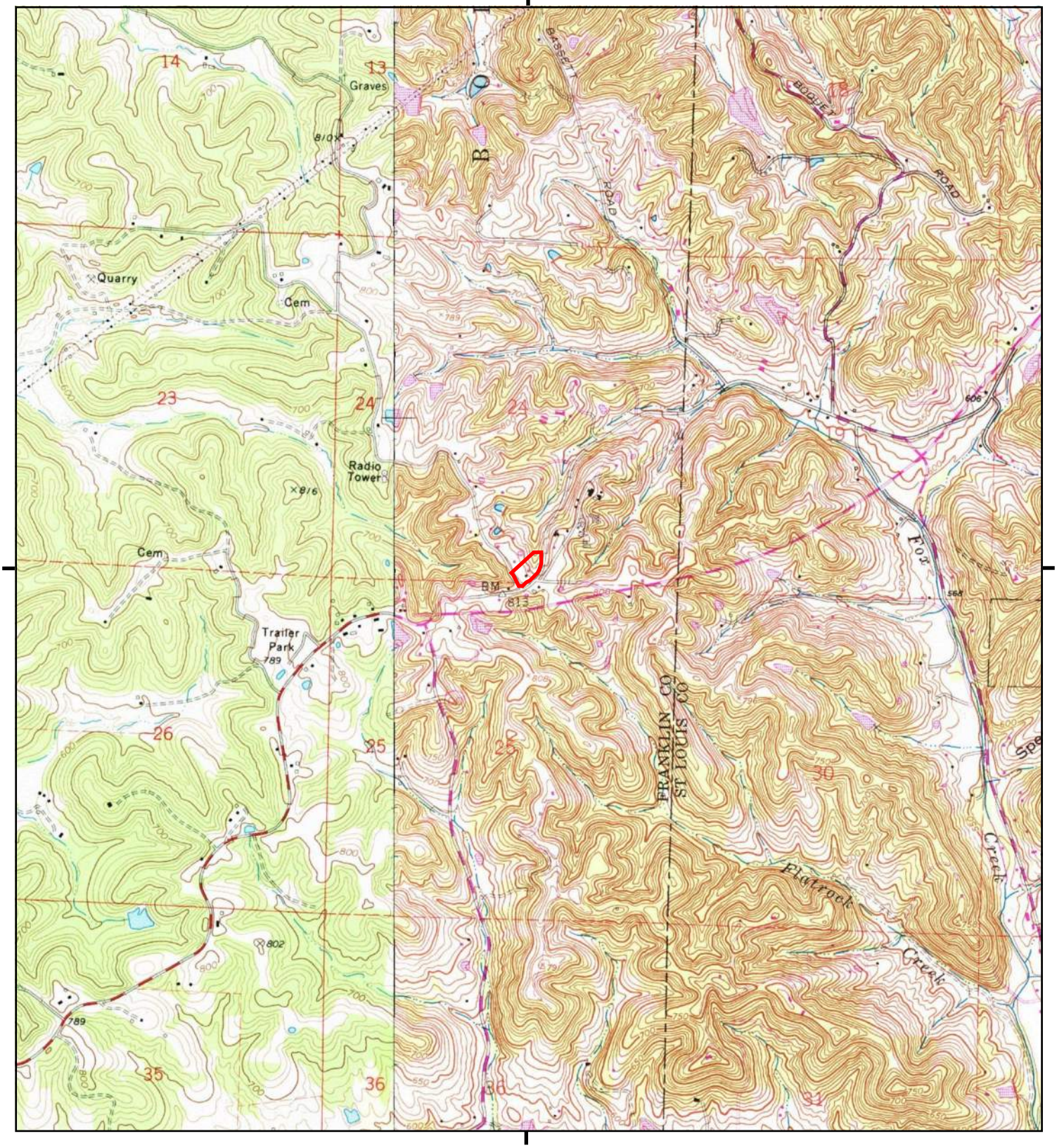
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Eureka, 1993, 7.5-minute

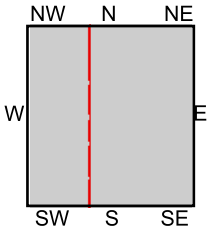
SITE NAME: Meramec Ambulance District
ADDRESS: 385 Old Manchester Road
Pacific, MO 63069
CLIENT: Sitex Environmental, Inc.

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5



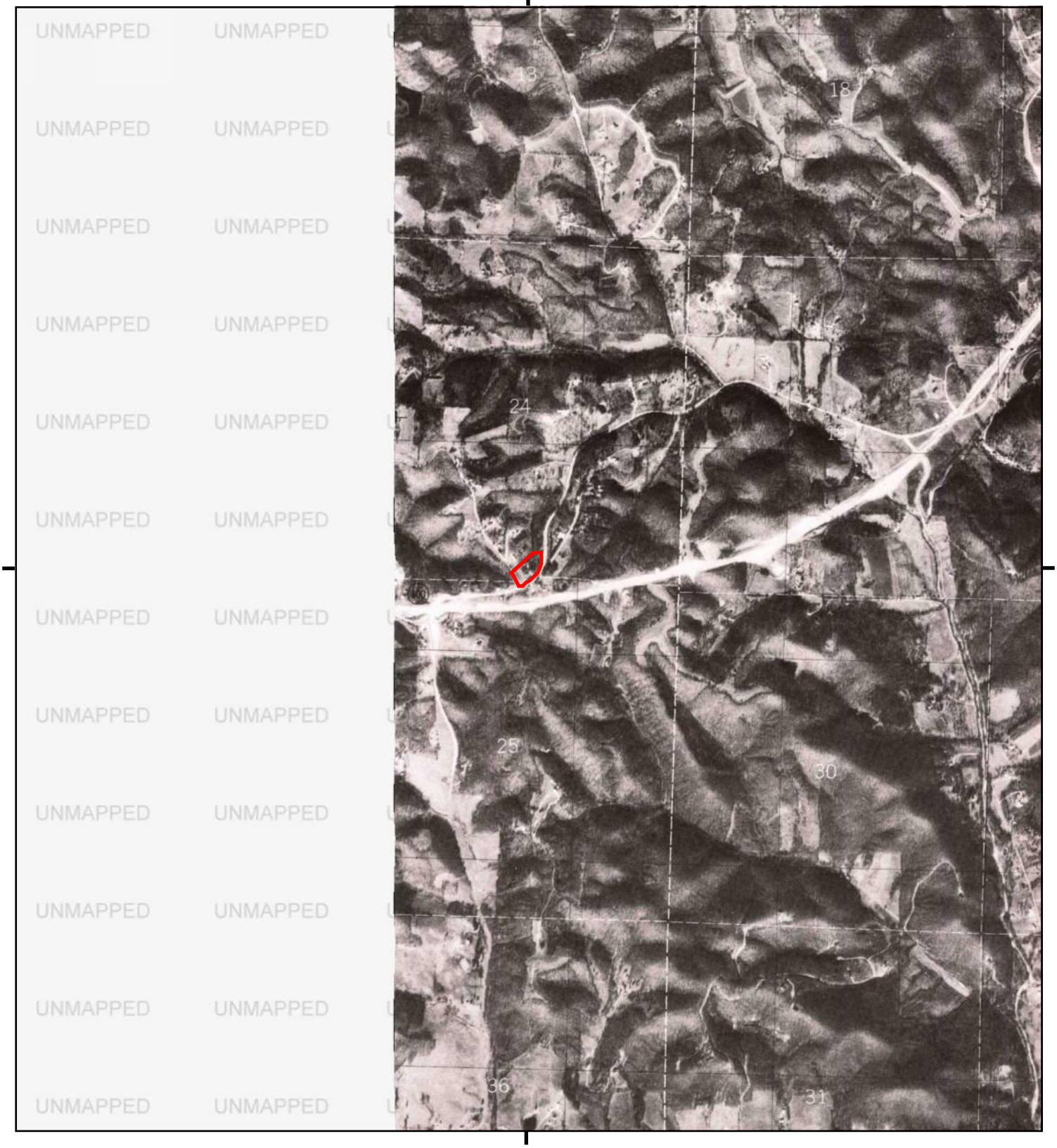
TP, Eureka, 1982, 7.5-minute
NW, Labadie, 1980, 7.5-minute

SITE NAME: Meramec Ambulance District
ADDRESS: 385 Old Manchester Road
Pacific, MO 63069
CLIENT: Sitex Environmental, Inc.

N

Historical Topo Map

1979



This report includes information from the following map sheet(s).

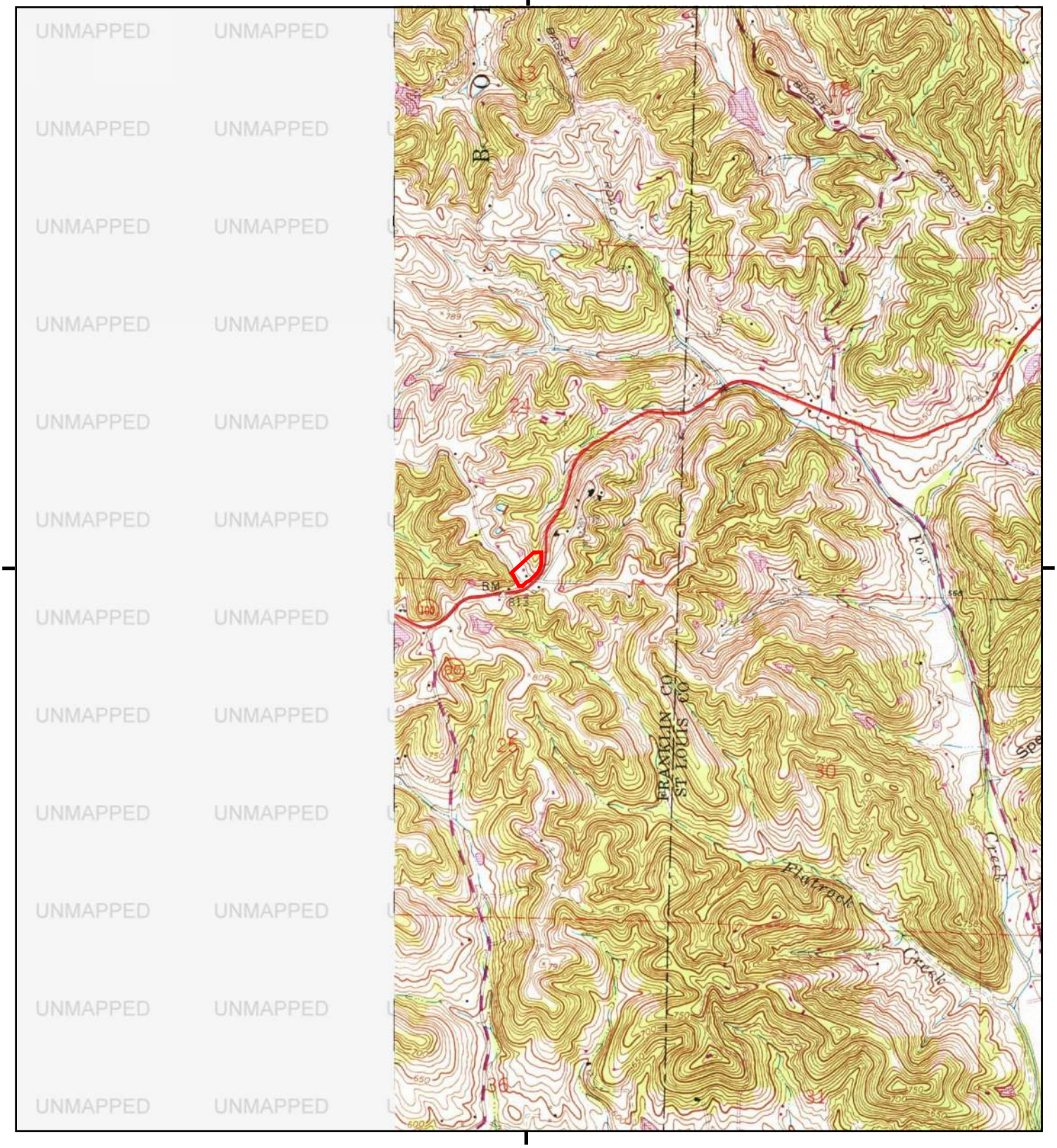
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Eureka, 1979, 7.5-minute

SITE NAME: Meramec Ambulance District
ADDRESS: 385 Old Manchester Road
Pacific, MO 63069
CLIENT: Sitex Environmental, Inc.

N



This report includes information from the following map sheet(s).

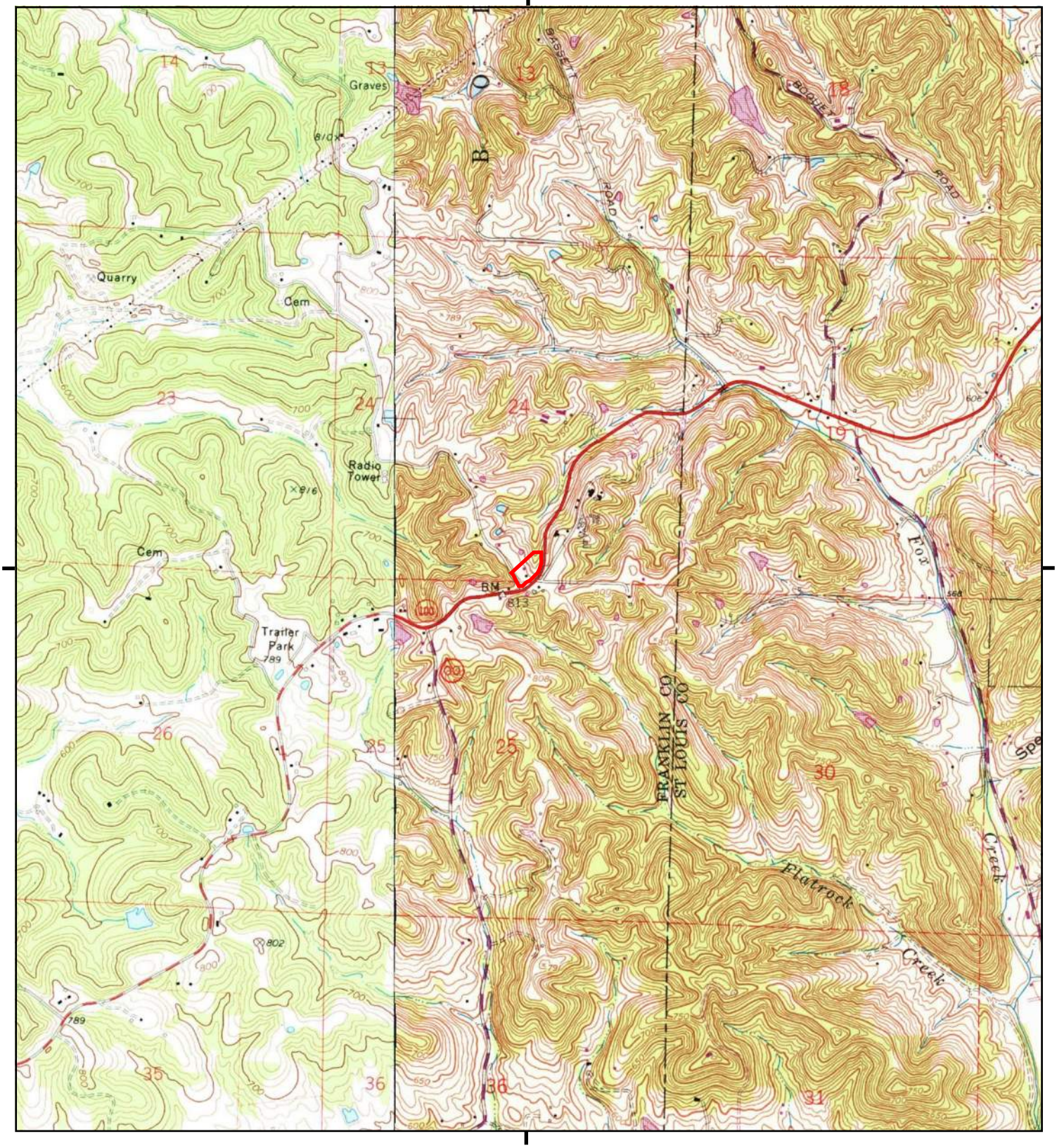
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Eureka, 1974, 7.5-minute

SITE NAME: Meramec Ambulance District
ADDRESS: 385 Old Manchester Road
Pacific, MO 63069
CLIENT: Sitex Environmental, Inc.

N



This report includes information from the following map sheet(s).

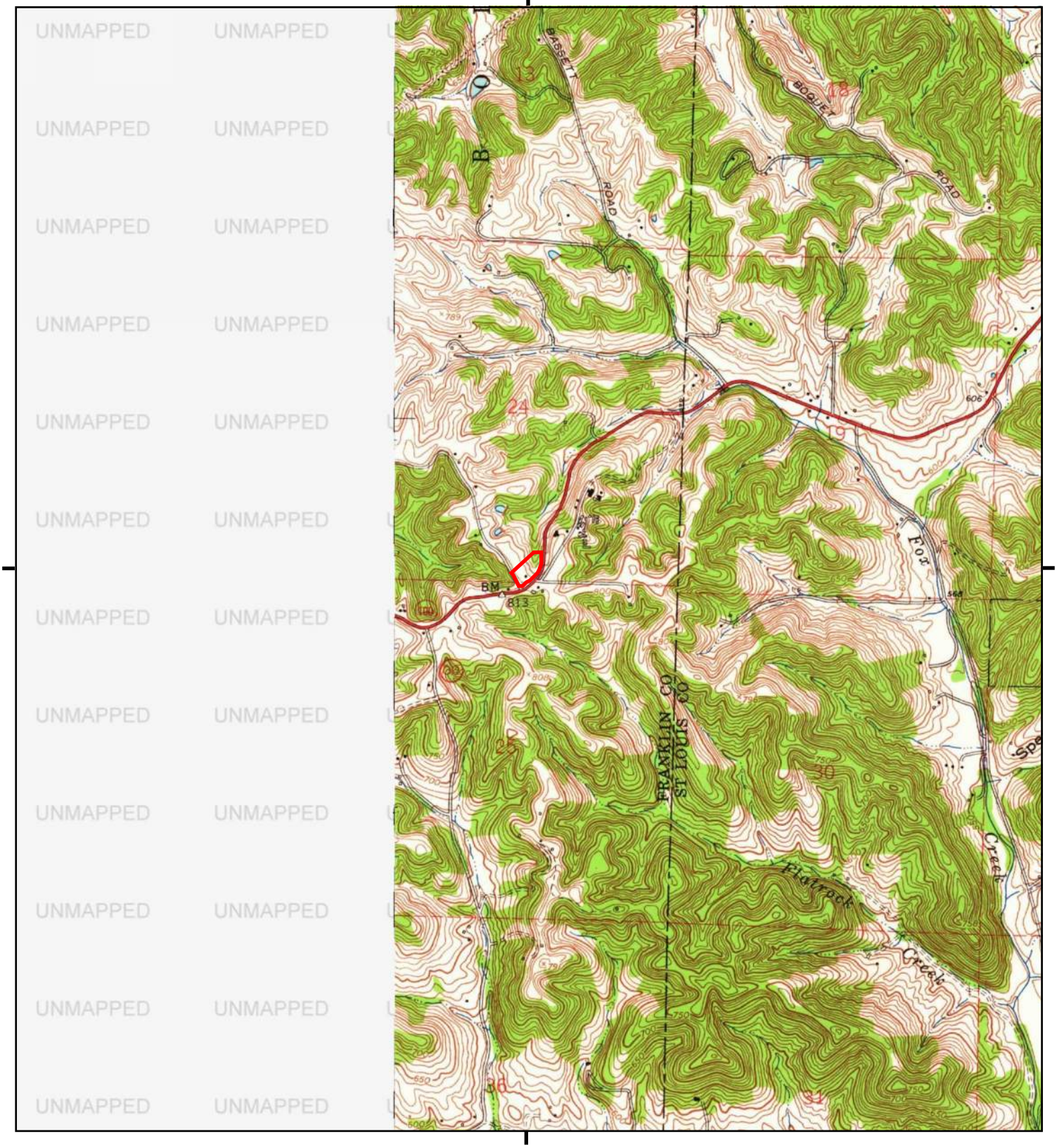
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Eureka, 1968, 7.5-minute
NW, Labadie, 1972, 7.5-minute

SITE NAME: Meramec Ambulance District
ADDRESS: 385 Old Manchester Road
Pacific, MO 63069
CLIENT: Sitex Environmental, Inc.

N



This report includes information from the following map sheet(s).

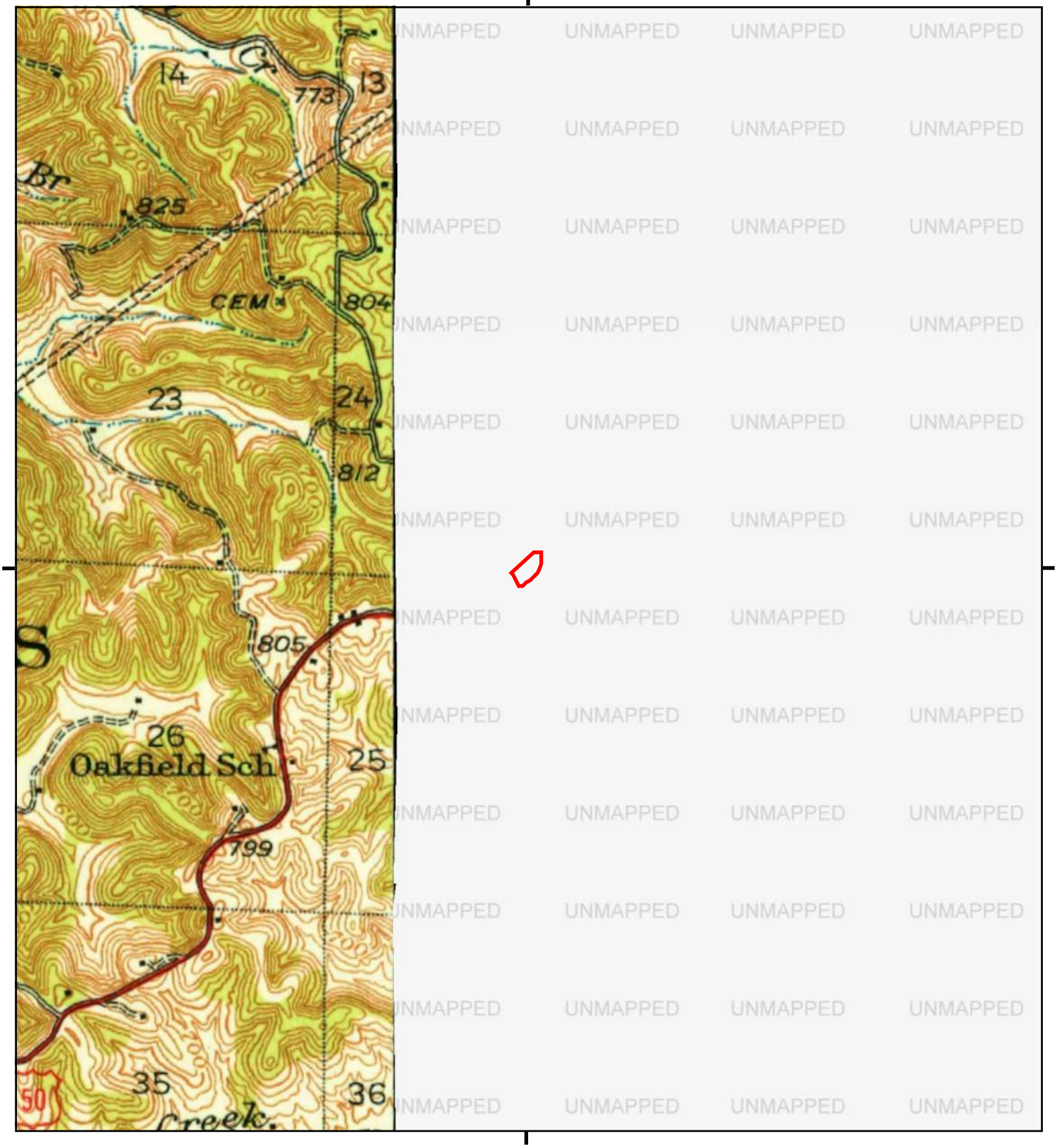
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Eureka, 1954, 7.5-minute

SITE NAME: Meramec Ambulance District
ADDRESS: 385 Old Manchester Road
Pacific, MO 63069
CLIENT: Sitex Environmental, Inc.

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

NW, Augusta, 1949, 15-minute

SITE NAME: Meramec Ambulance District
ADDRESS: 385 Old Manchester Road
Pacific, MO 63069
CLIENT: Sitex Environmental, Inc.

N



This report includes information from the following map sheet(s).

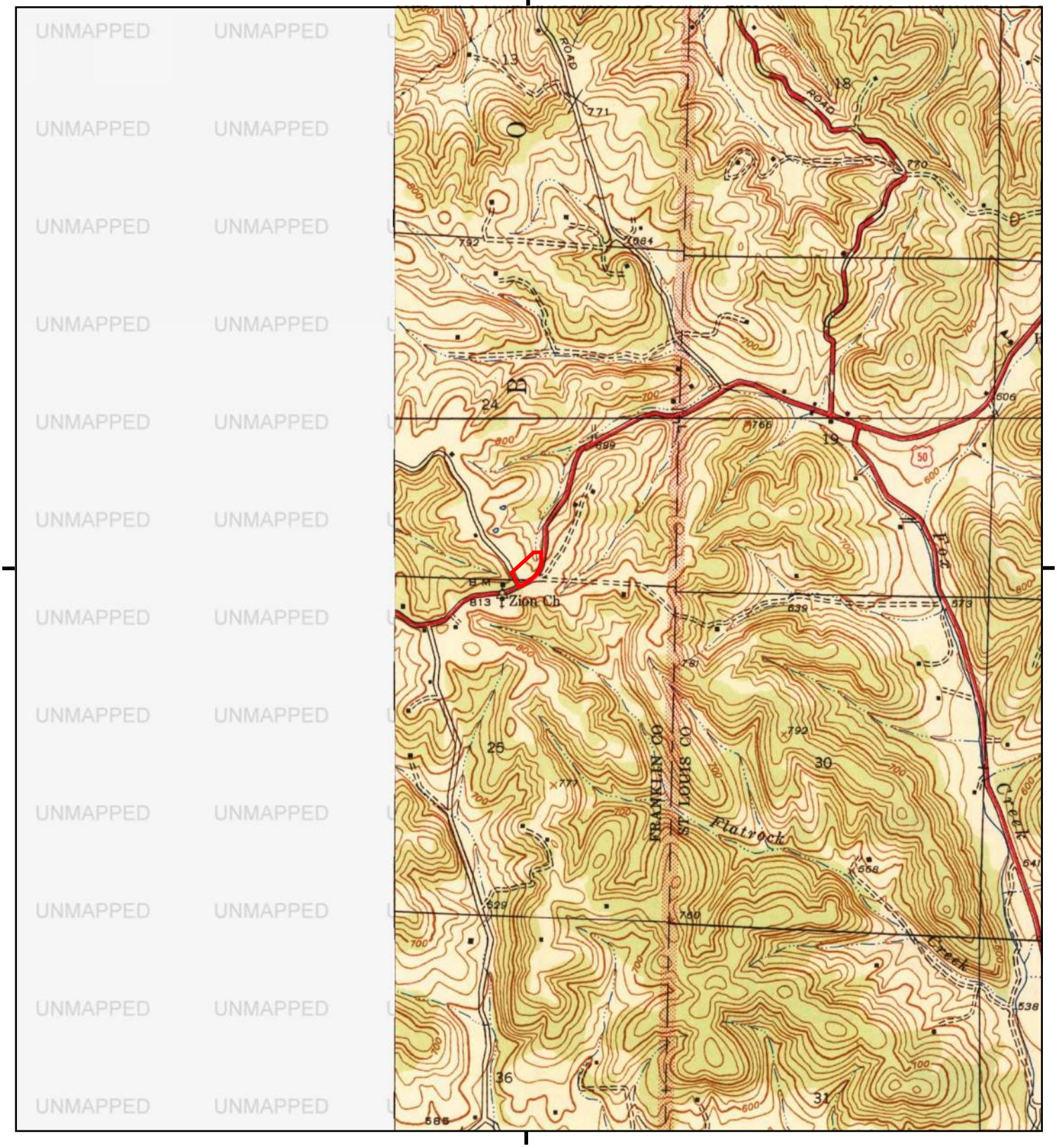
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

NW, Augusta, 1948, 15-minute

SITE NAME: Meramec Ambulance District
ADDRESS: 385 Old Manchester Road
Pacific, MO 63069
CLIENT: Sitex Environmental, Inc.

N



This report includes information from the following map sheet(s).

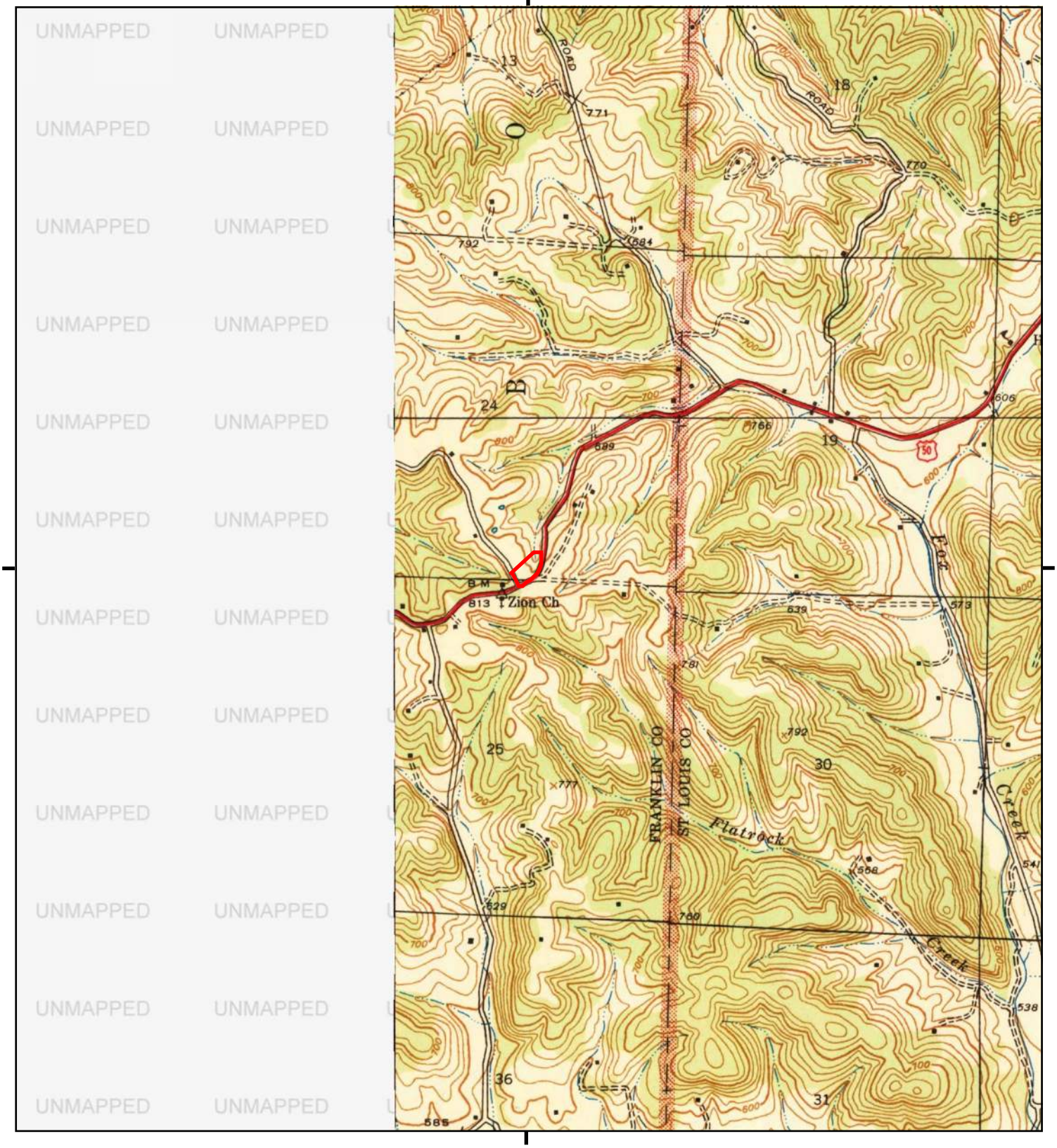
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Eureka, 1944, 7.5-minute

SITE NAME: Meramec Ambulance District
ADDRESS: 385 Old Manchester Road
Pacific, MO 63069
CLIENT: Sitex Environmental, Inc.

N



This report includes information from the following map sheet(s).

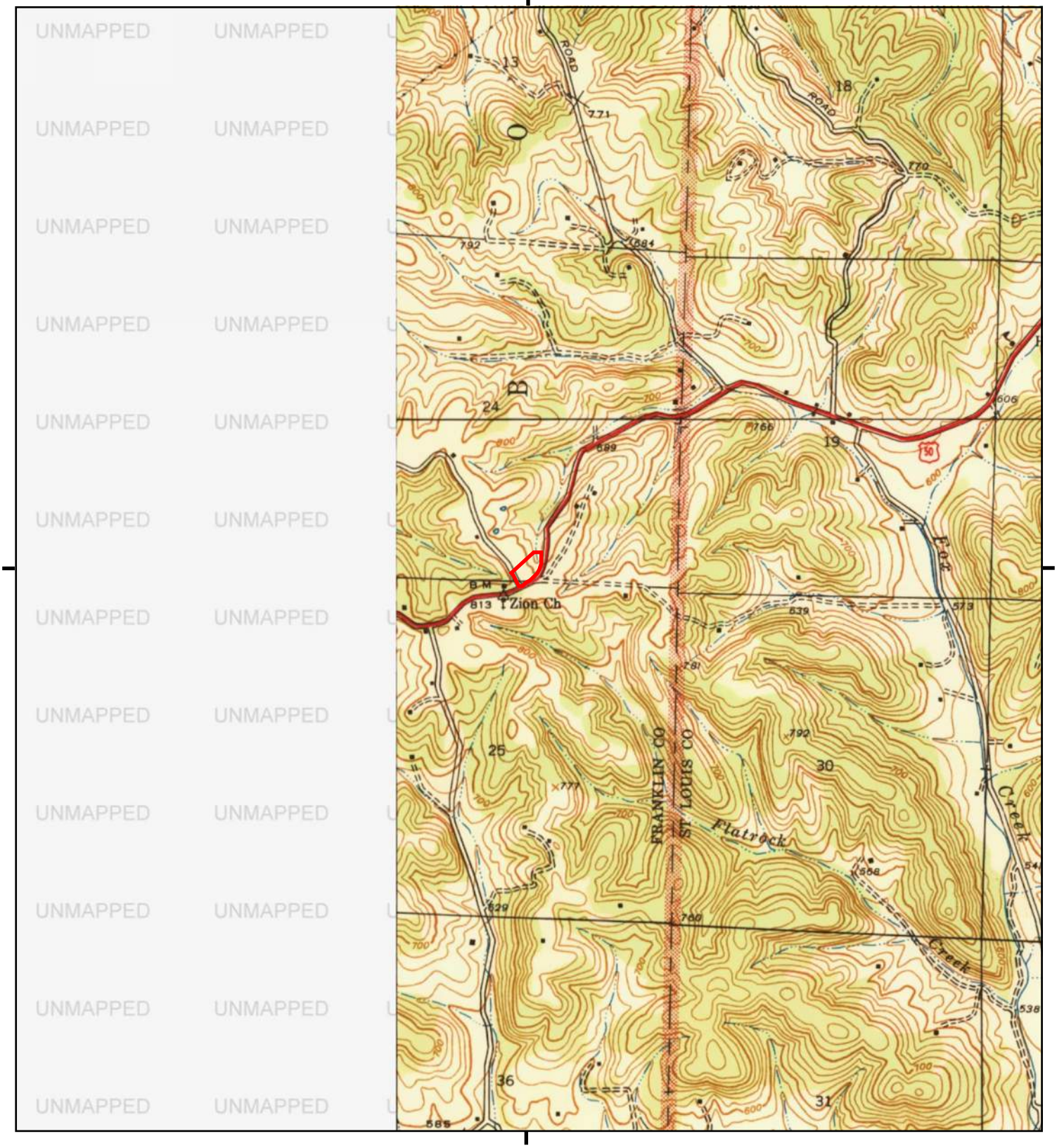
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Eureka, 1940, 7.5-minute

SITE NAME: Meramec Ambulance District
ADDRESS: 385 Old Manchester Road
Pacific, MO 63069
CLIENT: Sitex Environmental, Inc.

N



This report includes information from the following map sheet(s).

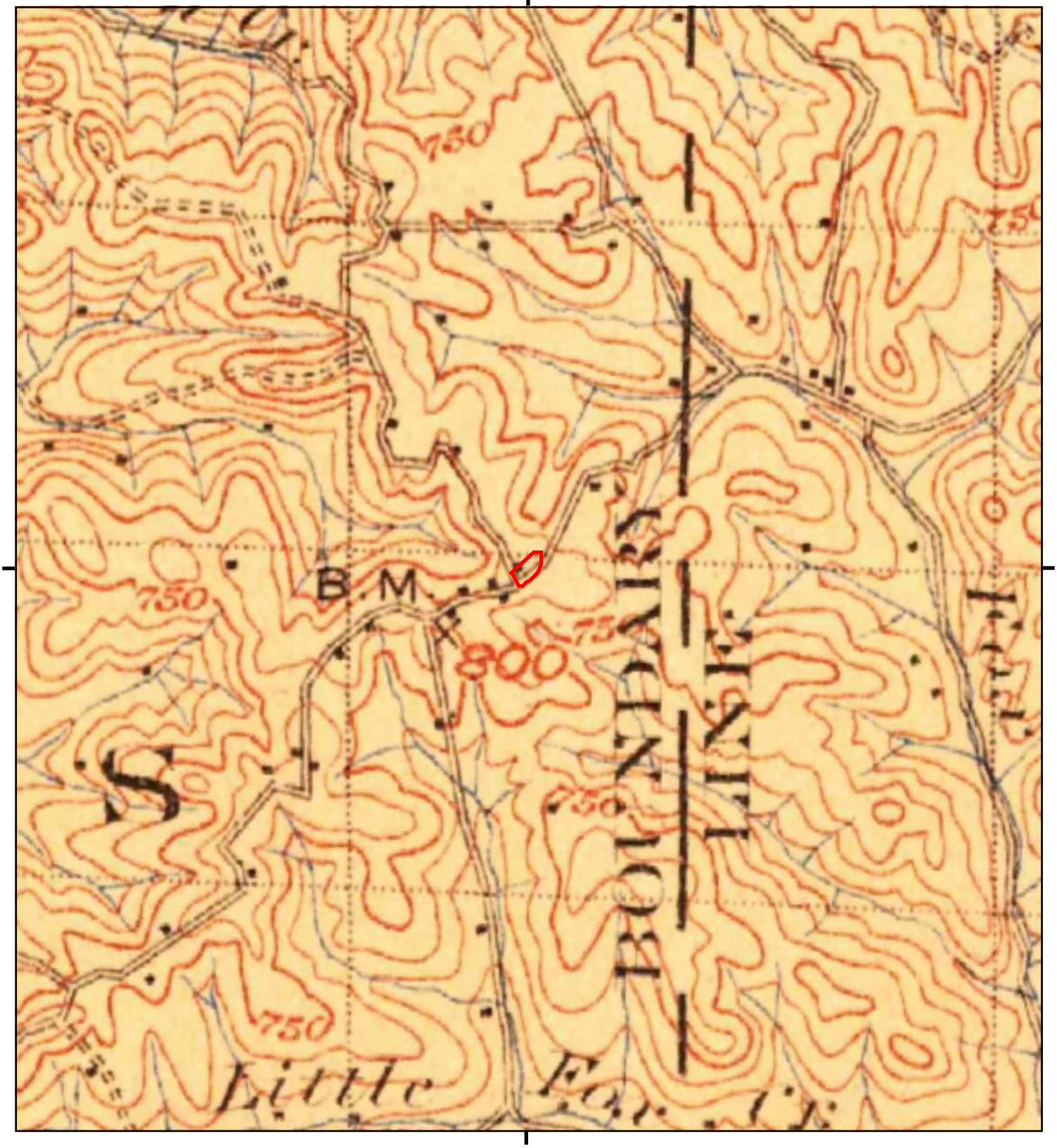
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, EUREKA, 1938, 7.5-minute

SITE NAME: Meramec Ambulance District
ADDRESS: 385 Old Manchester Road
Pacific, MO 63069
CLIENT: Sitex Environmental, Inc.

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, O'Fallon, 1903, 30-minute

SITE NAME: Meramec Ambulance District
ADDRESS: 385 Old Manchester Road
Pacific, MO 63069
CLIENT: Sitex Environmental, Inc.

N

B.

Environmental Database Review and City Directories

Meramec Ambulance District
385 Old Manchester Road
Pacific, MO 63069

Inquiry Number: 08194693.2r
December 10, 2025

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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LIGHTBOX LIVE

Open LightBox Live to access data, tools, and advanced analytics in one online platform.

http://www.web.edrnet.com/ordering/switchboard/login.aspx?s=goto_lightbox&pguid=5BDADDD0-134E-48BD-8866-F78C3404EA9E

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E1527 - 21), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E2247 - 23), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E1528 - 22) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

385 OLD MANCHESTER ROAD
PACIFIC, MO 63069

COORDINATES

Latitude (North):	38.5352130 - 38˚ 32' 6.76''
Longitude (West):	90.7426960 - 90˚ 44' 33.70''
Universal Tranverse Mercator:	Zone 15
UTM X (Meters):	696752.8
UTM Y (Meters):	4267409.0
Elevation:	803 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	24318366 EUREKA, MO
Version Date:	2021
Northwest Map:	24318386 LABADIE, MO
Version Date:	2021

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20220618
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
385 OLD MANCHESTER ROAD
PACIFIC, MO 63069

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION

NO MAPPED SITES FOUND

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Lists of Federal NPL (Superfund) sites

NPL ---- National Priority List
Proposed NPL ---- Proposed National Priority List Sites
NPL LIENS ---- Federal Superfund Liens

Lists of Federal Delisted NPL sites

Delisted NPL ---- National Priority List Deletions

Lists of Federal sites subject to CERCLA removals and CERCLA orders

FEDERAL FACILITY ---- Federal Facility Site Information listing
SEMS ---- Superfund Enterprise Management System

Lists of Federal CERCLA sites with NFRAP

SEMS-ARCHIVE ---- Superfund Enterprise Management System Archive

Lists of Federal RCRA facilities undergoing Corrective Action

CORRACTS ---- Corrective Action Report

Lists of Federal RCRA TSD facilities

RCRA-TSDF ---- RCRA - Treatment, Storage and Disposal

Lists of Federal RCRA generators

RCRA-LQG ---- RCRA - Large Quantity Generators
RCRA-SQG ---- RCRA - Small Quantity Generators
RCRA-VSQG ---- RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

Federal institutional controls / engineering controls registries

LUCIS ---- Land Use Control Information System

US ENG CONTROLS Engineering Controls Sites List
US INST CONTROLS Institutional Controls Sites List

Federal ERNS list

ERNS Emergency Response Notification System

Lists of state- and tribal hazardous waste facilities

SHWS Registry of Confirmed Abandoned or Uncontrolled Hazardous Waste Disposal Sites

Lists of state and tribal landfills and solid waste disposal facilities

SWF/LF Permitted Facility List

Lists of state and tribal leaking storage tanks

LUST Leaking Underground Storage Tanks
LAST Leaking Aboveground Storage Tanks
INDIAN LUST Leaking Underground Storage Tanks on Indian Land

Lists of state and tribal registered storage tanks

FEMA UST Underground Storage Tank Listing
UST Petroleum Storage Tanks
AST Aboveground Petroleum Storage Tanks
INDIAN UST Underground Storage Tanks on Indian Land
TANKS Underground Storage Tank Database

State and tribal institutional control / engineering control registries

AUL Sites with Controls

Lists of state and tribal voluntary cleanup sites

VCP Voluntary Cleanup Program Site Listing
INDIAN VCP Voluntary Cleanup Priority Listing

Lists of state and tribal brownfield sites

BROWNFIELDS Brownfields Site List

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

SWRCY Solid Waste Recycling Facilities
HIST LF Solid Waste Facility Database List
INDIAN ODI Report on the Status of Open Dumps on Indian Lands
ODI Open Dump Inventory

DEBRIS REGION 9	Torres Martinez Reservation Illegal Dump Site Locations
IHS OPEN DUMPS	Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL	Delisted National Clandestine Laboratory Register
CDL	Environmental Emergency Response System
DEL SHWS	Registry Sites Withdrawn or Deleted
US CDL	National Clandestine Laboratory Register

Local Land Records

LIENS 2	CERCLA Lien Information

Records of Emergency Release Reports

HMIRS	Hazardous Materials Information Reporting System
SPILLS	Environmental Response Tracking Database
SPILLS 90	SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated
FUDS	Formerly Used Defense Sites
DOD	Department of Defense Sites
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR	Financial Assurance Information
EPA WATCH LIST	EPA WATCH LIST
2020 COR ACTION	2020 Corrective Action Program List
TSCA	Toxic Substances Control Act
TRIS	Toxic Chemical Release Inventory System
SSTS	Section 7 Tracking Systems
ROD	Records Of Decision
RMP	Risk Management Plans
RAATS	RCRA Administrative Action Tracking System
PRP	Potentially Responsible Parties
PADS	PCB Activity Database System
ICIS	Integrated Compliance Information System
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS	Material Licensing Tracking System
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
RADINFO	Radiation Information Database
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS	Incident and Accident Data
CONSENT	Superfund (CERCLA) Consent Decrees
INDIAN RESERV	Indian Reservations
FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
US MINES	Mines Master Index File
ABANDONED MINES	Abandoned Mines

MINES MRDS	Mineral Resources Data System
FINDS	Facility Index System/Facility Registry System
DOCKET HWC	Hazardous Waste Compliance Docket Listing
UXO	Unexploded Ordnance Sites
ECHO	Enforcement & Compliance History Information
FUELS PROGRAM	EPA Fuels Program Registered Listing
PFAS NPL	Superfund Sites with PFAS Detections Information
PFAS FEDERAL SITES	Federal Sites PFAS Information
PFAS TRIS	List of PFAS Added to the TRI
PFAS TSCA	PFAS Manufacture and Imports Information
PFAS RCRA MANIFEST	PFAS Transfers Identified In the RCRA Database Listing
PFAS ATSDR	PFAS Contamination Site Location Listing
PFAS WQP	Ambient Environmental Sampling for PFAS
PFAS PROJECT	NORTHEASTERN UNIVERSITY PFAS PROJECT
PFAS NPDES	Clean Water Act Discharge Monitoring Information
PFAS ECHO	Facilities in Industries that May Be Handling PFAS Listing
PFAS ECHO FIRE TRAIN	Facilities in Industries that May Be Handling PFAS Listing
PFAS PT 139 AIRPORT	All Certified Part 139 Airports PFAS Information Listing
AQUEOUS FOAM NRC	Aqueous Foam Related Incidents Listing
BIOSOLIDS	ICIS-NPDES Biosolids Facility Data
UST FINDER RELEASE	UST Finder Releases Database
UST FINDER	UST Finder Database
E MANIFEST	Hazardous Waste Electronic Manifest System
PFAS	PFAS Detections
AIRS	Permit Facility Listing
ASBESTOS	Asbestos Notification Listing
COAL ASH	Coal Ash Disposal Sites
DRYCLEANERS	Drycleaners in Missouri Listing
Financial Assurance	Financial Assurance Information Listing
MINES	Industrial Mineral Mines Database
NPDES	Permitted Facility Listing
MO RRC	Certified Hazardous Waste Resource Recovery Facilities
SMARS	Site Management and Reporting System
UIC	Underground Injection Wells Database

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	EDR Proprietary Manufactured Gas Plants
EDR Hist Auto	EDR Exclusive Historical Auto Stations
EDR Hist Cleaner	EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA HWS	Recovered Government Archive State Hazardous Waste Facilities List
RGA LF	Recovered Government Archive Solid Waste Facilities List
RGA LUST	Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were not identified.

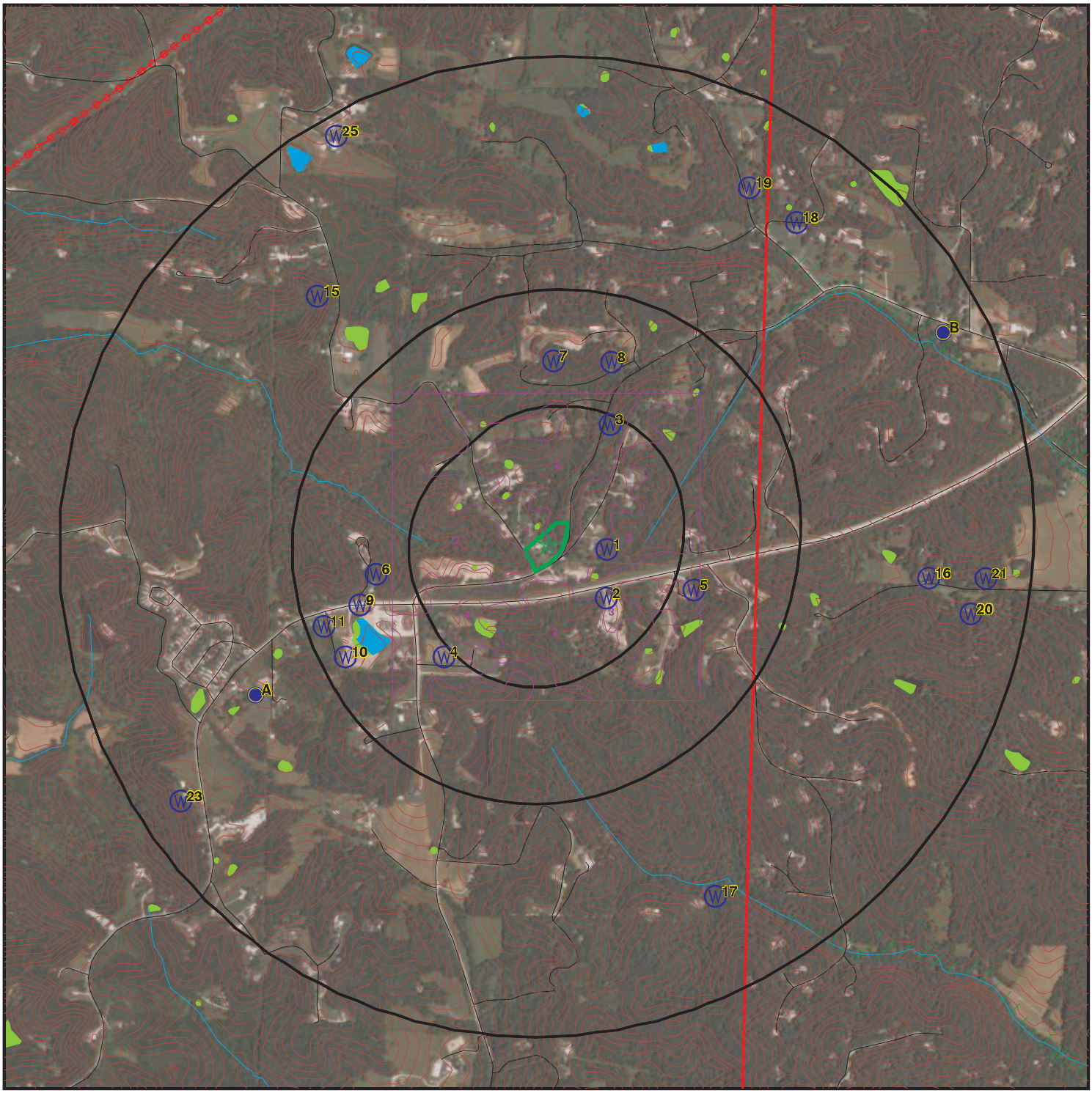
Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 1 records.

Site Name	Database(s)
GRAY SUMMIT LAUNDRY	DRYCLEANERS

OVERVIEW MAP - 08194693.2R



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites

0 1/4 1/2 1 Miles

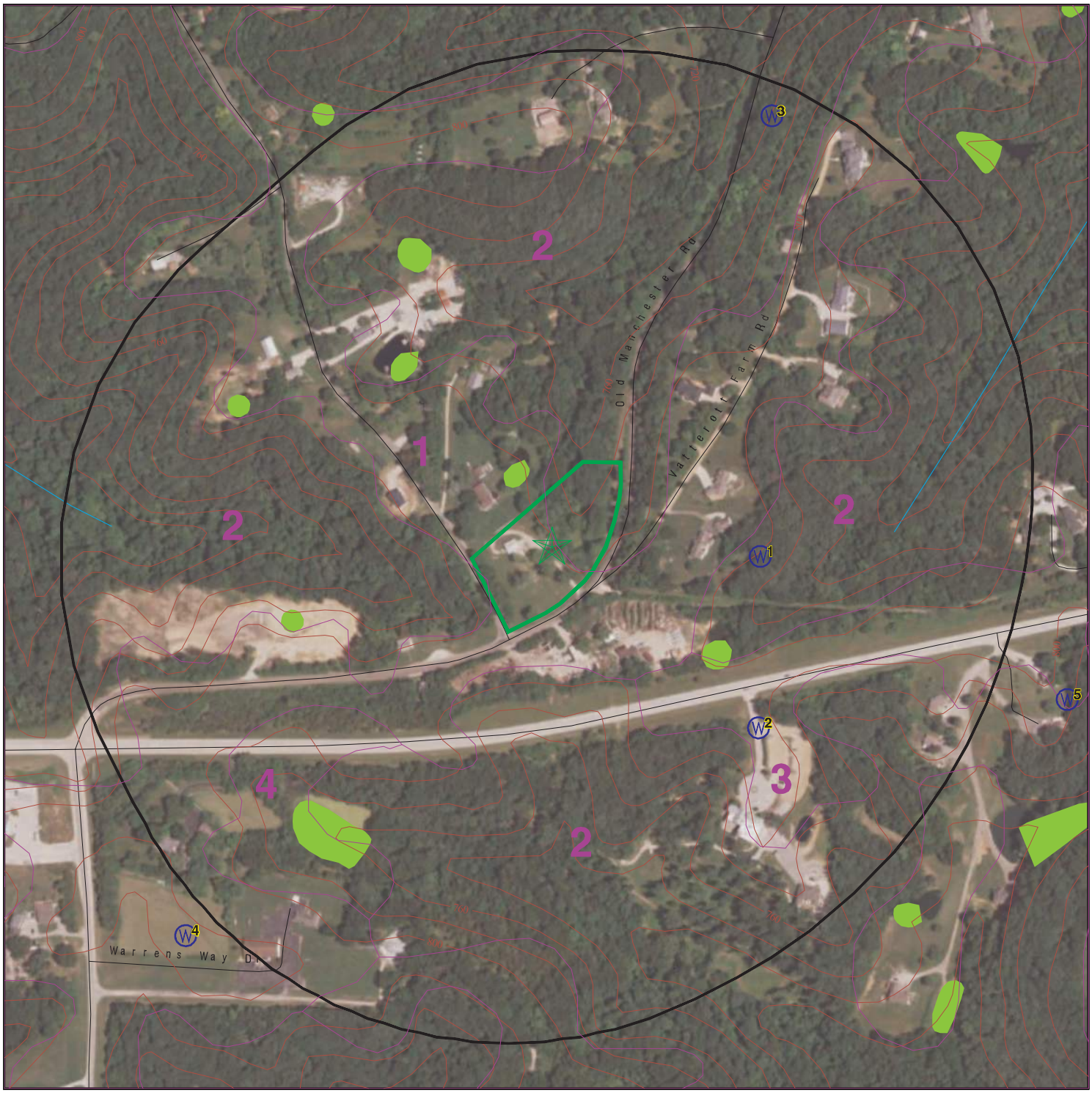
- Indian Reservations BIA
- County Boundary
- Power transmission lines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Meramec Ambulance District	CLIENT:	Sitex Environmental, Inc.
ADDRESS:	385 Old Manchester Road Pacific MO 63069	CONTACT:	Mackenzie Wagner
LAT/LONG:	38.535213 / 90.742696	INQUIRY #:	08194693.2r
		DATE:	December 10, 2025 9:54 am

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DETAIL MAP - 08194693.2R



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

Sensitive Receptors

National Priority List Sites

Dept. Defense Sites

0 1/16 1/8 1/4 Miles

Indian Reservations BIA

Special Flood Hazard Area (1%)

0.2% Annual Chance Flood Hazard

National Wetland Inventory

State Wetlands

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Meramec Ambulance District	CLIENT:	Sitex Environmental, Inc.
ADDRESS:	385 Old Manchester Road Pacific MO 63069	CONTACT:	Mackenzie Wagner
		INQUIRY #:	08194693.2r
LAT/LONG:	38.535213 / 90.742696	DATE:	December 10, 2025 9:57 am

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Lists of Federal NPL (Superfund) sites								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Lists of Federal Delisted NPL sites								
Delisted NPL	1.000		0	0	0	0	NR	0
Lists of Federal sites subject to CERCLA removals and CERCLA orders								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Lists of Federal CERCLA sites with NFRAP								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA facilities undergoing Corrective Action								
CORRACTS	1.000		0	0	0	0	NR	0
Lists of Federal RCRA TSD facilities								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA generators								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-VSQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROLS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
Lists of state- and tribal hazardous waste facilities								
SHWS	1.000		0	0	0	0	NR	0
Lists of state and tribal landfills and solid waste disposal facilities								
SWF/LF	0.500		0	0	0	NR	NR	0
Lists of state and tribal leaking storage tanks								
LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LAST	0.500		0	0	0	NR	NR	0
INDIAN LUST	0.500		0	0	0	NR	NR	0
Lists of state and tribal registered storage tanks								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
TANKS	0.250		0	0	NR	NR	NR	0
State and tribal institutional control / engineering control registries								
AUL	0.500		0	0	0	NR	NR	0
Lists of state and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
Lists of state and tribal brownfield sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
SWRCY	0.500		0	0	0	NR	NR	0
HIST LF	0.500		0	0	0	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
DEL SHWS	1.000		0	0	0	0	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
Local Land Records								
LIENS 2	TP		NR	NR	NR	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
SPILLS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
MINES MRDS	0.250		0	0	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
ECHO	TP		NR	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
PFAS NPL	0.250		0	0	NR	NR	NR	0
PFAS FEDERAL SITES	0.250		0	0	NR	NR	NR	0
PFAS TRIS	0.250		0	0	NR	NR	NR	0
PFAS TSCA	0.250		0	0	NR	NR	NR	0
PFAS RCRA MANIFEST	0.250		0	0	NR	NR	NR	0
PFAS ATSDR	0.250		0	0	NR	NR	NR	0
PFAS WQP	0.250		0	0	NR	NR	NR	0
PFAS PROJECT	0.250		0	0	NR	NR	NR	0
PFAS NPDES	0.250		0	0	NR	NR	NR	0
PFAS ECHO	0.250		0	0	NR	NR	NR	0
PFAS ECHO FIRE TRAIN	0.250		0	0	NR	NR	NR	0
PFAS PT 139 AIRPORT	0.250		0	0	NR	NR	NR	0
AQUEOUS FOAM NRC	0.250		0	0	NR	NR	NR	0
BIOSOLIDS	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
UST FINDER RELEASE	0.500		0	0	0	NR	NR	0
UST FINDER	0.250		0	0	NR	NR	NR	0
E MANIFEST	0.250		0	0	NR	NR	NR	0
PFAS	0.250		0	0	NR	NR	NR	0
AIRS	TP		NR	NR	NR	NR	NR	0
ASBESTOS	TP		NR	NR	NR	NR	NR	0
COAL ASH	0.500		0	0	0	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
MO RRC	TP		NR	NR	NR	NR	NR	0
SMARS	0.500		0	0	0	NR	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA HWS	TP		NR	NR	NR	NR	NR	0
RGA LF	TP		NR	NR	NR	NR	NR	0
RGA LUST	TP		NR	NR	NR	NR	NR	0
- Totals --		0	0	0	0	0	0	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

MAP FINDINGS

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number

NO SITES FOUND

Count: 1 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
PACIFIC	S106877094	GRAY SUMMIT LAUNDRY	HIGHWAY 100	63069	DRYCLEANERS

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Lists of Federal NPL (Superfund) sites

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 09/29/2025
Date Data Arrived at EDR: 10/01/2025
Date Made Active in Reports: 10/28/2025
Number of Days to Update: 27

Source: EPA
Telephone: N/A
Last EDR Contact: 12/01/2025
Next Scheduled EDR Contact: 01/05/2026
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 3
Telephone 215-814-5418

EPA Region 4
Telephone 404-562-8033

EPA Region 5
Telephone 312-886-6686

EPA Region 10
Telephone 206-553-8665

EPA Region 6
Telephone: 214-655-6659

EPA Region 7
Telephone: 913-551-7247

EPA Region 8
Telephone: 303-312-6774

EPA Region 9
Telephone: 415-947-4246

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 09/29/2025
Date Data Arrived at EDR: 10/01/2025
Date Made Active in Reports: 10/28/2025
Number of Days to Update: 27

Source: EPA
Telephone: N/A
Last EDR Contact: 12/01/2025
Next Scheduled EDR Contact: 01/05/2026
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Lists of Federal Delisted NPL sites

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 09/29/2025
Date Data Arrived at EDR: 10/01/2025
Date Made Active in Reports: 10/28/2025
Number of Days to Update: 27

Source: EPA
Telephone: N/A
Last EDR Contact: 12/01/2025
Next Scheduled EDR Contact: 01/05/2026
Data Release Frequency: Quarterly

Lists of Federal sites subject to CERCLA removals and CERCLA orders

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 09/22/2025
Date Data Arrived at EDR: 09/23/2025
Date Made Active in Reports: 11/18/2025
Number of Days to Update: 56

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 09/23/2025
Next Scheduled EDR Contact: 01/05/2026
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 09/29/2025
Date Data Arrived at EDR: 10/01/2025
Date Made Active in Reports: 10/28/2025
Number of Days to Update: 27

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 12/01/2025
Next Scheduled EDR Contact: 01/19/2026
Data Release Frequency: Quarterly

Lists of Federal CERCLA sites with NFRAP

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 09/29/2025
Date Data Arrived at EDR: 10/01/2025
Date Made Active in Reports: 10/28/2025
Number of Days to Update: 27

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 12/01/2025
Next Scheduled EDR Contact: 01/19/2026
Data Release Frequency: Quarterly

Lists of Federal RCRA facilities undergoing Corrective Action

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 06/02/2025
Date Data Arrived at EDR: 06/03/2025
Date Made Active in Reports: 06/16/2025
Number of Days to Update: 13

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 12/03/2025
Next Scheduled EDR Contact: 03/30/2026
Data Release Frequency: Quarterly

Lists of Federal RCRA TSD facilities

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 06/02/2025
Date Data Arrived at EDR: 06/04/2025
Date Made Active in Reports: 06/16/2025
Number of Days to Update: 12

Source: Environmental Protection Agency
Telephone: 913-551-7003
Last EDR Contact: 12/03/2025
Next Scheduled EDR Contact: 03/30/2026
Data Release Frequency: Quarterly

Lists of Federal RCRA generators

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 06/02/2025
Date Data Arrived at EDR: 06/04/2025
Date Made Active in Reports: 06/16/2025
Number of Days to Update: 12

Source: Environmental Protection Agency
Telephone: 913-551-7003
Last EDR Contact: 12/03/2025
Next Scheduled EDR Contact: 03/30/2026
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 06/02/2025
Date Data Arrived at EDR: 06/04/2025
Date Made Active in Reports: 06/16/2025
Number of Days to Update: 12

Source: Environmental Protection Agency
Telephone: 913-551-7003
Last EDR Contact: 12/03/2025
Next Scheduled EDR Contact: 03/30/2026
Data Release Frequency: Quarterly

RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 06/02/2025
Date Data Arrived at EDR: 06/04/2025
Date Made Active in Reports: 06/16/2025
Number of Days to Update: 12

Source: Environmental Protection Agency
Telephone: 913-551-7003
Last EDR Contact: 12/03/2025
Next Scheduled EDR Contact: 03/30/2026
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 03/11/2025
Date Data Arrived at EDR: 04/02/2025
Date Made Active in Reports: 06/24/2025
Number of Days to Update: 83

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 10/28/2025
Next Scheduled EDR Contact: 02/16/2026
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 10/30/2025
Date Data Arrived at EDR: 11/11/2025
Date Made Active in Reports: 11/12/2025
Number of Days to Update: 1

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 11/11/2025
Next Scheduled EDR Contact: 03/02/2026
Data Release Frequency: Varies

US INST CONTROLS: Institutional Controls Sites List

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 10/30/2025
Date Data Arrived at EDR: 11/11/2025
Date Made Active in Reports: 11/12/2025
Number of Days to Update: 1

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 11/11/2025
Next Scheduled EDR Contact: 03/02/2026
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 06/10/2025
Date Data Arrived at EDR: 06/12/2025
Date Made Active in Reports: 06/16/2025
Number of Days to Update: 4

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 12/08/2025
Next Scheduled EDR Contact: 03/30/2026
Data Release Frequency: Quarterly

Lists of state- and tribal hazardous waste facilities

HWS DETAIL: Registry Annual Report

Each site is described in detail in this annual report and includeds the following information: a general description of the site; a summary of any significant environmental problems at and near the site; a summary of any serious health problems in the immediate vicinity of the site; the status of any testing, monitoring or remedial actions in progress or recommended by the department.

Date of Government Version: 06/30/2024
Date Data Arrived at EDR: 02/26/2025
Date Made Active in Reports: 05/14/2025
Number of Days to Update: 77

Source: Department of Natural Resources
Telephone: 573-751-3176
Last EDR Contact: 11/11/2025
Next Scheduled EDR Contact: 03/02/2026
Data Release Frequency: Annually

SHWS: Registry of Confirmed Abandoned or Uncontrolled Hazardous Waste Disposal Sites

State Hazardous Waste Sites. State hazardous waste site records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. Available information varies by state.

Date of Government Version: 09/02/2025
Date Data Arrived at EDR: 09/04/2025
Date Made Active in Reports: 11/26/2025
Number of Days to Update: 83

Source: Department of Natural Resources
Telephone: 573-751-1990
Last EDR Contact: 11/24/2025
Next Scheduled EDR Contact: 03/16/2026
Data Release Frequency: Annually

Lists of state and tribal landfills and solid waste disposal facilities

SWF/LF: Solid Waste Facility List

Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 08/18/2025
Date Data Arrived at EDR: 08/18/2025
Date Made Active in Reports: 11/05/2025
Number of Days to Update: 79

Source: Department of Natural Resources
Telephone: 573-751-5401
Last EDR Contact: 11/12/2025
Next Scheduled EDR Contact: 03/02/2026
Data Release Frequency: Varies

Lists of state and tribal leaking storage tanks

LAST: Leaking Aboveground Storage Tanks

A listing of leaking aboveground storage tanks.

Date of Government Version: 11/17/2025
Date Data Arrived at EDR: 11/21/2025
Date Made Active in Reports: 11/25/2025
Number of Days to Update: 4

Source: Department of Natural Resources
Telephone: 573-751-6822
Last EDR Contact: 11/21/2025
Next Scheduled EDR Contact: 03/16/2026
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

LUST: Leaking Underground Storage Tanks

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 11/17/2025
Date Data Arrived at EDR: 11/21/2025
Date Made Active in Reports: 11/25/2025
Number of Days to Update: 4

Source: Department of Natural Resources
Telephone: 573-751-0135
Last EDR Contact: 11/21/2025
Next Scheduled EDR Contact: 03/16/2026
Data Release Frequency: Quarterly

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 04/21/2025
Date Data Arrived at EDR: 07/10/2025
Date Made Active in Reports: 10/02/2025
Number of Days to Update: 84

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 10/15/2025
Next Scheduled EDR Contact: 01/26/2026
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 05/22/2025
Date Data Arrived at EDR: 07/10/2025
Date Made Active in Reports: 10/02/2025
Number of Days to Update: 84

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 10/15/2025
Next Scheduled EDR Contact: 01/26/2026
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land

A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/21/2025
Date Data Arrived at EDR: 07/10/2025
Date Made Active in Reports: 10/02/2025
Number of Days to Update: 84

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/15/2025
Next Scheduled EDR Contact: 01/26/2026
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land

Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 04/21/2025
Date Data Arrived at EDR: 07/10/2025
Date Made Active in Reports: 10/02/2025
Number of Days to Update: 84

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 10/15/2025
Next Scheduled EDR Contact: 01/26/2026
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 04/21/2025
Date Data Arrived at EDR: 07/10/2025
Date Made Active in Reports: 10/02/2025
Number of Days to Update: 84

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 10/15/2025
Next Scheduled EDR Contact: 01/26/2026
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 04/21/2025
Date Data Arrived at EDR: 07/10/2025
Date Made Active in Reports: 10/02/2025
Number of Days to Update: 84

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 10/15/2025
Next Scheduled EDR Contact: 01/26/2026
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 05/27/2025
Date Data Arrived at EDR: 07/10/2025
Date Made Active in Reports: 10/02/2025
Number of Days to Update: 84
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 10/15/2025
Next Scheduled EDR Contact: 01/26/2026
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 05/22/2025
Date Data Arrived at EDR: 07/10/2025
Date Made Active in Reports: 10/02/2025
Number of Days to Update: 84
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 10/15/2025
Next Scheduled EDR Contact: 01/26/2026
Data Release Frequency: Varies

Lists of state and tribal registered storage tanks

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 06/06/2025
Date Data Arrived at EDR: 08/26/2025
Date Made Active in Reports: 11/12/2025
Number of Days to Update: 78
Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 11/06/2025
Next Scheduled EDR Contact: 01/12/2026
Data Release Frequency: Varies

UST: Petroleum Storage Tanks
Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 11/17/2025
Date Data Arrived at EDR: 11/21/2025
Date Made Active in Reports: 11/25/2025
Number of Days to Update: 4
Source: Department of Natural Resources
Telephone: 573-751-0135
Last EDR Contact: 11/21/2025
Next Scheduled EDR Contact: 03/16/2026
Data Release Frequency: Quarterly

AST: Aboveground Petroleum Storage Tanks
Registered Aboveground Storage Tanks.

Date of Government Version: 08/21/2025
Date Data Arrived at EDR: 08/21/2025
Date Made Active in Reports: 11/14/2025
Number of Days to Update: 85
Source: Department of Agriculture
Telephone: 573-751-7062
Last EDR Contact: 11/18/2025
Next Scheduled EDR Contact: 03/09/2026
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 04/21/2025
Date Data Arrived at EDR: 07/10/2025
Date Made Active in Reports: 10/02/2025
Number of Days to Update: 84
Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/15/2025
Next Scheduled EDR Contact: 01/26/2026
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 04/21/2025
Date Data Arrived at EDR: 07/10/2025
Date Made Active in Reports: 10/02/2025
Number of Days to Update: 84

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 10/15/2025
Next Scheduled EDR Contact: 01/26/2026
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 04/21/2025
Date Data Arrived at EDR: 07/10/2025
Date Made Active in Reports: 10/02/2025
Number of Days to Update: 84

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 10/15/2025
Next Scheduled EDR Contact: 01/26/2026
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 05/27/2025
Date Data Arrived at EDR: 07/10/2025
Date Made Active in Reports: 10/02/2025
Number of Days to Update: 84

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 10/15/2025
Next Scheduled EDR Contact: 01/26/2026
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 04/21/2025
Date Data Arrived at EDR: 07/10/2025
Date Made Active in Reports: 10/02/2025
Number of Days to Update: 84

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 10/15/2025
Next Scheduled EDR Contact: 01/26/2026
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 04/21/2025
Date Data Arrived at EDR: 07/10/2025
Date Made Active in Reports: 10/02/2025
Number of Days to Update: 84

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 10/15/2025
Next Scheduled EDR Contact: 01/26/2026
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 05/22/2025
Date Data Arrived at EDR: 07/10/2025
Date Made Active in Reports: 10/02/2025
Number of Days to Update: 84

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 10/15/2025
Next Scheduled EDR Contact: 01/26/2026
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 05/22/2025
Date Data Arrived at EDR: 07/10/2025
Date Made Active in Reports: 10/02/2025
Number of Days to Update: 84

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 10/15/2025
Next Scheduled EDR Contact: 01/26/2026
Data Release Frequency: Varies

TANKS: Underground Storage Tank Database
Storage tank sites

Date of Government Version: 11/17/2025
Date Data Arrived at EDR: 11/21/2025
Date Made Active in Reports: 11/25/2025
Number of Days to Update: 4

Source: Department of Natural Resources
Telephone: 573-526-2058
Last EDR Contact: 11/21/2025
Next Scheduled EDR Contact: 03/16/2026
Data Release Frequency: Varies

State and tribal institutional control / engineering control registries

AUL: Sites with Controls
Activity and use limitations include both engineering controls and institutional controls.

Date of Government Version: 10/02/2025
Date Data Arrived at EDR: 11/12/2025
Date Made Active in Reports: 11/19/2025
Number of Days to Update: 7

Source: Department of Natural Resources
Telephone: 573-751-3176
Last EDR Contact: 11/12/2025
Next Scheduled EDR Contact: 02/16/2026
Data Release Frequency: Quarterly

Lists of state and tribal voluntary cleanup sites

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 12/03/2025
Next Scheduled EDR Contact: 03/30/2026
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 07/08/2021
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Sites Participating in the Voluntary Cleanup Program
Sites participating in the Voluntary Cleanup Program.

Date of Government Version: 10/02/2025
Date Data Arrived at EDR: 11/12/2025
Date Made Active in Reports: 11/19/2025
Number of Days to Update: 7

Source: Department of Natural Resources
Telephone: 573-526-8913
Last EDR Contact: 11/12/2025
Next Scheduled EDR Contact: 02/16/2026
Data Release Frequency: Quarterly

Lists of state and tribal brownfield sites

BROWNFIELDS: Brownfields Site List

Brownfields are sites where redevelopment and reuse is hampered by known or suspected contamination with hazardous substances. While many brownfield sites are minimally contaminated, potential environmental liability can be a problem for owners, operators, prospective buyers and financial institutions. Because of the large number of these sites, their economic impact especially in heavily industrial areas is substantial.

Date of Government Version: 10/02/2025
Date Data Arrived at EDR: 11/12/2025
Date Made Active in Reports: 11/19/2025
Number of Days to Update: 7

Source: Department of Natural Resources
Telephone: 573-526-8913
Last EDR Contact: 11/12/2025
Next Scheduled EDR Contact: 02/16/2026
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 09/19/2025
Date Data Arrived at EDR: 10/01/2025
Date Made Active in Reports: 11/24/2025
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 12/03/2025
Next Scheduled EDR Contact: 03/23/2026
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

SWRCY: Solid Waste Recycling Facilities

A listing of recycling center locations.

Date of Government Version: 11/20/2024
Date Data Arrived at EDR: 11/22/2024
Date Made Active in Reports: 02/13/2025
Number of Days to Update: 83

Source: Department of Natural Resources
Telephone: 573-526-3944
Last EDR Contact: 11/11/2025
Next Scheduled EDR Contact: 03/02/2026
Data Release Frequency: Varies

HIST LF: Solid Waste Facility Database List

This database contains detailed information per site. It is no longer maintained by the Department of Natural Resources. For current information on solid waste facilities/landfills see the SWF/LF database.

Date of Government Version: 04/12/2005
Date Data Arrived at EDR: 07/19/2006
Date Made Active in Reports: 08/18/2006
Number of Days to Update: 30

Source: Department of Natural Resources
Telephone: 573-751-5401
Last EDR Contact: 01/12/2009
Next Scheduled EDR Contact: 04/13/2009
Data Release Frequency: No Update Planned

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 10/15/2025
Next Scheduled EDR Contact: 02/02/2026
Data Release Frequency: Varies

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137
Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 10/07/2025
Next Scheduled EDR Contact: 01/26/2026
Data Release Frequency: No Update Planned

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39
Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 02/07/2024
Date Data Arrived at EDR: 11/13/2024
Date Made Active in Reports: 11/19/2024
Number of Days to Update: 6
Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 10/23/2025
Next Scheduled EDR Contact: 02/02/2026
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register
A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 04/04/2025
Date Data Arrived at EDR: 06/02/2025
Date Made Active in Reports: 08/12/2025
Number of Days to Update: 71
Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 11/20/2025
Next Scheduled EDR Contact: 03/02/2026
Data Release Frequency: No Update Planned

CDL: Environmental Emergency Response System
Incidents reported to the Department of Natural Resources where drug lab materials were involved.

Date of Government Version: 06/03/2024
Date Data Arrived at EDR: 06/04/2024
Date Made Active in Reports: 06/07/2024
Number of Days to Update: 3
Source: Department of Natural Resources
Telephone: 573-751-3443
Last EDR Contact: 11/24/2025
Next Scheduled EDR Contact: 03/16/2026
Data Release Frequency: Quarterly

DEL SHWS: Registry Sites Withdrawn or Deleted
A list of sites that were removed from the Registry or for which Registry action was suspended due to cleanup.

Date of Government Version: 09/02/2025
Date Data Arrived at EDR: 09/04/2025
Date Made Active in Reports: 11/26/2025
Number of Days to Update: 83
Source: Department of Natural Resources
Telephone: 573-522-3710
Last EDR Contact: 11/24/2025
Next Scheduled EDR Contact: 03/16/2026
Data Release Frequency: Annually

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 04/04/2025
Date Data Arrived at EDR: 06/02/2025
Date Made Active in Reports: 08/12/2025
Number of Days to Update: 71

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 11/20/2025
Next Scheduled EDR Contact: 03/02/2026
Data Release Frequency: Quarterly

Local Land Records

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 09/29/2025
Date Data Arrived at EDR: 10/01/2025
Date Made Active in Reports: 10/28/2025
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 12/01/2025
Next Scheduled EDR Contact: 01/05/2026
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 06/11/2025
Date Data Arrived at EDR: 06/12/2025
Date Made Active in Reports: 06/16/2025
Number of Days to Update: 4

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 12/08/2025
Next Scheduled EDR Contact: 03/30/2026
Data Release Frequency: Quarterly

SPILLS: Environmental Response Tracking Database

Releases of hazardous substances reported to the department's Environmental Emergency Response (EER) section.

Date of Government Version: 06/03/2024
Date Data Arrived at EDR: 06/04/2024
Date Made Active in Reports: 06/07/2024
Number of Days to Update: 3

Source: Department of Natural Resources
Telephone: 573-526-3349
Last EDR Contact: 11/24/2025
Next Scheduled EDR Contact: 03/16/2026
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/27/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 06/02/2025
Date Data Arrived at EDR: 06/04/2025
Date Made Active in Reports: 06/16/2025
Number of Days to Update: 12

Source: Environmental Protection Agency
Telephone: 913-551-7003
Last EDR Contact: 12/03/2025
Next Scheduled EDR Contact: 03/30/2026
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 07/23/2025
Date Data Arrived at EDR: 07/23/2025
Date Made Active in Reports: 07/29/2025
Number of Days to Update: 6

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 11/06/2025
Next Scheduled EDR Contact: 02/23/2026
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 06/07/2021
Date Data Arrived at EDR: 07/13/2021
Date Made Active in Reports: 03/09/2022
Number of Days to Update: 239

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 10/07/2025
Next Scheduled EDR Contact: 01/19/2026
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 574

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 10/02/2025
Next Scheduled EDR Contact: 01/12/2026
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 07/30/2021
Date Data Arrived at EDR: 02/03/2023
Date Made Active in Reports: 02/10/2023
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 11/03/2025
Next Scheduled EDR Contact: 02/16/2026
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 06/02/2025
Date Data Arrived at EDR: 06/03/2025
Date Made Active in Reports: 06/16/2025
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 12/08/2025
Next Scheduled EDR Contact: 03/30/2026
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA Watch List

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 10/22/2025
Next Scheduled EDR Contact: 02/09/2026
Data Release Frequency: No Update Planned

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 10/30/2025
Next Scheduled EDR Contact: 02/09/2026
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 06/14/2022
Date Made Active in Reports: 03/24/2023
Number of Days to Update: 283

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 09/11/2025
Next Scheduled EDR Contact: 12/22/2025
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2023
Date Data Arrived at EDR: 08/11/2025
Date Made Active in Reports: 11/10/2025
Number of Days to Update: 91

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 11/10/2025
Next Scheduled EDR Contact: 02/23/2026
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 07/14/2025
Date Data Arrived at EDR: 07/14/2025
Date Made Active in Reports: 10/13/2025
Number of Days to Update: 91

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 10/14/2025
Next Scheduled EDR Contact: 01/26/2026
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 10/30/2025
Date Data Arrived at EDR: 11/03/2025
Date Made Active in Reports: 11/18/2025
Number of Days to Update: 15

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 12/01/2025
Next Scheduled EDR Contact: 03/09/2026
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 07/01/2025
Date Data Arrived at EDR: 07/29/2025
Date Made Active in Reports: 10/28/2025
Number of Days to Update: 91

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 10/08/2025
Next Scheduled EDR Contact: 01/26/2026
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties

A listing of verified Potentially Responsible Parties

Date of Government Version: 06/26/2025
Date Data Arrived at EDR: 07/01/2025
Date Made Active in Reports: 07/29/2025
Number of Days to Update: 28

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 12/01/2025
Next Scheduled EDR Contact: 02/09/2026
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 08/12/2025
Date Data Arrived at EDR: 09/30/2025
Date Made Active in Reports: 11/24/2025
Number of Days to Update: 55

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 09/30/2025
Next Scheduled EDR Contact: 01/12/2026
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 09/23/2025
Next Scheduled EDR Contact: 01/12/2026
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 08/11/2025
Date Data Arrived at EDR: 08/12/2025
Date Made Active in Reports: 11/04/2025
Number of Days to Update: 84

Source: Nuclear Regulatory Commission
Telephone: 301-415-0717
Last EDR Contact: 10/23/2025
Next Scheduled EDR Contact: 01/26/2026
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data

A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2023
Date Data Arrived at EDR: 10/16/2024
Date Made Active in Reports: 01/14/2025
Number of Days to Update: 90

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 11/19/2025
Next Scheduled EDR Contact: 03/09/2026
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List

A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 11/18/2025
Next Scheduled EDR Contact: 03/09/2026
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 09/13/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 96
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 10/30/2025
Next Scheduled EDR Contact: 02/09/2026
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 12/09/2025
Next Scheduled EDR Contact: 04/06/2026
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data
Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 06/30/2025
Date Data Arrived at EDR: 07/17/2025
Date Made Active in Reports: 10/13/2025
Number of Days to Update: 88
Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 10/20/2025
Next Scheduled EDR Contact: 02/02/2026
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 06/30/2025
Date Data Arrived at EDR: 07/29/2025
Date Made Active in Reports: 10/28/2025
Number of Days to Update: 91

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 11/20/2025
Next Scheduled EDR Contact: 01/12/2026
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2023
Date Data Arrived at EDR: 02/19/2025
Date Made Active in Reports: 03/07/2025
Number of Days to Update: 16

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 12/08/2025
Next Scheduled EDR Contact: 03/30/2026
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 09/29/2025
Next Scheduled EDR Contact: 01/12/2026
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 03/03/2023
Date Data Arrived at EDR: 03/03/2023
Date Made Active in Reports: 06/09/2023
Number of Days to Update: 98

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 10/22/2025
Next Scheduled EDR Contact: 02/09/2026
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 05/15/2025
Date Data Arrived at EDR: 05/15/2025
Date Made Active in Reports: 07/29/2025
Number of Days to Update: 75

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 11/10/2025
Next Scheduled EDR Contact: 02/23/2026
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 09/29/2025
Date Data Arrived at EDR: 10/01/2025
Date Made Active in Reports: 10/28/2025
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 12/01/2025
Next Scheduled EDR Contact: 01/05/2026
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 08/08/2025
Date Data Arrived at EDR: 08/18/2025
Date Made Active in Reports: 11/12/2025
Number of Days to Update: 86

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 12/04/2025
Next Scheduled EDR Contact: 03/02/2026
Data Release Frequency: Semi-Annually

MINES VIOLATIONS: MSHA Violation Assessment Data

Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 07/01/2025
Date Data Arrived at EDR: 07/01/2025
Date Made Active in Reports: 09/24/2025
Number of Days to Update: 85

Source: DOL, Mine Safety & Health Admi
Telephone: 202-693-9424
Last EDR Contact: 11/24/2025
Next Scheduled EDR Contact: 03/02/2026
Data Release Frequency: Quarterly

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 04/08/2025
Date Data Arrived at EDR: 05/20/2025
Date Made Active in Reports: 08/12/2025
Number of Days to Update: 84

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 11/12/2025
Next Scheduled EDR Contact: 03/02/2026
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 11/20/2025
Next Scheduled EDR Contact: 03/02/2026
Data Release Frequency: Varies

MINES MRDS: Mineral Resources Data System

Mineral Resources Data System

Date of Government Version: 06/04/2024
Date Data Arrived at EDR: 11/22/2024
Date Made Active in Reports: 02/18/2025
Number of Days to Update: 88

Source: USGS
Telephone: 703-648-6533
Last EDR Contact: 11/20/2025
Next Scheduled EDR Contact: 03/02/2026
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 09/10/2025
Date Data Arrived at EDR: 09/10/2025
Date Made Active in Reports: 11/12/2025
Number of Days to Update: 63

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 12/03/2025
Next Scheduled EDR Contact: 03/16/2026
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 09/04/2025
Date Data Arrived at EDR: 10/01/2025
Date Made Active in Reports: 11/18/2025
Number of Days to Update: 48

Source: EPA
Telephone: (913) 551-7003
Last EDR Contact: 11/19/2025
Next Scheduled EDR Contact: 03/09/2026
Data Release Frequency: Quarterly

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 09/20/2025
Date Data Arrived at EDR: 09/26/2025
Date Made Active in Reports: 11/24/2025
Number of Days to Update: 59

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 09/26/2025
Next Scheduled EDR Contact: 01/12/2026
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 07/31/2025
Date Data Arrived at EDR: 08/14/2025
Date Made Active in Reports: 11/04/2025
Number of Days to Update: 82

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 10/29/2025
Next Scheduled EDR Contact: 01/19/2026
Data Release Frequency: Varies

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/06/2021
Date Data Arrived at EDR: 05/21/2021
Date Made Active in Reports: 08/11/2021
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 11/11/2025
Next Scheduled EDR Contact: 03/02/2026
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing

This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 08/07/2025
Date Data Arrived at EDR: 08/07/2025
Date Made Active in Reports: 11/04/2025
Number of Days to Update: 89

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 11/06/2025
Next Scheduled EDR Contact: 02/23/2026
Data Release Frequency: Quarterly

PFAS NPL: Superfund Sites with PFAS Detections Information

EPA's Office of Land and Emergency Management and EPA Regional Offices maintain data describing what is known about site investigations, contamination, and remedial actions under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) where PFAS is present in the environment.

Date of Government Version: 06/23/2025
Date Data Arrived at EDR: 06/26/2025
Date Made Active in Reports: 08/27/2025
Number of Days to Update: 62

Source: Environmental Protection Agency
Telephone: 703-603-8895
Last EDR Contact: 09/26/2025
Next Scheduled EDR Contact: 01/12/2026
Data Release Frequency: Varies

PFAS FEDERAL SITES: Federal Sites PFAS Information

Several federal entities, such as the federal Superfund program, Department of Defense, National Aeronautics and Space Administration, Department of Transportation, and Department of Energy provided information for sites with known or suspected detections at federal facilities.

Date of Government Version: 06/23/2025
Date Data Arrived at EDR: 06/26/2025
Date Made Active in Reports: 08/27/2025
Number of Days to Update: 62

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 09/26/2025
Next Scheduled EDR Contact: 01/12/2026
Data Release Frequency: Varies

PFAS TRIS: List of PFAS Added to the TRI

Section 7321 of the National Defense Authorization Act for Fiscal Year 2020 (NDAA) immediately added certain per- and polyfluoroalkyl substances (PFAS) to the list of chemicals covered by the Toxics Release Inventory (TRI) under Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) and provided a framework for additional PFAS to be added to TRI on an annual basis.

Date of Government Version: 06/23/2025
Date Data Arrived at EDR: 06/26/2025
Date Made Active in Reports: 08/27/2025
Number of Days to Update: 62

Source: Environmental Protection Agency
Telephone: 202-566-0250
Last EDR Contact: 09/26/2025
Next Scheduled EDR Contact: 01/12/2026
Data Release Frequency: Varies

PFAS TSCA: PFAS Manufacture and Imports Information

EPA issued the Chemical Data Reporting (CDR) Rule under the Toxic Substances Control Act (TSCA) and requires chemical manufacturers and facilities that manufacture or import chemical substances to report data to EPA. EPA publishes non-confidential business information (non-CBI) and includes descriptive information about each site, corporate parent, production volume, other manufacturing information, and processing and use information.

Date of Government Version: 06/23/2025
Date Data Arrived at EDR: 06/26/2025
Date Made Active in Reports: 08/27/2025
Number of Days to Update: 62

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 09/26/2025
Next Scheduled EDR Contact: 01/12/2026
Data Release Frequency: Varies

PFAS RCRA MANIFEST: PFAS Transfers Identified In the RCRA Database Listing

To work around the lack of PFAS waste codes in the RCRA database, EPA developed the PFAS Transfers dataset by mining e-Manifest records containing at least one of these common PFAS keywords: PFAS, PFOA, PFOS, PERFL, AFFF, GENX, GEN-X (plus the VT waste codes). These keywords were searched for in the following text fields: Manifest handling instructions (MANIFEST_HANDLING_INSTR), Non-hazardous waste description (NON_HAZ_WASTE_DESCRIPTION), DOT printed information (DOT_PRINTED_INFORMATION), Waste line handling instructions (WASTE_LINE_HANDLING_INSTR), Waste residue comments (WASTE_RESIDUE_COMMENTS).

Date of Government Version: 06/23/2025
Date Data Arrived at EDR: 06/26/2025
Date Made Active in Reports: 09/24/2025
Number of Days to Update: 90

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 09/26/2025
Next Scheduled EDR Contact: 01/12/2026
Data Release Frequency: Varies

PFAS ATSDR: PFAS Contamination Site Location Listing

PFAS contamination site locations from the Department of Health & Human Services, Center for Disease Control & Prevention. ATSDR is involved at a number of PFAS-related sites, either directly or through assisting state and federal partners. As of now, most sites are related to drinking water contamination connected with PFAS production facilities or fire training areas where aqueous film-forming firefighting foam (AFFF) was regularly used.

Date of Government Version: 11/12/2024
Date Data Arrived at EDR: 07/21/2025
Date Made Active in Reports: 10/13/2025
Number of Days to Update: 84

Source: Department of Health & Human Services
Telephone: 202-741-5770
Last EDR Contact: 10/15/2025
Next Scheduled EDR Contact: 02/02/2026
Data Release Frequency: Varies

PFAS WQP: Ambient Environmental Sampling for PFAS

The Water Quality Portal (WQP) is a part of a modernized repository storing ambient sampling data for all environmental media and tissue samples. A wide range of federal, state, tribal and local governments, academic and non-governmental organizations and individuals submit project details and sampling results to this public repository. The information is commonly used for research and assessments of environmental quality.

Date of Government Version: 06/23/2025
Date Data Arrived at EDR: 06/26/2025
Date Made Active in Reports: 08/27/2025
Number of Days to Update: 62

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 09/26/2025
Next Scheduled EDR Contact: 01/12/2026
Data Release Frequency: Varies

PFAS PROJECT: NORTHEASTERN UNIVERSITY PFAS PROJECT

The PFAS Contamination Site Tracker records qualitative and quantitative data from each site in a chart, specifically examining discovery, contamination levels, government response, litigation, health impacts, media coverage, and community characteristics. All data presented in the chart were extracted from government websites, such as state health departments or the Environmental Protection Agency, and news articles.

Date of Government Version: 05/15/2024
Date Data Arrived at EDR: 03/06/2025
Date Made Active in Reports: 06/03/2025
Number of Days to Update: 89

Source: Social Science Environmental Health Research Institute
Telephone: N/A
Last EDR Contact: 11/25/2025
Next Scheduled EDR Contact: 03/16/2026
Data Release Frequency: Varies

PFAS NPDES: Clean Water Act Discharge Monitoring Information

Any discharger of pollutants to waters of the United States from a point source must have a National Pollutant Discharge Elimination System (NPDES) permit. The process for obtaining limits involves the regulated entity (permittee) disclosing releases in a NPDES permit application and the permitting authority (typically the state but sometimes EPA) deciding whether to require monitoring or monitoring with limits. Caveats and Limitations: Less than half of states have required PFAS monitoring for at least one of their permittees and fewer states have established PFAS effluent limits for permittees. New rulemakings have been initiated that may increase the number of facilities monitoring for PFAS in the future.

Date of Government Version: 06/23/2025
Date Data Arrived at EDR: 06/26/2025
Date Made Active in Reports: 08/27/2025
Number of Days to Update: 62

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 09/26/2025
Next Scheduled EDR Contact: 01/12/2026
Data Release Frequency: Varies

PFAS ECHO: Facilities in Industries that May Be Handling PFAS Listing

Regulators and the public have expressed interest in knowing which regulated entities may be using PFAS. EPA has developed a dataset from various sources that show which industries may be handling PFAS. Approximately 120,000 facilities subject to federal environmental programs have operated or currently operate in industry sectors with processes that may involve handling and/or release of PFAS.

Date of Government Version: 06/23/2025
Date Data Arrived at EDR: 06/26/2025
Date Made Active in Reports: 08/27/2025
Number of Days to Update: 62

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 09/26/2025
Next Scheduled EDR Contact: 01/12/2026
Data Release Frequency: Varies

PFAS ECHO FIRE TRAIN: Facilities in Industries that May Be Handling PFAS Listing

A list of fire training sites was added to the Industry Sectors dataset using a keyword search on the permitted facilitys name to identify sites where fire-fighting foam may have been used in training exercises. Additionally, you may view an example spreadsheet of the subset of fire training facility data, as well as the keywords used in selecting or deselecting a facility for the subset. as well as the keywords used in selecting or deselecting a facility for the subset. These keywords were tested to maximize accuracy in selecting facilities that may use fire-fighting foam in training exercises, however, due to the lack of a required reporting field in the data systems for designating fire training sites, this methodology may not identify all fire training sites or may potentially misidentify them.

Date of Government Version: 06/23/2025
Date Data Arrived at EDR: 06/26/2025
Date Made Active in Reports: 08/27/2025
Number of Days to Update: 62

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 09/26/2025
Next Scheduled EDR Contact: 01/12/2026
Data Release Frequency: Varies

PFAS PT 139 AIRPORT: All Certified Part 139 Airports PFAS Information Listing

Since July 1, 2006, all certified part 139 airports are required to have fire-fighting foam onsite that meet military specifications (MIL-F-24385) (14 CFR 139.317). To date, these military specification fire-fighting foams are fluorinated and have been historically used for training and extinguishing. The 2018 FAA Reauthorization Act has a provision stating that no later than October 2021, FAA shall not require the use of fluorinated AFFF. This provision does not prohibit the use of fluorinated AFFF at Part 139 civilian airports; it only prohibits FAA from mandating its use. The Federal Aviation Administration?s document AC 150/5210-6D - Aircraft Fire Extinguishing Agents provides guidance on Aircraft Fire Extinguishing Agents, which includes Aqueous Film Forming Foam (AFFF).

Date of Government Version: 06/23/2025
Date Data Arrived at EDR: 06/26/2025
Date Made Active in Reports: 08/27/2025
Number of Days to Update: 62

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 09/26/2025
Next Scheduled EDR Contact: 01/12/2026
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

AQUEOUS FOAM NRC: Aqueous Foam Related Incidents Listing

The National Response Center (NRC) serves as an emergency call center that fields initial reports for pollution and railroad incidents and forwards that information to appropriate federal/state agencies for response. The spreadsheets posted to the NRC website contain initial incident data that has not been validated or investigated by a federal/state response agency. Response center calls from 1990 to the most recent complete calendar year where there was indication of Aqueous Film Forming Foam (AFFF) usage are included in this dataset. NRC calls may reference AFFF usage in the ?Material Involved? or ?Incident Description? fields.

Date of Government Version: 09/25/2025
Date Data Arrived at EDR: 09/26/2025
Date Made Active in Reports: 11/24/2025
Number of Days to Update: 59

Source: Environmental Protection Agency
Telephone: 202-267-2675
Last EDR Contact: 09/26/2025
Next Scheduled EDR Contact: 01/12/2026
Data Release Frequency: Varies

PCS: Permit Compliance System

PCS is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

Date of Government Version: 12/16/2016
Date Data Arrived at EDR: 01/06/2017
Date Made Active in Reports: 03/10/2017
Number of Days to Update: 63

Source: EPA, Office of Water
Telephone: 202-564-2496
Last EDR Contact: 09/24/2025
Next Scheduled EDR Contact: 01/12/2026
Data Release Frequency: No Update Planned

PCS ENF: Enforcement data

No description is available for this data

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 02/05/2015
Date Made Active in Reports: 03/06/2015
Number of Days to Update: 29

Source: EPA
Telephone: 202-564-2497
Last EDR Contact: 09/24/2025
Next Scheduled EDR Contact: 01/12/2026
Data Release Frequency: Varies

BIOSOLIDS: ICIS-NPDES Biosolids Facility Data

The data reflects compliance information about facilities in the biosolids program.

Date of Government Version: 07/06/2025
Date Data Arrived at EDR: 07/10/2025
Date Made Active in Reports: 10/02/2025
Number of Days to Update: 84

Source: Environmental Protection Agency
Telephone: 202-564-4700
Last EDR Contact: 10/01/2025
Next Scheduled EDR Contact: 01/26/2026
Data Release Frequency: Varies

UST FINDER: UST Finder Database

EPA developed UST Finder, a web map application containing a comprehensive, state-sourced national map of underground storage tank (UST) and leaking UST (LUST) data. It provides the attributes and locations of active and closed USTs, UST facilities, and LUST sites from states and from Tribal lands and US territories . UST Finder contains information about proximity of UST facilities and LUST sites to: surface and groundwater public drinking water protection areas; estimated number of private domestic wells and number of people living nearby; and flooding and wildfires.

Date of Government Version: 06/08/2023
Date Data Arrived at EDR: 10/04/2023
Date Made Active in Reports: 01/18/2024
Number of Days to Update: 106

Source: Environmental Protection Agency
Telephone: 202-564-0394
Last EDR Contact: 11/06/2025
Next Scheduled EDR Contact: 02/16/2026
Data Release Frequency: Varies

UST FINDER RELEASE: UST Finder Releases Database

US EPA’s UST Finder data is a national composite of leaking underground storage tanks. This data contains information about, and locations of, leaking underground storage tanks. Data was collected from state sources and standardized into a national profile by EPA’s Office of Underground Storage Tanks, Office of Research and Development, and the Association of State and Territorial Solid Waste Management Officials.

Date of Government Version: 06/08/2023
Date Data Arrived at EDR: 10/31/2023
Date Made Active in Reports: 01/18/2024
Number of Days to Update: 79
Source: Environmental Protecton Agency
Telephone: 202-564-0394
Last EDR Contact: 11/06/2025
Next Scheduled EDR Contact: 02/16/2026
Data Release Frequency: Semi-Annually

E MANIFEST: Hazardous Waste Electronic Manifest System

EPA established a national system for tracking hazardous waste shipments electronically. This system, known as ?e-Manifest,? will modernize the nation?s cradle-to-grave hazardous waste tracking process while saving valuable time, resources, and dollars for industry and states.

Date of Government Version: 06/02/2025
Date Data Arrived at EDR: 06/04/2025
Date Made Active in Reports: 08/13/2025
Number of Days to Update: 70
Source: Environmental Protection Agency
Telephone: 833-501-6826
Last EDR Contact: 12/05/2025
Next Scheduled EDR Contact: 04/30/2026
Data Release Frequency: Varies

PFAS: PFAS Detections

PFAS detection list

Date of Government Version: 09/24/2025
Date Data Arrived at EDR: 10/21/2025
Date Made Active in Reports: 10/29/2025
Number of Days to Update: 8
Source: Department of Natural Resources
Telephone: 517-751-9857
Last EDR Contact: 09/24/2025
Next Scheduled EDR Contact: 01/12/2026
Data Release Frequency: Varies

AIRS: Permit Facility Listing

A listing of Air Pollution Control Program permits.

Date of Government Version: 05/30/2025
Date Data Arrived at EDR: 05/30/2025
Date Made Active in Reports: 06/11/2025
Number of Days to Update: 12
Source: Department of Natural Resources
Telephone: 573-751-4817
Last EDR Contact: 11/24/2025
Next Scheduled EDR Contact: 03/16/2026
Data Release Frequency: Varies

ASBESTOS: Asbestos Notification Listing

The department requires notification of demolitions and abatement projects involving regulated structures at least 10 working days before crews begin a project.

Date of Government Version: 06/24/2025
Date Data Arrived at EDR: 06/25/2025
Date Made Active in Reports: 09/19/2025
Number of Days to Update: 86
Source: Department of Natural Resources
Telephone: 573-751-4817
Last EDR Contact: 09/30/2025
Next Scheduled EDR Contact: 01/12/2026
Data Release Frequency: Varies

COAL ASH: Coal Ash Disposal Sites

A listing of power plants with coal ash ponds.

Date of Government Version: 01/03/2018
Date Data Arrived at EDR: 02/01/2018
Date Made Active in Reports: 03/22/2018
Number of Days to Update: 49
Source: Department of Natural Resources
Telephone: 573-526-1825
Last EDR Contact: 12/09/2025
Next Scheduled EDR Contact: 04/06/2026
Data Release Frequency: No Update Planned

DRYCLEANERS: Drycleaners in Missouri Listing

A listing of drycleaner facilities that are potentially eligible for reimbursement of department approved cleanup costs under the Drycleaning Environmental Response Trust Fund.

Date of Government Version: 05/28/2025
Date Data Arrived at EDR: 06/11/2025
Date Made Active in Reports: 06/24/2025
Number of Days to Update: 13
Source: Department of Natural Resources
Telephone: 573-526-8913
Last EDR Contact: 11/24/2025
Next Scheduled EDR Contact: 03/16/2026
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

FIN ASSURANCE 1: Financial Assurance Information Listing
Financial Assurance information.

Date of Government Version: 09/11/2025
Date Data Arrived at EDR: 09/17/2025
Date Made Active in Reports: 09/23/2025
Number of Days to Update: 6

Source: Department of Natural Resources
Telephone: 573-751-3553
Last EDR Contact: 11/18/2025
Next Scheduled EDR Contact: 03/09/2026
Data Release Frequency: Annually

FIN ASSURANCE 2: Financial Assurance Information Listing
Financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay

Date of Government Version: 12/19/2022
Date Data Arrived at EDR: 02/28/2023
Date Made Active in Reports: 05/17/2023
Number of Days to Update: 78

Source: Department of Natural Resources
Telephone: 573-751-5401
Last EDR Contact: 11/26/2025
Next Scheduled EDR Contact: 03/09/2026
Data Release Frequency: Quarterly

MINES: Industrial Mineral Mines Database
This data set contains names, locations and additional data for active Industrial Mineral Mines permitted with the Missouri Department of Natural Resources, Division of Environmental Quality, Land Reclamation Program. Industrial Mineral Mines permitted are rock quarries, clay pits, sand and gravel pits, or in-stream sand and gravel operations.

Date of Government Version: 04/30/2021
Date Data Arrived at EDR: 07/14/2021
Date Made Active in Reports: 10/07/2021
Number of Days to Update: 85

Source: Department of Natural Resources
Telephone: 573-751-4041
Last EDR Contact: 10/09/2025
Next Scheduled EDR Contact: 01/19/2026
Data Release Frequency: Varies

NPDES: Permitted Facility Listing
A listing of permitted facilities from the Water Pollution Branch.

Date of Government Version: 09/17/2025
Date Data Arrived at EDR: 10/01/2025
Date Made Active in Reports: 10/09/2025
Number of Days to Update: 8

Source: Department of Natural Resources
Telephone: 573-751-7023
Last EDR Contact: 12/09/2025
Next Scheduled EDR Contact: 04/06/2026
Data Release Frequency: Quarterly

RRC: Certified Hazardous Waste Resource Recovery Facilities
Facilities that take hazardous waste material, either from on-site or off-site, and make it re-usable.

Date of Government Version: 09/30/2020
Date Data Arrived at EDR: 10/06/2020
Date Made Active in Reports: 12/28/2020
Number of Days to Update: 83

Source: Department of Natural Resources
Telephone: 573-751-3176
Last EDR Contact: 11/21/2025
Next Scheduled EDR Contact: 03/16/2026
Data Release Frequency: Annually

SMARS: Site Management and Reporting System
SMARS currently houses information for Superfund, Federal Facility, Brownfields Voluntary Cleanup Program and Missouri's other state response programs.

Date of Government Version: 07/11/2025
Date Data Arrived at EDR: 07/16/2025
Date Made Active in Reports: 08/19/2025
Number of Days to Update: 34

Source: Department of Natural Resources
Telephone: 573-751-3043
Last EDR Contact: 10/21/2025
Next Scheduled EDR Contact: 02/02/2026
Data Release Frequency: Quarterly

UIC: Underground Injection Wells Database
A listing of underground injection well locations. The UIC Program is responsible for regulating the construction, operation, permitting, and closure of injection wells that place fluids underground for storage or disposal.

Date of Government Version: 08/16/2025
Date Data Arrived at EDR: 08/11/2025
Date Made Active in Reports: 09/10/2025
Number of Days to Update: 30

Source: Department of Natural Resources
Telephone: 573-368-2183
Last EDR Contact: 11/06/2025
Next Scheduled EDR Contact: 02/23/2026
Data Release Frequency: Semi-Annually

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners
EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA HWS: Recovered Government Archive State Hazardous Waste Facilities List

The EDR Recovered Government Archive State Hazardous Waste database provides a list of SHWS incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Natural Resources in Missouri.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/03/2014
Number of Days to Update: 186

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Natural Resources in Missouri.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/15/2014
Number of Days to Update: 198

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Natural Resources in Missouri.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/03/2014
Number of Days to Update: 186

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 07/30/2025
Date Data Arrived at EDR: 07/31/2025
Date Made Active in Reports: 10/16/2025
Number of Days to Update: 77

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 11/03/2025
Next Scheduled EDR Contact: 02/16/2026
Data Release Frequency: No Update Planned

NY MANIFEST: Facility and Manifest Data

Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 11/30/2023
Date Made Active in Reports: 12/01/2023
Number of Days to Update: 1

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 10/23/2025
Next Scheduled EDR Contact: 02/02/2026
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 06/30/2018
Date Data Arrived at EDR: 07/19/2019
Date Made Active in Reports: 09/10/2019
Number of Days to Update: 53

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 10/01/2025
Next Scheduled EDR Contact: 01/19/2026
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 11/30/2021
Date Made Active in Reports: 02/18/2022
Number of Days to Update: 80

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 11/05/2025
Next Scheduled EDR Contact: 02/23/2026
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 76

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 11/21/2025
Next Scheduled EDR Contact: 03/16/2026
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: Endeavor Business Media
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Electric Power Transmission Line Data
Source: Endeavor Business Media
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.
Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.
Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.
Daycare Centers: Licensed Child Care Facilities
Source: Department of Health & Senior Services
Telephone: 573-751-2450

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005, 2010 and 2015 from the U.S. Fish and Wildlife Service.

State Wetlands Data: National Wetland Inventory of Missouri
Source: Department of Natural Resources
Telephone: 573-751-5110

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

MERAMEC AMBULANCE DISTRICT
385 OLD MANCHESTER ROAD
PACIFIC, MO 63069

TARGET PROPERTY COORDINATES

Latitude (North):	38.535213 - 38° 32' 6.77''
Longitude (West):	90.742696 - 90° 44' 33.71''
Universal Tranverse Mercator:	Zone 15
UTM X (Meters):	696752.8
UTM Y (Meters):	4267409.0
Elevation:	803 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	24318366 EUREKA, MO
Version Date:	2021
Northwest Map:	24318386 LABADIE, MO
Version Date:	2021

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

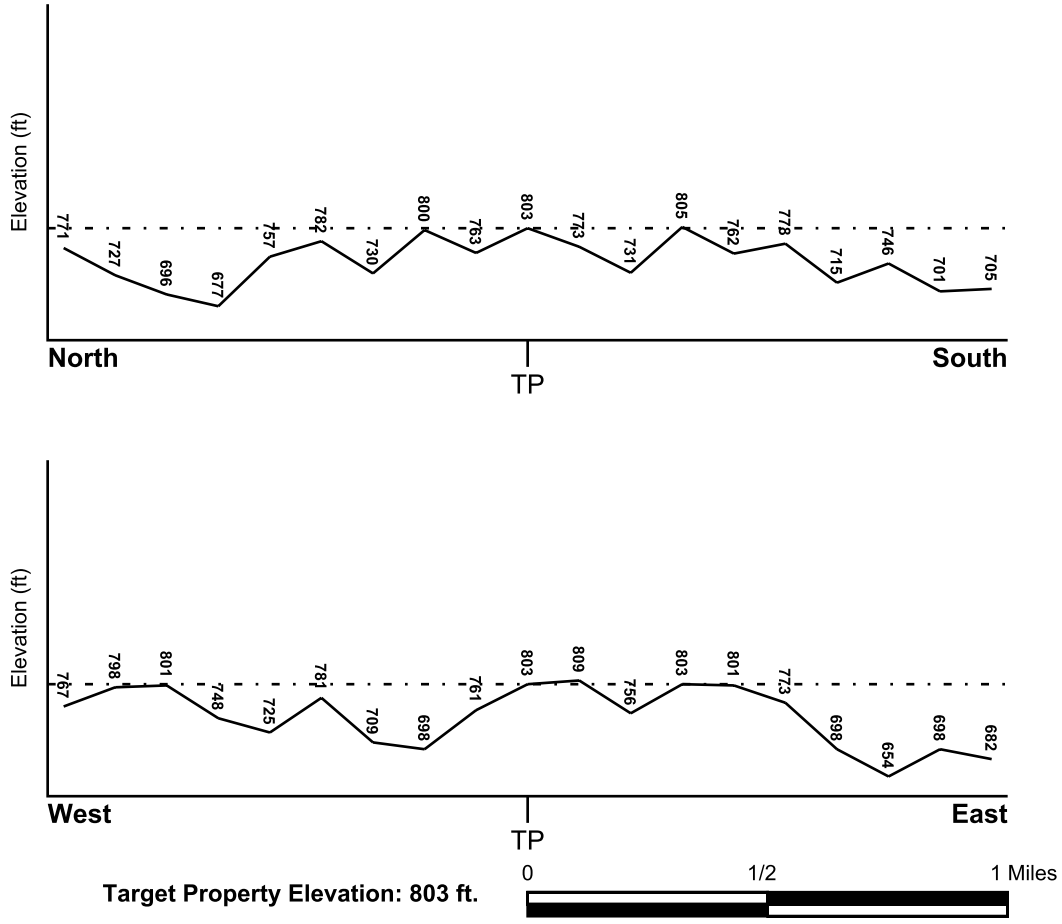
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General SW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
29071C0225D	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
29071C0195D	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
EUREKA	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

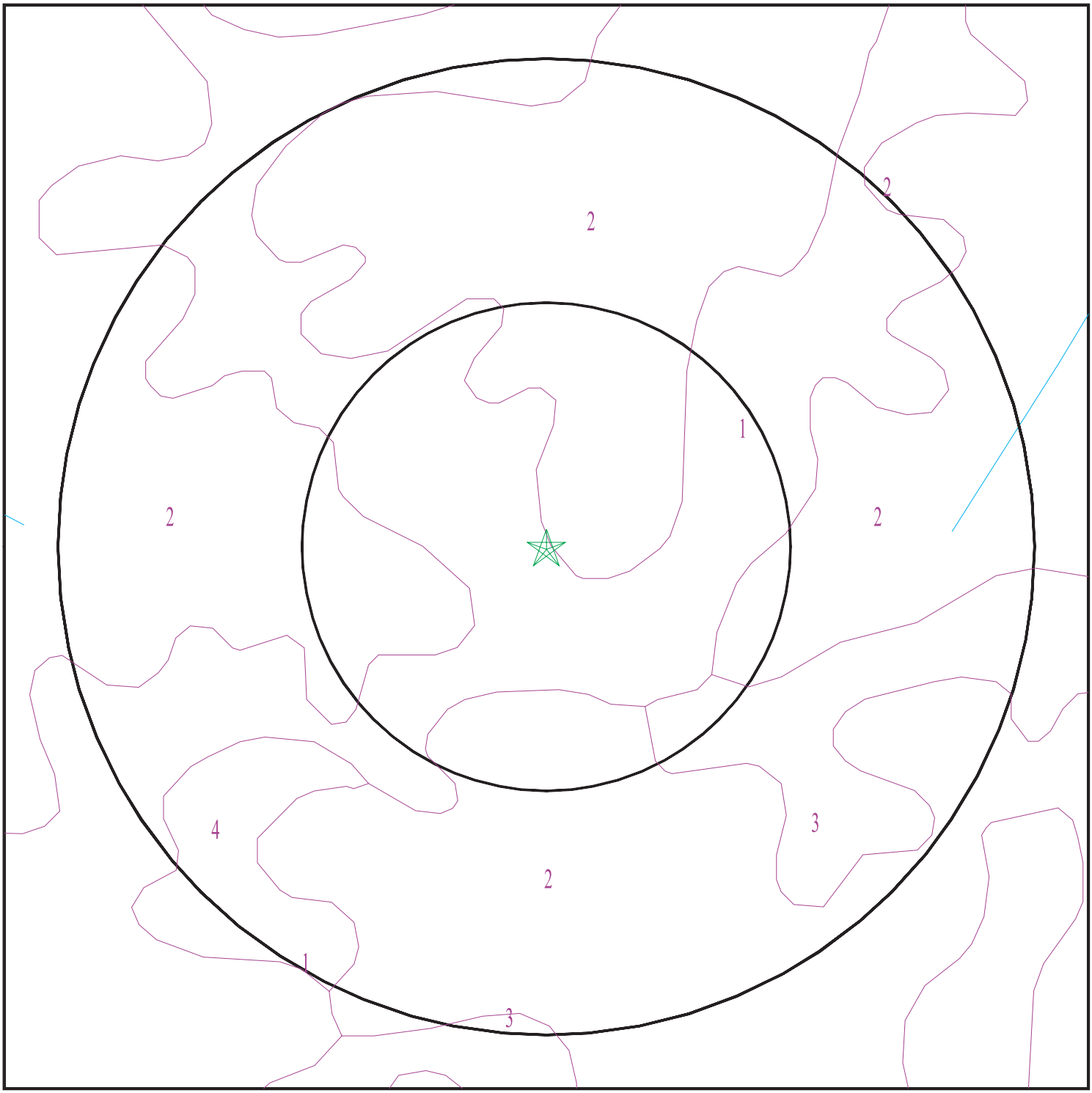
Era:	Paleozoic
System:	Ordovician
Series:	Upper Ordovician (Cincinnatian)
Code:	O3 *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratified Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 08194693.2r



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Meramec Ambulance District	CLIENT:	Sitex Environmental, Inc.
ADDRESS:	385 Old Manchester Road Pacific MO 63069	CONTACT:	Mackenzie Wagner
		INQUIRY #:	08194693.2r
LAT/LONG:	38.535213 / 90.742696	DATE:	December 10, 2025 9:59 am

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Winfield

Soil Surface Texture: silt loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Moderately well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 99 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	5 inches	silt loam	Not reported	Not reported	Max: 14 Min: 4	Max: 6.5 Min: 5.1
2	5 inches	9 inches	silt loam	Not reported	Not reported	Max: 14 Min: 4	Max: 6.5 Min: 5.1
3	9 inches	48 inches	silty clay loam	Not reported	Not reported	Max: 14 Min: 4	Max: 6.5 Min: 5.1
4	48 inches	66 inches	silt loam	Not reported	Not reported	Max: 14 Min: 4	Max: 6.5 Min: 5.1

Soil Map ID: 2

Soil Component Name: Menfro

Soil Surface Texture: silt loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 81 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	silt loam	Not reported	Not reported	Max: 14 Min: 4	Max: 7.3 Min: 5.6
2	9 inches	14 inches	silty clay loam	Not reported	Not reported	Max: 14 Min: 4	Max: 7.3 Min: 5.6
3	14 inches	44 inches	silty clay loam	Not reported	Not reported	Max: 14 Min: 4	Max: 7.3 Min: 5.6
4	44 inches	59 inches	silt loam	Not reported	Not reported	Max: 14 Min: 4	Max: 7.3 Min: 5.6

Soil Map ID: 3

Soil Component Name: Winfield

Soil Surface Texture: silt loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Moderately well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 99 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	5 inches	silt loam	Not reported	Not reported	Max: 14 Min: 4	Max: 6.5 Min: 5.1

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
2	5 inches	9 inches	silt loam	Not reported	Not reported	Max: 14 Min: 4	Max: 6.5 Min: 5.1
3	9 inches	48 inches	silty clay loam	Not reported	Not reported	Max: 14 Min: 4	Max: 6.5 Min: 5.1
4	48 inches	66 inches	silt loam	Not reported	Not reported	Max: 14 Min: 4	Max: 6.5 Min: 5.1

Soil Map ID: 4

Soil Component Name: Menfro

Soil Surface Texture: silt loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	5 inches	silt loam	Not reported	Not reported	Max: 14 Min: 4	Max: 7.3 Min: 5.6
2	5 inches	9 inches	silty clay loam	Not reported	Not reported	Max: 14 Min: 4	Max: 7.3 Min: 5.6
3	9 inches	53 inches	silty clay loam	Not reported	Not reported	Max: 14 Min: 4	Max: 7.3 Min: 5.6
4	53 inches	72 inches	silt loam	Not reported	Not reported	Max: 14 Min: 4	Max: 7.3 Min: 5.6

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
9	USGS40000694160	1/4 - 1/2 Mile WSW
16	USGS40000694166	1/2 - 1 Mile East
20	USGS40000694158	1/2 - 1 Mile East
B22	USGS40000694218	1/2 - 1 Mile ENE

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A14	MO6024213	1/2 - 1 Mile WSW

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

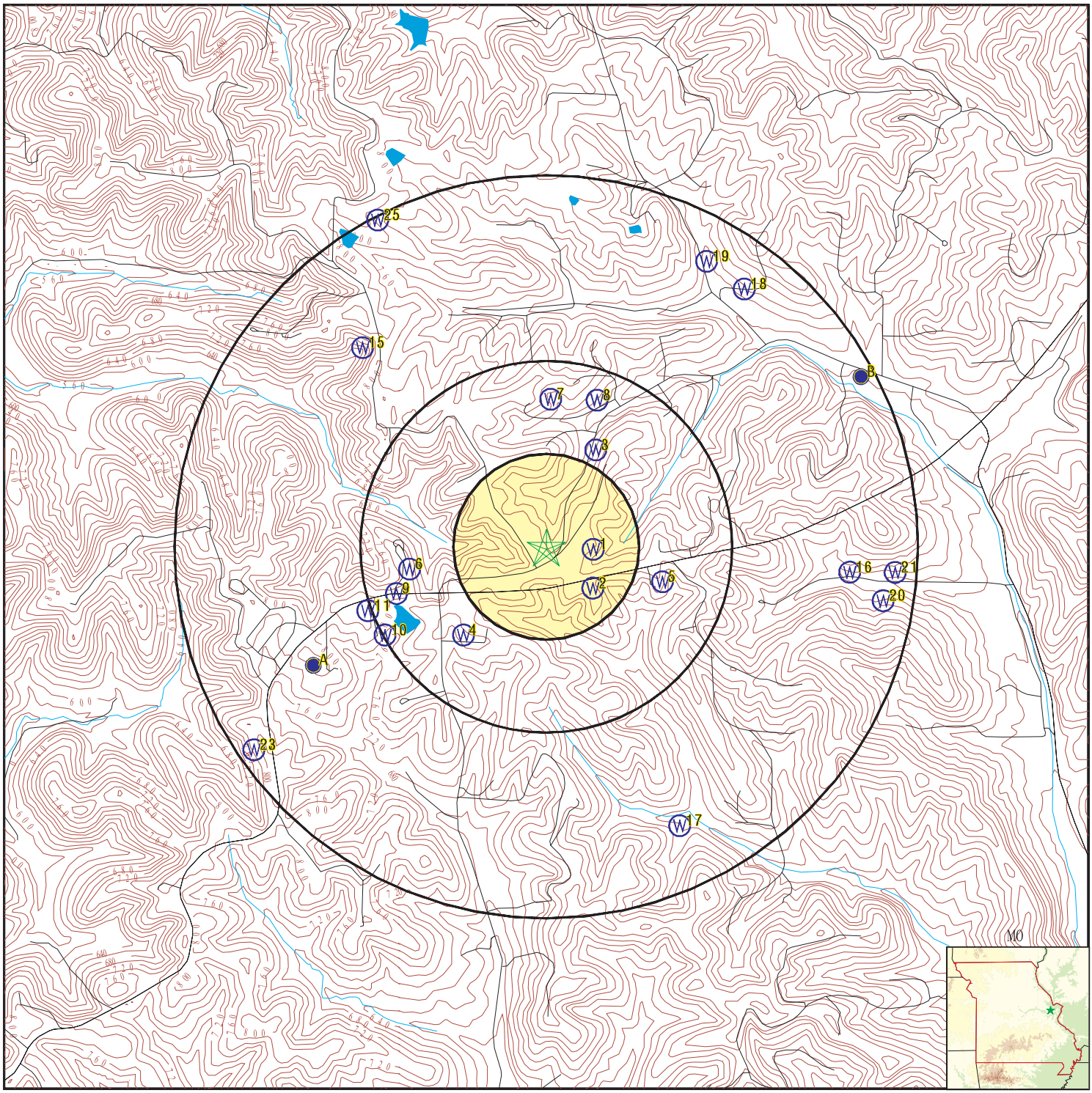
MAP ID	WELL ID	LOCATION FROM TP
1	MOLOG3000035225	1/8 - 1/4 Mile East
2	MOLOG3000035202	1/8 - 1/4 Mile SE
3	MOLOG3000035268	1/4 - 1/2 Mile NNE
4	MOLOG3000035184	1/4 - 1/2 Mile SW
5	MOLOG3000035207	1/4 - 1/2 Mile ESE
6	MOLOG3000035213	1/4 - 1/2 Mile West
7	MOLOG3000035292	1/4 - 1/2 Mile North
8	MOLOG3000035290	1/4 - 1/2 Mile NNE
10	MOLOG3000035183	1/4 - 1/2 Mile WSW
11	MOLOG3000035194	1/2 - 1 Mile WSW
A12	MOLOG3000035161	1/2 - 1 Mile WSW
A13	MO7000000002017	1/2 - 1 Mile WSW
15	MOLOG3000035307	1/2 - 1 Mile NW
17	MOLOG3000035108	1/2 - 1 Mile SSE
18	MOLOG3000035332	1/2 - 1 Mile NE
19	MOLOG3000035345	1/2 - 1 Mile NNE
21	MOLOG3000035210	1/2 - 1 Mile East

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
23	MOLOG3000035141	1/2 - 1 Mile SW
B24	MOLOG3000035297	1/2 - 1 Mile ENE
25	MOLOG3000035364	1/2 - 1 Mile NNW

PHYSICAL SETTING SOURCE MAP - 08194693.2r



- County Boundary
- Major Roads
- Contour Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- Oil, gas or related wells

SITE NAME:	Meramec Ambulance District	CLIENT:	Sitex Environmental, Inc.
ADDRESS:	385 Old Manchester Road Pacific MO 63069	CONTACT:	Mackenzie Wagner
		INQUIRY #:	08194693.2r
LAT/LONG:	38.535213 / 90.742696	DATE:	December 10, 2025 9:58 am

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

1
East
1/8 - 1/4 Mile
Lower

MO WELLS **MOLOG3000035225**

WELLS LOG:

Database:	Geologic Well Log Database		
ID:	0004960		
Owner:	Bradshaw, Preston J. - Well #1		
Well Type:	Private Well	Stratigraphy Log:	Yes
Driller Log:	No	Other Log:	No
Samples Retained:	No	Elevation (ft):	791
Total Depth (ft):	380	Depth to Bedrock (ft):	90
SWL After Casing Set:	-9999	SWL Before Casing Set:	-9999
SWL After Casing Grouting (ft):	-9999	SWL Before Casing Grouting (ft):	-9999
Water Noted by Driller (ft):	Not Reported	Draw Down (ft):	-9999
Well Yield (gpm):	-9999		
Surface Formation:	(NO SAMPLES or NOT LOGGED)		
First Bedrock Form:	DECORAH GROUP UNDIFFERENTIATED		
Alternate ID 1:	None	Alternate ID 3:	None
SDWIS ID:	-99999	WIMS ID:	None
Oil and Gas ID:	None	Other Database ID:	None
Mineral Bore Hole ID:	None	Additional Databases Linked:	Not Reported
Drill Date:	1938	Driller:	Hawkins, L.E.
Logger:	Grohskopf, J.	Log Date:	Not Reported
Geological Structures:	No	Interval Core Top (ft):	0
Interval Core Bottom (ft):	0		
Remarks:	S Sd Hwy 50, Jst W Of St Louis County Line; Hole Lost @ 380’		
URL:	https://info.mo.gov/dnr/DNR_GIS/geology/wrc/logmain/striplogs/0004960.pdf		

2
SE
1/8 - 1/4 Mile
Higher

MO WELLS **MOLOG3000035202**

WELLS LOG:

Database:	Geologic Well Log Database		
ID:	2014022	Owner:	Silver Oaks
Well Type:	Public Well - Noncommunity		
Stratigraphy Log:	Yes	Driller Log:	No
Other Log:	No	Samples Retained:	Yes
Elevation (ft):	810	Total Depth (ft):	929
Depth to Bedrock (ft):	50	SWL After Casing Set:	265
SWL Before Casing Set:	-9999	SWL After Casing Grouting (ft):	545
SWL Before Casing Grouting (ft):	-9999	Water Noted by Driller (ft):	305
Draw Down (ft):	-9999	Well Yield (gpm):	60
Surface Formation:	SOIL-RESIDUUM	First Bedrock Form:	KIMMSWICK LIMESTONE
Alternate ID 1:	None	Alternate ID 3:	None
SDWIS ID:	18910	WIMS ID:	00485126
Oil and Gas ID:	None	Other Database ID:	None
Mineral Bore Hole ID:	None	Additional Databases Linked:	PUBLIC DRINKING WATER
Drill Date:	20141026	Driller:	P Luther
Logger:	Mason, T.	Log Date:	20141028
Geological Structures:	No	Interval Core Top (ft):	0
Interval Core Bottom (ft):	0		
Remarks:	Not Reported		
URL:	https://info.mo.gov/dnr/DNR_GIS/geology/wrc/logmain/striplogs/RF2014022.pdf		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

3
NNE
1/4 - 1/2 Mile
Lower

MO WELLS **MOLOG3000035268**

WELLS LOG:

Database:	Geologic Well Log Database		
ID:	0007440	Owner:	Bradshaw, Preston J.
Well Type:	Private Well	Stratigraphy Log:	Yes
Driller Log:	No	Other Log:	No
Samples Retained:	Yes	Elevation (ft):	740
Total Depth (ft):	472	Depth to Bedrock (ft):	70
SWL After Casing Set:	310	SWL Before Casing Set:	-9999
SWL After Casing Grouting (ft):	430	SWL Before Casing Grouting (ft):	-9999
Water Noted by Driller (ft):	255-260’	Draw Down (ft):	-9999
Well Yield (gpm):	16.5		
Surface Formation:	(NO SAMPLES or NOT LOGGED)		
First Bedrock Form:	KIMMSWICK LIMESTONE		
Alternate ID 1:	None	Alternate ID 3:	None
SDWIS ID:	-99999	WIMS ID:	None
Oil and Gas ID:	None	Other Database ID:	None
Mineral Bore Hole ID:	None	Additional Databases Linked:	Not Reported
Drill Date:	19410919	Driller:	Koebel & Koebel
Logger:	Grohskopf, J.	Log Date:	19410108
Geological Structures:	No	Interval Core Top (ft):	0
Interval Core Bottom (ft):	0		
Remarks:	500’ Sw Of House		
URL:	https://info.mo.gov/dnr/DNR_GIS/geology/wrc/logmain/striplogs/0007440.pdf		

4
SW
1/4 - 1/2 Mile
Higher

MO WELLS **MOLOG3000035184**

WELLS LOG:

Database:	Geologic Well Log Database		
ID:	0024035	Owner:	Renz, John
Well Type:	Private Well	Stratigraphy Log:	Yes
Driller Log:	No	Other Log:	No
Samples Retained:	Yes	Elevation (ft):	811
Total Depth (ft):	482	Depth to Bedrock (ft):	50
SWL After Casing Set:	350	SWL Before Casing Set:	-9999
SWL After Casing Grouting (ft):	461	SWL Before Casing Grouting (ft):	-9999
Water Noted by Driller (ft):	Not Reported	Draw Down (ft):	-9999
Well Yield (gpm):	5		
Surface Formation:	(NO SAMPLES or NOT LOGGED)		
First Bedrock Form:	KIMMSWICK LIMESTONE		
Alternate ID 1:	None	Alternate ID 3:	None
SDWIS ID:	-99999	WIMS ID:	None
Oil and Gas ID:	None	Other Database ID:	None
Mineral Bore Hole ID:	None	Additional Databases Linked:	Not Reported
Drill Date:	19651215	Driller:	Shepard
Logger:	Robertson, C.E.	Log Date:	196610
Geological Structures:	No	Interval Core Top (ft):	0
Interval Core Bottom (ft):	0		
Remarks:	Yield - 5 Gpm @ 400’		
URL:	https://info.mo.gov/dnr/DNR_GIS/geology/wrc/logmain/striplogs/0024035.pdf		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

5
ESE
1/4 - 1/2 Mile
Lower

MO WELLS **MOLOG3000035207**

WELLS LOG:

Database:	Geologic Well Log Database		
ID:	0011231	Owner:	Hicks, Grady L. & Irene
Well Type:	Private Well	Stratigraphy Log:	Yes
Driller Log:	No	Other Log:	No
Samples Retained:	Yes	Elevation (ft):	788
Total Depth (ft):	340	Depth to Bedrock (ft):	55
SWL After Casing Set:	200	SWL Before Casing Set:	-9999
SWL After Casing Grouting (ft):	588	SWL Before Casing Grouting (ft):	-9999
Water Noted by Driller (ft):	330’	Draw Down (ft):	-9999
Well Yield (gpm):	6		
Surface Formation:	(NO SAMPLES or NOT LOGGED)		
First Bedrock Form:	KIMMSWICK LIMESTONE		
Alternate ID 1:	None	Alternate ID 3:	None
SDWIS ID:	-99999	WIMS ID:	None
Oil and Gas ID:	None	Other Database ID:	None
Mineral Bore Hole ID:	None	Additional Databases Linked:	Not Reported
Drill Date:	19470530	Driller:	Shepard Brothers
Logger:	McCracken	Log Date:	19500218
Geological Structures:	No	Interval Core Top (ft):	0
Interval Core Bottom (ft):	0		
Remarks:	Not Reported		
URL:	https://info.mo.gov/dnr/DNR_GIS/geology/wrc/logmain/striplogs/0011231.pdf		

6
West
1/4 - 1/2 Mile
Lower

MO WELLS **MOLOG3000035213**

WELLS LOG:

Database:	Geologic Well Log Database		
ID:	0024706	Owner:	Hrach, William F.
Well Type:	Private Well	Stratigraphy Log:	Yes
Driller Log:	No	Other Log:	No
Samples Retained:	Yes	Elevation (ft):	786
Total Depth (ft):	605	Depth to Bedrock (ft):	100
SWL After Casing Set:	325	SWL Before Casing Set:	-9999
SWL After Casing Grouting (ft):	461	SWL Before Casing Grouting (ft):	-9999
Water Noted by Driller (ft):	Not Reported	Draw Down (ft):	-9999
Well Yield (gpm):	20		
Surface Formation:	(NO SAMPLES or NOT LOGGED)		
First Bedrock Form:	PLATTIN LIMESTONE		
Alternate ID 1:	None	Alternate ID 3:	None
SDWIS ID:	-99999	WIMS ID:	None
Oil and Gas ID:	None	Other Database ID:	None
Mineral Bore Hole ID:	None	Additional Databases Linked:	Not Reported
Drill Date:	19660723	Driller:	Shepard Well Drlg
Logger:	Hebrank, Art W.	Log Date:	Not Reported
Geological Structures:	No	Interval Core Top (ft):	0
Interval Core Bottom (ft):	0		
Remarks:	0.25 Mi W Of Hwys Oo & 100, 3 Mi N Of Pacific; Yield - 20 Gpm @ 360’		
URL:	https://info.mo.gov/dnr/DNR_GIS/geology/wrc/logmain/striplogs/0024706.pdf		

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

7
North
1/4 - 1/2 Mile
Lower

MO WELLS **MOLOG3000035292**

WELLS LOG:

Database:	Geologic Well Log Database		
ID:	0005284	Owner:	English, Fred L. (Judge)
Well Type:	Private Well	Stratigraphy Log:	Yes
Driller Log:	No	Other Log:	No
Samples Retained:	No	Elevation (ft):	740
Total Depth (ft):	285	Depth to Bedrock (ft):	50
SWL After Casing Set:	130	SWL Before Casing Set:	-9999
SWL After Casing Grouting (ft):	610	SWL Before Casing Grouting (ft):	-9999
Water Noted by Driller (ft):	Not Reported	Draw Down (ft):	-9999
Well Yield (gpm):	7.5		
Surface Formation:	(NO SAMPLES or NOT LOGGED)		
First Bedrock Form:	PLATTIN LIMESTONE		
Alternate ID 1:	None	Alternate ID 3:	None
SDWIS ID:	-99999	WIMS ID:	None
Oil and Gas ID:	None	Other Database ID:	None
Mineral Bore Hole ID:	None	Additional Databases Linked:	Not Reported
Drill Date:	1939	Driller:	Hoppe, F.D. (Mrs.)
Logger:	Grohskopf, J.	Log Date:	Not Reported
Geological Structures:	No	Interval Core Top (ft):	0
Interval Core Bottom (ft):	0		
Remarks:	0.25 Mi N Of Manchester Rd, 4.5 Mi W Of Bassett Rd; 7.5 Gpm @ 200’		
URL:	https://info.mo.gov/dnr/DNR_GIS/geology/wrc/logmain/striplogs/0005284.pdf		

8
NNE
1/4 - 1/2 Mile
Lower

MO WELLS **MOLOG3000035290**

WELLS LOG:

Database:	Geologic Well Log Database		
ID:	0009844		
Owner:	Bradshaw, Hilda W. (Mrs. Preston)		
Well Type:	Private Well	Stratigraphy Log:	Yes
Driller Log:	No	Other Log:	No
Samples Retained:	No	Elevation (ft):	719
Total Depth (ft):	439	Depth to Bedrock (ft):	60
SWL After Casing Set:	200	SWL Before Casing Set:	-9999
SWL After Casing Grouting (ft):	519	SWL Before Casing Grouting (ft):	-9999
Water Noted by Driller (ft):	150’	Draw Down (ft):	-9999
Well Yield (gpm):	7		
Surface Formation:	(NO SAMPLES or NOT LOGGED)		
First Bedrock Form:	PLATTIN LIMESTONE		
Alternate ID 1:	None	Alternate ID 3:	None
SDWIS ID:	-99999	WIMS ID:	None
Oil and Gas ID:	None	Other Database ID:	None
Mineral Bore Hole ID:	None	Additional Databases Linked:	Not Reported
Drill Date:	19461120	Driller:	Lang, J.
Logger:	French, E.F.	Log Date:	19480204
Geological Structures:	No	Interval Core Top (ft):	0
Interval Core Bottom (ft):	0		
Remarks:	4 Mi N Of Pacific; Many Missing Samples		

URL: https://info.mo.gov/dnr/DNR_GIS/geology/wrc/logmain/striplogs/0009844.pdf

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9
WSW
1/4 - 1/2 Mile
Higher

FED USGS **USGS40000694160**

Organization ID:	USGS-MO	Organization Name:	USGS Missouri Water Science Center
Monitor Location:	T44N R02E 25BB	Type:	Well
Description:	Not Reported	HUC:	10300200
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Ozark Plateaus aquifer system		
Formation Type:	St Peter Sandstone	Aquifer Type:	Not Reported
Construction Date:	19660723	Well Depth:	605
Well Depth Units:	ft	Well Hole Depth:	605
Well Hole Depth Units:	ft		

Ground water levels,Number of Measurements:	1	Level reading date:	1966-07-23
Feet below surface:	325	Feet to sea level:	Not Reported
Note:	Not Reported		

10
WSW
1/4 - 1/2 Mile
Lower

MO WELLS **MOLOG3000035183**

WELLS LOG:

Database:	Geologic Well Log Database		
ID:	0015373	Owner:	Laudendale, M.D.
Well Type:	Public Well - Noncommunity		
Stratigraphy Log:	Yes	Driller Log:	No
Other Log:	No	Samples Retained:	Yes
Elevation (ft):	777	Total Depth (ft):	418
Depth to Bedrock (ft):	999999	SWL After Casing Set:	320
SWL Before Casing Set:	-9999	SWL After Casing Grouting (ft):	457
SWL Before Casing Grouting (ft):	-9999	Water Noted by Driller (ft):	385-418’
Draw Down (ft):	-9999	Well Yield (gpm):	17
Surface Formation:	(NO SAMPLES or NOT LOGGED)		
First Bedrock Form:	PLATTIN LIMESTONE		
Alternate ID 1:	None	Alternate ID 3:	None
SDWIS ID:	-99999	WIMS ID:	None
Oil and Gas ID:	None	Other Database ID:	None
Mineral Bore Hole ID:	None	Additional Databases Linked:	Not Reported
Drill Date:	19560903	Driller:	Shepard Well Drilling Co
Logger:	Wells, J.	Log Date:	19570124
Geological Structures:	No	Interval Core Top (ft):	0
Interval Core Bottom (ft):	0		
Remarks:	Green Door Tavern, 3 Mi N Of Pacific On Hwy 100; Yield - 17 Gpm @ 355’		
URL:	https://info.mo.gov/dnr/DNR_GIS/geology/wrc/logmain/striplogs/0015373.pdf		

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

11
WSW
1/2 - 1 Mile
Higher | **MO WELLS** | **MOLOG3000035194**

WELLS LOG:

Database:	Geologic Well Log Database		
ID:	0022233	Owner:	Harrison, W.B.
Well Type:	Private Well	Stratigraphy Log:	Yes
Driller Log:	No	Other Log:	No
Samples Retained:	No	Elevation (ft):	806
Total Depth (ft):	422	Depth to Bedrock (ft):	60
SWL After Casing Set:	350	SWL Before Casing Set:	-9999
SWL After Casing Grouting (ft):	456	SWL Before Casing Grouting (ft):	-9999
Water Noted by Driller (ft):	400’	Draw Down (ft):	-9999
Well Yield (gpm):	14		
Surface Formation:	(NO SAMPLES or NOT LOGGED)		
First Bedrock Form:	DECORAH GROUP UNDIFFERENTIATED		
Alternate ID 1:	None	Alternate ID 3:	None
SDWIS ID:	-99999	WIMS ID:	None
Oil and Gas ID:	None	Other Database ID:	None
Mineral Bore Hole ID:	None	Additional Databases Linked:	Not Reported
Drill Date:	19630715	Driller:	Shepard Well Drilling Co
Logger:	Wells, J.	Log Date:	19640227
Geological Structures:	No	Interval Core Top (ft):	0
Interval Core Bottom (ft):	0		
Remarks:	3 Mi N Of Pacific On Hwy 100		
URL:	https://info.mo.gov/dnr/DNR_GIS/geology/wrc/logmain/striplogs/0022233.pdf		

A12
WSW
1/2 - 1 Mile
Higher | **MO WELLS** | **MOLOG3000035161**

WELLS LOG:

Database:	Geologic Well Log Database		
ID:	0026672		
Owner:	Franklin Co Pwsd #3 Well #5		
Well Type:	Public Well - Community		
Stratigraphy Log:	Yes	Driller Log:	No
Other Log:	No	Samples Retained:	Yes
Elevation (ft):	806	Total Depth (ft):	1020
Depth to Bedrock (ft):	70	SWL After Casing Set:	349
SWL Before Casing Set:	318	SWL After Casing Grouting (ft):	457
SWL Before Casing Grouting (ft):	488	Water Noted by Driller (ft):	Not Reported
Draw Down (ft):	166	Well Yield (gpm):	72
Surface Formation:	SOIL-RESIDUUM	First Bedrock Form:	PLATTIN LIMESTONE
Alternate ID 1:	None	Alternate ID 3:	None
SDWIS ID:	10188	WIMS ID:	00275121
Oil and Gas ID:	None	Other Database ID:	None
Mineral Bore Hole ID:	None	Additional Databases Linked:	PUBLIC DRINKING WATER
Drill Date:	19701005	Driller:	Clark & Son
Logger:	Hebrank, Art W.	Log Date:	19701201
Geological Structures:	Yes	Interval Core Top (ft):	0
Interval Core Bottom (ft):	0		
Remarks:	Formerly In Name Of Robert G. Romine And City Of Gray Summit - 70-100’ Mixed Decorah & Kmmswk; At Sw Edge Of House Springs Fault		

URL: https://info.mo.gov/dnr/DNR_GIS/geology/wrc/logmain/striplogs/0026672.pdf

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A13
WSW
1/2 - 1 Mile
Higher

MO WELLS **MO7000000002017**

Database:	Missouri Public Drinking Water Wells		
DGLS ID:	100239	LOGMAIN ID:	0026672
Well Certification #:	00275121	PWSS Name:	Franklin Co. PWSD #3
PWSS ID:	6024213	IPWS ID:	MO6024213
Well #:	5	Local Name:	Country Aire
Well ID:	10188	Facility Type:	Water District
Federal Water System Type:	Community	Status:	Plugged
Drill Date:	1970	Abandoned:	0
Plugged:	0	Material Type:	Consolidated
Formation at Casing Depth:	Smithville/Powell		
Formation at Total Depth:	Roubidoux	Total Depth:	1020
Ground Elevation:	806	Top Seal Type:	Not Reported
Bottom Seal Type:	Not Reported	Casing Depth:	490
Casing Diameter:	6	Casing Type:	Not Reported
Casing Elevation:	0	Casing Height:	0
Outer Well Casing Depth:	0	Outer Casing Diameter:	0
Screen Length (ft):	-9999	Screen Size (in):	-9999
Depth to Static Water Level:	349	Max Yield (gal/min):	73
Dynamic Head of Pump:	0	Drawdown:	155
Year of Pump Test:	0	Pump Type:	Not Reported
Pump Manufacturer:	Not Reported	Pump Depth:	0
Pump Capacity:	73	Has Pump Meter:	Not Reported
Has Stand-by Power:	Not Reported	VOC detections:	N
Nitrates Detected:	N	Chlorination Used:	Y
Filtration Used:	N	GWUDISW:	N
Meets Construction Requirements:	Not Reported	Surface Drainage:	Not Reported
Water System Entry Point ID:	Y	SWIP Wellhead Status:	Not Verified

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A14
WSW
1/2 - 1 Mile
Higher

FRDS PWS **MO6024213**

Epa region:	07	State:	MO
Pwsid:	MO6024213	Pwsname:	FRANKLIN CO PWSD 3
Cityserved:	Not Reported	Stateserved:	MO
Zipserved:	Not Reported	Fipscounty:	29071
Status:	Active	Retpopsrvd:	8250
Pwssvcconn:	3300	Psource longname:	Groundwater
Pwstype:	CWS	Owner:	Local_Govt
Contact:	BADER, GAIL	Contactorgname:	BADER, GAIL
Contactphone:	636-742-5200	Contactaddress1:	150 OLD HIGHWAY 100
Contactaddress2:	PO BOX 160	Contactcity:	VILLA RIDGE
Contactstate:	MO	Contactzip:	63089-0000
Pwsactivitycode:	A		

Pwsid:	MO6024213	Facid:	102183
Facname:	WELL # 9 CATAWISSA TREATMENT		
Factype:	Treatment_plant	Facactivitycode:	I
Trtobjective:	disinfection	Trtprocess:	hypochlorination, post
Factypecode:	TP		

Pwsid:	MO6024213	Facid:	72298
Facname:	GRAY SUMMIT W1	Factype:	Treatment_plant
Facactivitycode:	A	Trtobjective:	disinfection
Trtprocess:	hypochlorination, post	Factypecode:	TP
Pwsid:	MO6024213	Facid:	72299
Facname:	VILLA RIDGE W2	Factype:	Treatment_plant
Facactivitycode:	A	Trtobjective:	disinfection
Trtprocess:	hypochlorination, post	Factypecode:	TP
Pwsid:	MO6024213	Facid:	72300
Facname:	VILLA RIDGE W3	Factype:	Treatment_plant
Facactivitycode:	A	Trtobjective:	disinfection
Trtprocess:	hypochlorination, post	Factypecode:	TP
Pwsid:	MO6024213	Facid:	72601
Facname:	OLD LAKEWOOD W7	Factype:	Treatment_plant
Facactivitycode:	A	Trtobjective:	disinfection
Trtprocess:	hypochlorination, post	Factypecode:	TP
Pwsid:	MO6024213	Facid:	95915
Facname:	WELL # 8 TREATMENT	Factype:	Treatment_plant
Facactivitycode:	A	Trtobjective:	disinfection
Trtprocess:	hypochlorination, post	Factypecode:	TP
PWS ID:	MO6024213	PWS name:	FRANKLIN CO PWSD #3
Address:	150 OLD HWY 100	Care of:	Not Reported
City:	VILLA RIDGE	State:	MO
Zip:	63089	Owner:	FRANKLIN CO PWSD #3
Source code:	Ground water	Population:	6800
PWS ID:	MO6024213	PWS type:	Not Reported
PWS name:	Not Reported	PWS address:	Not Reported
PWS city:	Not Reported	PWS state:	Not Reported
PWS zip:	Not Reported	PWS name:	FRANKLIN CO PWSD #3
PWS type code:	C	Retail population served:	6800
Contact:	HUFFMAN, DEBRA	Contact address:	C/O FRANKLIN CO PWSD #3
Contact address:	150 OLD HIGHWAY 100	Contact city:	VILLA RIDGE
Contact state:	MO	Contact zip:	63089-0000
Contact telephone:	636-742-5200		
County:	FRANKLIN	Source:	Ground water
Treatment Objective:	DISINFECTION	Process:	HYPOCHLORINATION, POST
Population:	6800		
PWS ID:	MO6024213	Activity status:	Active
Date system activated:	7101	Date system deactivated:	Not Reported
Retail population:	00004200	System name:	FRANKLIN CO PWSD #3
System address:	Not Reported	System address:	150 OLD HWY 100
System city:	VILLA RIDGE	System state:	MO
System zip:	63089		
County FIPS:	Not Reported	City served:	LABADIE
Population served:	3,301 - 5,000 Persons	Treatment:	Untreated
Latitude:	382501	Longitude:	0905832
Latitude:	383149	Longitude:	0904514
Latitude:	382630	Longitude:	0905403

Latitude:	382816	Longitude:	0905126
Latitude:	382857	Longitude:	0905310
Latitude:	382944	Longitude:	0904833
State:	MO	Latitude degrees:	38
Latitude minutes:	25	Latitude seconds:	2.0000
Longitude degrees:	90	Longitude minutes:	58
Longitude seconds:	33.0000		
State:	MO	Latitude degrees:	38
Latitude minutes:	26	Latitude seconds:	31.0000
Longitude degrees:	90	Longitude minutes:	54
Longitude seconds:	4.0000		
State:	MO	Latitude degrees:	38
Latitude minutes:	28	Latitude seconds:	17.0000
Longitude degrees:	90	Longitude minutes:	51
Longitude seconds:	26.0000		
State:	MO	Latitude degrees:	38
Latitude minutes:	29	Latitude seconds:	0.0000
Longitude degrees:	90	Longitude minutes:	53
Longitude seconds:	10.0000		
State:	MO	Latitude degrees:	38
Latitude minutes:	29	Latitude seconds:	38.0000
Longitude degrees:	90	Longitude minutes:	54
Longitude seconds:	45.0000		
State:	MO	Latitude degrees:	38
Latitude minutes:	29	Latitude seconds:	44.0000
Longitude degrees:	90	Longitude minutes:	48
Longitude seconds:	33.0000		
State:	MO	Latitude degrees:	38
Latitude minutes:	31	Latitude seconds:	50.0000
Longitude degrees:	90	Longitude minutes:	45
Longitude seconds:	15.0000		
Violation id:	#0001	Orig code:	F
State:	MO	Violation Year:	2008
Contamination code:	0600	Contamination Name:	DBP STAGE 2
Violation code:	30	Violation name:	Monitoring, Routine (IDSE)
Rule code:	220	Rule name:	St2 DBP
Violation measur:	Not Reported	Unit of measure:	Not Reported
State mcl:	Not Reported	Cmp bdt:	04/01/2008
Cmp edt:	Not Reported		
Violation id:	79106	Orig code:	S
State:	MO	Violation Year:	2006
Contamination code:	3100	Contamination Name:	Coliform (TCR)
Violation code:	22	Violation name:	MCL, Monthly (TCR)
Rule code:	110	Rule name:	TCR
Violation measur:	Not Reported	Unit of measure:	Not Reported
State mcl:	Not Reported	Cmp bdt:	07/01/2006
Cmp edt:	07/31/2006		
Violation ID:	#0001	Orig Code:	F
Enforcemnt FY:	2008	Enforcement Action:	05/02/2008
Enforcement Detail:	Fed Violation/Reminder Notice		

Enforcement Category: Informal

Violation ID: #0001 Orig Code: F
Enforcemnt FY: 2008 Enforcement Action: 05/12/2008
Enforcement Detail: Fed Compliance achieved Enforcement Category: Resolving

Violation ID: 2000 Orig Code: S
Enforcemnt FY: 2000 Enforcement Action: 04/26/2000
Enforcement Detail: St Compliance achieved Enforcement Category: Resolving

Violation ID: 597 Orig Code: S
Enforcemnt FY: 2014 Enforcement Action: 01/22/2014
Enforcement Detail: St Compliance achieved Enforcement Category: Resolving

Violation ID: 697 Orig Code: S
Enforcemnt FY: 2014 Enforcement Action: 01/22/2014
Enforcement Detail: St Compliance achieved Enforcement Category: Resolving

Violation ID: 79106 Orig Code: S
Enforcemnt FY: 2006 Enforcement Action: 08/21/2006
Enforcement Detail: St Public Notif requested Enforcement Category: Informal

Violation ID: 79106 Orig Code: S
Enforcemnt FY: 2006 Enforcement Action: 08/21/2006
Enforcement Detail: St Violation/Reminder Notice
Enforcement Category: Informal

Violation ID: 79106 Orig Code: S
Enforcemnt FY: 2006 Enforcement Action: 09/22/2006
Enforcement Detail: St Public Notif received Enforcement Category: Informal

Violation ID: 79106 Orig Code: S
Enforcemnt FY: 2014 Enforcement Action: 01/22/2014
Enforcement Detail: St Compliance achieved Enforcement Category: Resolving

PWS name: FRANKLIN CO PWSD #3 Population served: 6800
PWS type code: C Violation ID: 79106
Contaminant: Coliform (Tcr)
Violation type: Max Contaminant Level, Monthly (TCR)
Compliance start date: 7/1/2006 0:00:00 Compliance end date: 7/31/2006 0:00:00
Enforcement date: 8/21/2006 0:00:00 Enforcement action: State Violation/Reminder Notice
Violation measurement: Not Reported

PWS name: FRANKLIN CO PWSD #3 Population served: 6800
PWS type code: C Violation ID: 79106
Contaminant: Coliform (Tcr)
Violation type: Max Contaminant Level, Monthly (TCR)
Compliance start date: 7/1/2006 0:00:00 Compliance end date: 7/31/2006 0:00:00
Enforcement date: 8/21/2006 0:00:00 Enforcement action: State Public Notif Requested
Violation measurement: Not Reported

PWS name: FRANKLIN CO PWSD #3 Population served: 6800
PWS type code: C Violation ID: 79106
Contaminant: Coliform (Tcr)
Violation type: Max Contaminant Level, Monthly (TCR)
Compliance start date: 7/1/2006 0:00:00 Compliance end date: 7/31/2006 0:00:00
Enforcement date: 9/22/2006 0:00:00 Enforcement action: State Public Notif Received
Violation measurement: Not Reported

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

15
NW
1/2 - 1 Mile
Lower

MO WELLS **MOLOG3000035307**

WELLS LOG:

Database:	Geologic Well Log Database		
ID:	0022262	Owner:	Long, Ellis
Well Type:	Private Well	Stratigraphy Log:	Yes
Driller Log:	No	Other Log:	No
Samples Retained:	Yes	Elevation (ft):	704
Total Depth (ft):	430	Depth to Bedrock (ft):	70
SWL After Casing Set:	320	SWL Before Casing Set:	-9999
SWL After Casing Grouting (ft):	384	SWL Before Casing Grouting (ft):	-9999
Water Noted by Driller (ft):	410’	Draw Down (ft):	-9999
Well Yield (gpm):	15		
Surface Formation:	(NO SAMPLES or NOT LOGGED)		
First Bedrock Form:	DECORAH GROUP UNDIFFERENTIATED		
Alternate ID 1:	None	Alternate ID 3:	None
SDWIS ID:	-99999	WIMS ID:	None
Oil and Gas ID:	None	Other Database ID:	None
Mineral Bore Hole ID:	None	Additional Databases Linked:	Not Reported
Drill Date:	19630805	Driller:	Shepards Well Drilling Co
Logger:	Groves, H.M.	Log Date:	19640310
Geological Structures:	No	Interval Core Top (ft):	0
Interval Core Bottom (ft):	0		
Remarks:	1.25 Mi N Of Hwy 100 On Little Tavern Creek Rd		
URL:	https://info.mo.gov/dnr/DNR_GIS/geology/wrc/logmain/striplogs/0022262.pdf		

16
East
1/2 - 1 Mile
Lower

FED USGS **USGS40000694166**

Organization ID:	USGS-MO	Organization Name:	USGS Missouri Water Science Center
Monitor Location:	T44N R03E 19CDD1	Type:	Well
Description:	Not Reported	HUC:	07140102
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Ozark Plateaus aquifer system		
Formation Type:	Everton Formation	Aquifer Type:	Not Reported
Construction Date:	19400000	Well Depth:	325
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1940-10-01
Feet below surface:	122	Feet to sea level:	Not Reported
Note:	Not Reported		

17
SSE
1/2 - 1 Mile
Lower

MO WELLS **MOLOG3000035108**

WELLS LOG:

Database:	Geologic Well Log Database		
ID:	0013828	Owner:	Laretto, J.D.
Well Type:	Private Well	Stratigraphy Log:	Yes
Driller Log:	No	Other Log:	No
Samples Retained:	No	Elevation (ft):	524
Total Depth (ft):	195	Depth to Bedrock (ft):	90
SWL After Casing Set:	45	SWL Before Casing Set:	-9999
SWL After Casing Grouting (ft):	479	SWL Before Casing Grouting (ft):	-9999
Water Noted by Driller (ft):	104', 137'	Draw Down (ft):	-9999
Well Yield (gpm):	70		
Surface Formation:	(NO SAMPLES or NOT LOGGED)		
First Bedrock Form:	COTTER DOLOMITE	Alternate ID 1:	None
Alternate ID 3:	None	SDWIS ID:	-99999
WIMS ID:	None	Oil and Gas ID:	None
Other Database ID:	None	Mineral Bore Hole ID:	None
Additional Databases Linked:	Not Reported	Drill Date:	19550715
Driller:	Shepard Brothers		
Logger:	Knight, R.D.	Log Date:	19550930
Geological Structures:	No	Interval Core Top (ft):	0
Interval Core Bottom (ft):	0		
Remarks:	Yield - 70? Gpm @ 55'		
URL:	https://info.mo.gov/dnr/DNR_GIS/geology/wrc/logmain/striplogs/0013828.pdf		

18
NE
1/2 - 1 Mile
Lower

MO WELLS **MOLOG3000035332**

WELLS LOG:

Database:	Geologic Well Log Database		
ID:	0018597	Owner:	Holt, Bud
Well Type:	Private Well	Stratigraphy Log:	Yes
Driller Log:	No	Other Log:	No
Samples Retained:	No	Elevation (ft):	653
Total Depth (ft):	220	Depth to Bedrock (ft):	35
SWL After Casing Set:	40	SWL Before Casing Set:	-9999
SWL After Casing Grouting (ft):	613	SWL Before Casing Grouting (ft):	-9999
Water Noted by Driller (ft):	Not Reported	Draw Down (ft):	-9999
Well Yield (gpm):	15		
Surface Formation:	(NO SAMPLES or NOT LOGGED)		
First Bedrock Form:	JOACHIM DOLOMITE		
Alternate ID 1:	None	Alternate ID 3:	None
SDWIS ID:	-99999	WIMS ID:	None
Oil and Gas ID:	None	Other Database ID:	None
Mineral Bore Hole ID:	None	Additional Databases Linked:	Not Reported
Drill Date:	19590627	Driller:	Winters Well Drlg
Logger:	Wells, J.	Log Date:	19600114
Geological Structures:	No	Interval Core Top (ft):	0
Interval Core Bottom (ft):	0		
Remarks:	Not Reported		
URL:	https://info.mo.gov/dnr/DNR_GIS/geology/wrc/logmain/striplogs/0018597.pdf		

19
NNE
1/2 - 1 Mile
Lower

MO WELLS **MOLOG3000035345**

WELLS LOG:

Database:	Geologic Well Log Database		
ID:	0025564	Owner:	Eberwein, Glen
Well Type:	Private Well	Stratigraphy Log:	Yes
Driller Log:	No	Other Log:	No
Samples Retained:	No	Elevation (ft):	636
Total Depth (ft):	275	Depth to Bedrock (ft):	10
SWL After Casing Set:	-9999	SWL Before Casing Set:	-9999
SWL After Casing Grouting (ft):	-9999	SWL Before Casing Grouting (ft):	-9999
Water Noted by Driller (ft):	Not Reported	Draw Down (ft):	-9999
Well Yield (gpm):	20		
Surface Formation:	(NO SAMPLES or NOT LOGGED)		
First Bedrock Form:	PLATTIN LIMESTONE		
Alternate ID 1:	None	Alternate ID 3:	None
SDWIS ID:	-99999	WIMS ID:	None
Oil and Gas ID:	None	Other Database ID:	None
Mineral Bore Hole ID:	None	Additional Databases Linked:	Not Reported
Drill Date:	19670810	Driller:	Shepard Drilling Co
Logger:	Thacker, J.	Log Date:	Not Reported
Geological Structures:	No	Interval Core Top (ft):	0
Interval Core Bottom (ft):	0		
Remarks:	No Samples Logged, Tops Only; Yield - 20 Gpm @ 175’		
URL:	https://info.mo.gov/dnr/DNR_GIS/geology/wrc/logmain/striplogs/0025564.pdf		

20
East
1/2 - 1 Mile
Lower

FED USGS **USGS40000694158**

Organization ID:	USGS-MO	Organization Name:	USGS Missouri Water Science Center
Monitor Location:	T44N R03E 30ABB1	Type:	Well
Description:	Not Reported	HUC:	07140102
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Ozark Plateaus aquifer system		
Formation Type:	Powell Dolomite	Aquifer Type:	Not Reported
Construction Date:	19560000	Well Depth:	226
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1956-08-01
Feet below surface:	50	Feet to sea level:	Not Reported
Note:	Not Reported		

21
East
1/2 - 1 Mile
Lower

MO WELLS **MOLOG3000035210**

WELLS LOG:

Database:	Geologic Well Log Database		
ID:	0006646	Owner:	Grove, E.W.
Well Type:	Private Well	Stratigraphy Log:	Yes
Driller Log:	No	Other Log:	No
Samples Retained:	Yes	Elevation (ft):	613
Total Depth (ft):	325	Depth to Bedrock (ft):	25
SWL After Casing Set:	122	SWL Before Casing Set:	-9999
SWL After Casing Grouting (ft):	491	SWL Before Casing Grouting (ft):	-9999
Water Noted by Driller (ft):	Not Reported	Draw Down (ft):	88

Well Yield (gpm):	30		
Surface Formation:	(NO SAMPLES or NOT LOGGED)		
First Bedrock Form:	PLATTIN GROUP UNDIFFERENTIATED		
Alternate ID 1:	None	Alternate ID 3:	None
SDWIS ID:	-99999	WIMS ID:	None
Oil and Gas ID:	None	Other Database ID:	None
Mineral Bore Hole ID:	None	Additional Databases Linked:	Not Reported
Drill Date:	19401007	Driller:	Koebel & Koebel
Logger:	Grohskopf, J.	Log Date:	Not Reported
Geological Structures:	No	Interval Core Top (ft):	0
Interval Core Bottom (ft):	0		
Remarks:	On W Sd Fox Creek Rd 1 Mi S Of Hwy 50, 'Sky Meadows		
URL:	https://info.mo.gov/dnr/DNR_GIS/geology/wrc/logmain/striplogs/0006646.pdf		

B22
ENE
1/2 - 1 Mile
Lower

FED USGS **USGS40000694218**

Organization ID:	USGS-MO	Organization Name:	USGS Missouri Water Science Center
Monitor Location:	T44N R03E 19BDD1	Type:	Well
Description:	Not Reported	HUC:	07140102
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Ozark Plateaus aquifer system		
Formation Type:	St Peter Sandstone	Aquifer Type:	Not Reported
Construction Date:	19640000	Well Depth:	203
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1964-01-01
Feet below surface:	15	Feet to sea level:	Not Reported
Note:	Not Reported		

23
SW
1/2 - 1 Mile
Lower

MO WELLS **MOLOG3000035141**

WELLS LOG:

Database:	Geologic Well Log Database		
ID:	0018364	Owner:	Burke, Richard
Well Type:	Private Well	Stratigraphy Log:	Yes
Driller Log:	No	Other Log:	No
Samples Retained:	Yes	Elevation (ft):	759
Total Depth (ft):	400	Depth to Bedrock (ft):	40
SWL After Casing Set:	323	SWL Before Casing Set:	-9999
SWL After Casing Grouting (ft):	436	SWL Before Casing Grouting (ft):	-9999
Water Noted by Driller (ft):	350-400'	Draw Down (ft):	-9999
Well Yield (gpm):	10		
Surface Formation:	(NO SAMPLES or NOT LOGGED)		
First Bedrock Form:	PLATTIN LIMESTONE		
Alternate ID 1:	None	Alternate ID 3:	None
SDWIS ID:	-99999	WIMS ID:	None
Oil and Gas ID:	None	Other Database ID:	None
Mineral Bore Hole ID:	None	Additional Databases Linked:	Not Reported
Drill Date:	19590505	Driller:	Shepard Well Drilling Co
Logger:	Groves, H.M.	Log Date:	19590914

Geological Structures:	Yes	Interval Core Top (ft):	0
Interval Core Bottom (ft):	0		
Remarks:	4 Mi E Of Gray Summit On Hwy 100; Yield - 10 Gpm @ 340'; Fault At Top?		
URL:	https://info.mo.gov/dnr/DNR_GIS/geology/wrc/logmain/striplogs/0018364.pdf		

B24
ENE
1/2 - 1 Mile
Lower

MO WELLS **MOLOG3000035297**

WELLS LOG:

Database:	Geologic Well Log Database		
ID:	0022933	Owner:	Hagemeier, Frank
Well Type:	Private Well	Stratigraphy Log:	Yes
Driller Log:	No	Other Log:	No
Samples Retained:	Yes	Elevation (ft):	599
Total Depth (ft):	203	Depth to Bedrock (ft):	75
SWL After Casing Set:	15	SWL Before Casing Set:	-9999
SWL After Casing Grouting (ft):	584	SWL Before Casing Grouting (ft):	-9999
Water Noted by Driller (ft):	50'	Draw Down (ft):	-9999
Well Yield (gpm):	24		
Surface Formation:	(NO SAMPLES or NOT LOGGED)		
First Bedrock Form:	JOACHIM DOLOMITE		
Alternate ID 1:	None	Alternate ID 3:	None
SDWIS ID:	-99999	WIMS ID:	None
Oil and Gas ID:	None	Other Database ID:	None
Mineral Bore Hole ID:	None	Additional Databases Linked:	Not Reported
Drill Date:	19640122	Driller:	Shepard Well Drilling Co
Logger:	Wells, J.	Log Date:	196412
Geological Structures:	No	Interval Core Top (ft):	0
Interval Core Bottom (ft):	0		
Remarks:	Not Reported		
URL:	https://info.mo.gov/dnr/DNR_GIS/geology/wrc/logmain/striplogs/0022933.pdf		

25
NNW
1/2 - 1 Mile
Lower

MO WELLS **MOLOG3000035364**

WELLS LOG:

Database:	Geologic Well Log Database		
ID:	0024040	Owner:	Rollins, John R.
Well Type:	Private Well	Stratigraphy Log:	Yes
Driller Log:	No	Other Log:	No
Samples Retained:	Yes	Elevation (ft):	796
Total Depth (ft):	430	Depth to Bedrock (ft):	95
SWL After Casing Set:	321	SWL Before Casing Set:	-9999
SWL After Casing Grouting (ft):	475	SWL Before Casing Grouting (ft):	-9999
Water Noted by Driller (ft):	Not Reported	Draw Down (ft):	-9999
Well Yield (gpm):	20		
Surface Formation:	(NO SAMPLES or NOT LOGGED)		
First Bedrock Form:	PLATTIN LIMESTONE		
Alternate ID 1:	None	Alternate ID 3:	None
SDWIS ID:	-99999	WIMS ID:	None
Oil and Gas ID:	None	Other Database ID:	None
Mineral Bore Hole ID:	None	Additional Databases Linked:	Not Reported
Drill Date:	19651207	Driller:	Shepard Well Drilling Co
Logger:	Robertson, C.E.	Log Date:	196610

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Geological Structures:	No	Interval Core Top (ft):	0
Interval Core Bottom (ft):	0		
Remarks:	1 Mi N Of Hwy 100 On Little Tavern Ck Rd; Yield - 20 Gpm @ 371;		
URL:	https://info.mo.gov/dnr/DNR_GIS/geology/wrc/logmain/striplogs/0024040.pdf		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: MO Radon

Radon Test Results

Zipcode	Test Date	Result
63069	12/22/08	3.5
63069	02/02/08	7.1
63069	02/28/09	3.8
63069	03/15/07	3.2
63069	03/17/08	1.7
63069	06/02/08	1.1
63069	07/17/08	3.7
63069	08/30/07	1.2
63069	09/01/07	1.6
63069	09/09/08	6.9
63069	06/20/07	2.4
63069	05/05/08	3.1
63069	05/08/08	9

Federal EPA Radon Zone for FRANKLIN County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 63069

Number of sites tested: 3

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.650 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	3.167 pCi/L	67%	33%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005, 2010 and 2015 from the U.S. Fish and Wildlife Service.

State Wetlands Data: National Wetland Inventory of Missouri
Source: Department of Natural Resources
Telephone: 573-751-5110

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Missouri Public Drinking Water Wells
Source: Department of Natural Resources
Telephone: 573-526-5448

Missouri Geologic Well Log Database
Source: Department of Natural Resources
Telephone: 573-526-5448

OTHER STATE DATABASE INFORMATION

Oil and Gas Well Database
Source: Department of Natural Resources
Telephone: 573-368-2143

RADON

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary faultlines, prepared in 1975 by the United State Geological Survey

PHYSICAL SETTING SOURCE RECORDS SEARCHED

STREET AND ADDRESS INFORMATION

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Meramec Ambulance District
385 Old Manchester Road
Pacific, MO 63069

Inquiry Number: 08194693.2r
December 10, 2025

EDR Summary Radius Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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LIGHTBOX LIVE

Open LightBox Live to access data, tools, and advanced analytics in one online platform.

http://www.web.edrnet.com/ordering/switchboard/login.aspx?s=goto_lightbox&pguid=5BDADDD0-134E-48BD-8866-F78C3404EA9E

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E1527 - 21), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E2247 - 23), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E1528 - 22) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

385 OLD MANCHESTER ROAD
PACIFIC, MO 63069

COORDINATES

Latitude (North):	38.5352130 - 38° 32' 6.76''
Longitude (West):	90.7426960 - 90° 44' 33.70''
Universal Tranverse Mercator:	Zone 15
UTM X (Meters):	696752.8
UTM Y (Meters):	4267409.0
Elevation:	803 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property:	TP
Source:	U.S. Geological Survey

Target Property:	NW
Source:	U.S. Geological Survey

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20220618
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
385 OLD MANCHESTER ROAD
PACIFIC, MO 63069

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION

NO MAPPED SITES FOUND

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

SURROUNDING SITES: SEARCH RESULTS

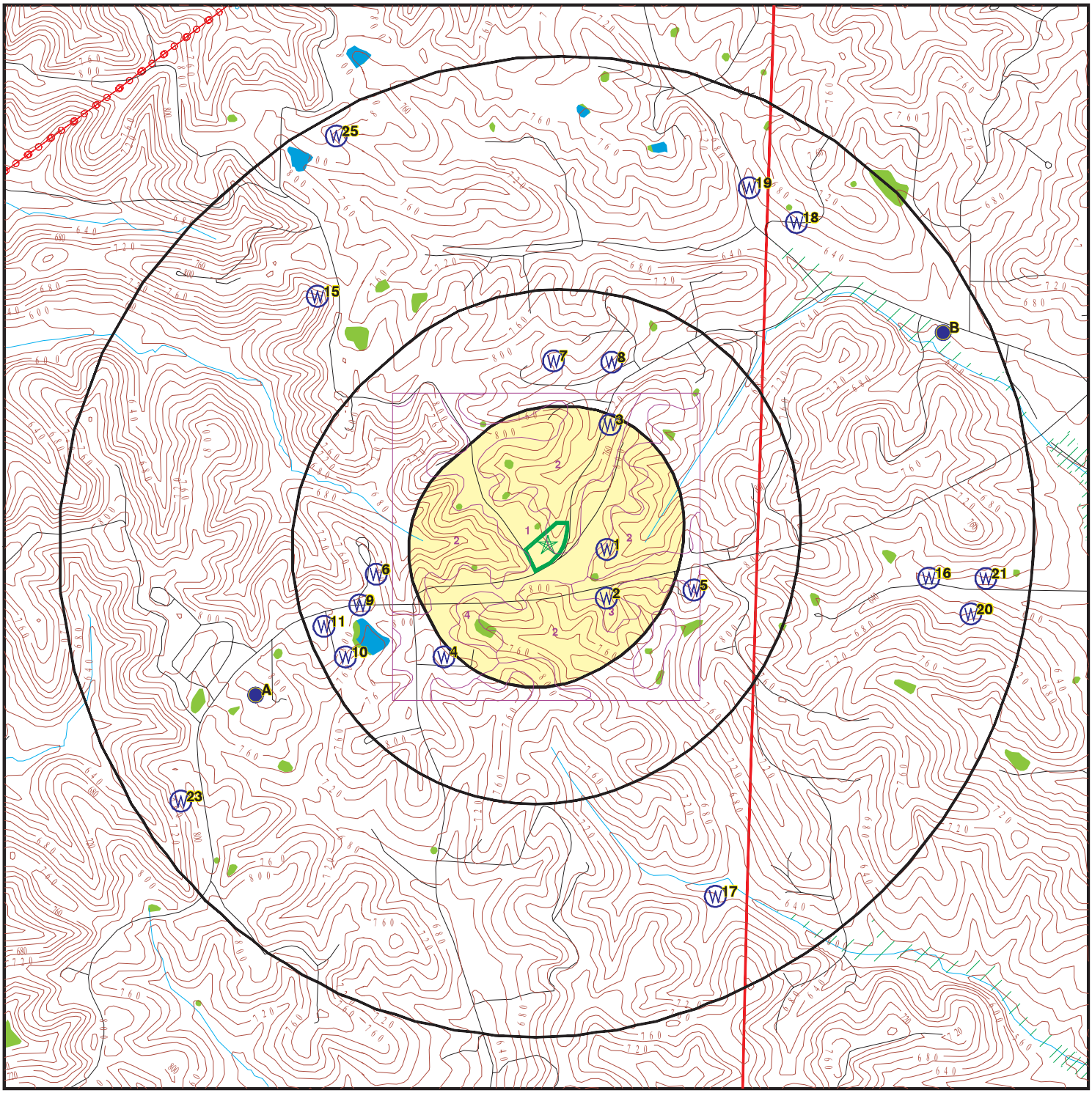
Surrounding sites were not identified.

Unmappable (orphan) sites are not considered in the foregoing analysis.

Count: 1 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
PACIFIC	S106877094	GRAY SUMMIT LAUNDRY	HIGHWAY 100	63069	DRYCLEANERS

OVERVIEW MAP - 08194693.2R



0 1/4 1/2 1 Miles

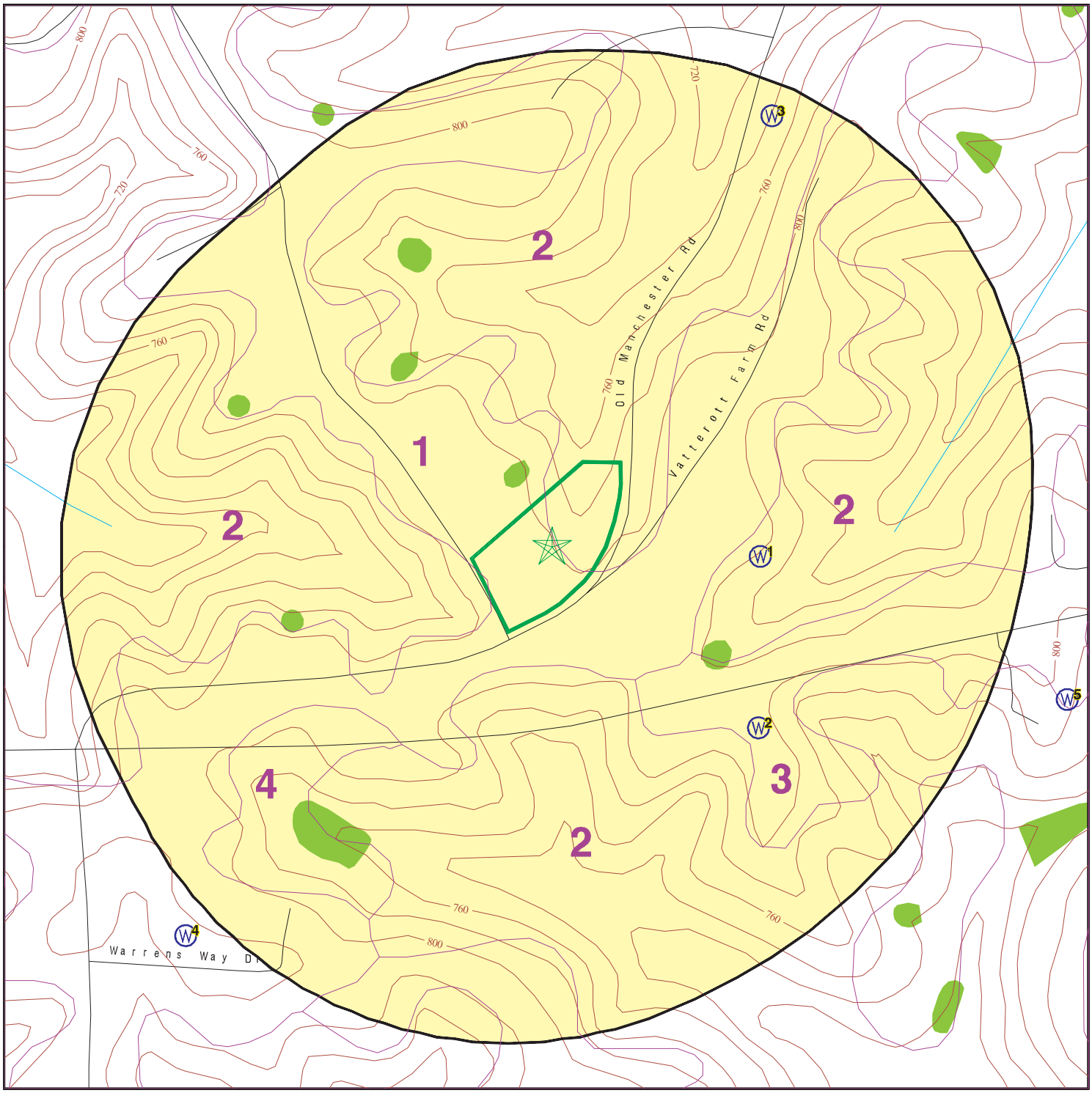
- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- County Boundary
- Power transmission lines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Meramec Ambulance District	CLIENT:	Sitex Environmental, Inc.
ADDRESS:	385 Old Manchester Road Pacific MO 63069	CONTACT:	Mackenzie Wagner
		INQUIRY #:	08194693.2r
LAT/LONG:	38.535213 / 90.742696	DATE:	December 10, 2025 9:54 am

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DETAIL MAP - 08194693.2R



Target Property
Sites at elevations higher than or equal to the target property
Sites at elevations lower than the target property
Manufactured Gas Plants
Sensitive Receptors
National Priority List Sites
Dept. Defense Sites

0 1/16 1/8 1/4 Miles

Indian Reservations BIA
Special Flood Hazard Area (1%)
0.2% Annual Chance Flood Hazard
National Wetland Inventory
State Wetlands

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Meramec Ambulance District	CLIENT:	Sitex Environmental, Inc.
ADDRESS:	385 Old Manchester Road Pacific MO 63069	CONTACT:	Mackenzie Wagner
		INQUIRY #:	08194693.2r
LAT/LONG:	38.535213 / 90.742696	DATE:	December 10, 2025 9:57 am

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Lists of Federal NPL (Superfund) sites								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Lists of Federal Delisted NPL sites								
Delisted NPL	1.000		0	0	0	0	NR	0
Lists of Federal sites subject to CERCLA removals and CERCLA orders								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Lists of Federal CERCLA sites with NFRAP								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA facilities undergoing Corrective Action								
CORRACTS	1.000		0	0	0	0	NR	0
Lists of Federal RCRA TSD facilities								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA generators								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-VSQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROLS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
Lists of state- and tribal hazardous waste facilities								
SHWS	1.000		0	0	0	0	NR	0
Lists of state and tribal landfills and solid waste disposal facilities								
SWF/LF	0.500		0	0	0	NR	NR	0
Lists of state and tribal leaking storage tanks								
LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LAST	0.500		0	0	0	NR	NR	0
INDIAN LUST	0.500		0	0	0	NR	NR	0
Lists of state and tribal registered storage tanks								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
TANKS	0.250		0	0	NR	NR	NR	0
State and tribal institutional control / engineering control registries								
AUL	0.500		0	0	0	NR	NR	0
Lists of state and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
Lists of state and tribal brownfield sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
SWRCY	0.500		0	0	0	NR	NR	0
HIST LF	0.500		0	0	0	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
DEL SHWS	1.000		0	0	0	0	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
Local Land Records								
LIENS 2	TP		NR	NR	NR	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
SPILLS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
MINES MRDS	0.250		0	0	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
ECHO	TP		NR	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
PFAS NPL	0.250		0	0	NR	NR	NR	0
PFAS FEDERAL SITES	0.250		0	0	NR	NR	NR	0
PFAS TRIS	0.250		0	0	NR	NR	NR	0
PFAS TSCA	0.250		0	0	NR	NR	NR	0
PFAS RCRA MANIFEST	0.250		0	0	NR	NR	NR	0
PFAS ATSDR	0.250		0	0	NR	NR	NR	0
PFAS WQP	0.250		0	0	NR	NR	NR	0
PFAS PROJECT	0.250		0	0	NR	NR	NR	0
PFAS NPDES	0.250		0	0	NR	NR	NR	0
PFAS ECHO	0.250		0	0	NR	NR	NR	0
PFAS ECHO FIRE TRAIN	0.250		0	0	NR	NR	NR	0
PFAS PT 139 AIRPORT	0.250		0	0	NR	NR	NR	0
AQUEOUS FOAM NRC	0.250		0	0	NR	NR	NR	0
BIOSOLIDS	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
UST FINDER RELEASE	0.500		0	0	0	NR	NR	0
UST FINDER	0.250		0	0	NR	NR	NR	0
E MANIFEST	0.250		0	0	NR	NR	NR	0
PFAS	0.250		0	0	NR	NR	NR	0
AIRS	TP		NR	NR	NR	NR	NR	0
ASBESTOS	TP		NR	NR	NR	NR	NR	0
COAL ASH	0.500		0	0	0	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
MO RRC	TP		NR	NR	NR	NR	NR	0
SMARS	0.500		0	0	0	NR	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA HWS	TP		NR	NR	NR	NR	NR	0
RGA LF	TP		NR	NR	NR	NR	NR	0
RGA LUST	TP		NR	NR	NR	NR	NR	0
- Totals --		0	0	0	0	0	0	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

MAP FINDINGS

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number

NO SITES FOUND

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
MO	AIRS	Permit Facility Listing	Department of Natural Resources	05/30/2025	05/30/2025	06/11/2025
MO	ASBESTOS	Asbestos Notification Listing	Department of Natural Resources	06/24/2025	06/25/2025	09/19/2025
MO	AST	Aboveground Petroleum Storage Tanks	Department of Agriculture	08/21/2025	08/21/2025	11/14/2025
MO	AUL	Sites with Controls	Department of Natural Resources	10/02/2025	11/12/2025	11/19/2025
MO	BROWNFIELDS	Brownfields Site List	Department of Natural Resources	10/02/2025	11/12/2025	11/19/2025
MO	CDL	Environmental Emergency Response System	Department of Natural Resources	06/03/2024	06/04/2024	06/07/2024
MO	COAL ASH	Coal Ash Disposal Sites	Department of Natural Resources	01/03/2018	02/01/2018	03/22/2018
MO	DEL SHWS	Registry Sites Withdrawn or Deleted	Department of Natural Resources	09/02/2025	09/04/2025	11/26/2025
MO	DRYCLEANERS	Drycleaners in Missouri Listing	Department of Natural Resources	05/28/2025	06/11/2025	06/24/2025
MO	FIN ASSURANCE 1	Financial Assurance Information Listing	Department of Natural Resources	09/11/2025	09/17/2025	09/23/2025
MO	FIN ASSURANCE 2	Financial Assurance Information Listing	Department of Natural Resources	12/19/2022	02/28/2023	05/17/2023
MO	HIST LF	Solid Waste Facility Database List	Department of Natural Resources	04/12/2005	07/19/2006	08/18/2006
MO	HWS DETAIL	Registry Annual Report	Department of Natural Resources	06/30/2024	02/26/2025	05/14/2025
MO	LAST	Leaking Aboveground Storage Tanks	Department of Natural Resources	11/17/2025	11/21/2025	11/25/2025
MO	LUST	Leaking Underground Storage Tanks	Department of Natural Resources	11/17/2025	11/21/2025	11/25/2025
MO	MINES	Industrial Mineral Mines Database	Department of Natural Resources	04/30/2021	07/14/2021	10/07/2021
MO	NPDES	Permitted Facility Listing	Department of Natural Resources	09/17/2025	10/01/2025	10/09/2025
MO	PFAS	PFAS Detections	Department of Natural Resources	09/24/2025	10/21/2025	10/29/2025
MO	RGA HWS	Recovered Government Archive State Hazardous Waste Facilitie	Department of Natural Resources		07/01/2013	01/03/2014
MO	RGA LF	Recovered Government Archive Solid Waste Facilities List	Department of Natural Resources		07/01/2013	01/15/2014
MO	RGA LUST	Recovered Government Archive Leaking Underground Storage Tan	Department of Natural Resources		07/01/2013	01/03/2014
MO	RRC	Certified Hazardous Waste Resource Recovery Facilities	Department of Natural Resources	09/30/2020	10/06/2020	12/28/2020
MO	SHWS	Registry of Confirmed Abandoned or Uncontrolled Hazardous Wa	Department of Natural Resources	09/02/2025	09/04/2025	11/26/2025
MO	SMARS	Site Management and Reporting System	Department of Natural Resources	07/11/2025	07/16/2025	08/19/2025
MO	SPILLS	Environmental Response Tracking Database	Department of Natural Resources	06/03/2024	06/04/2024	06/07/2024
MO	SPILLS 90	SPILLS90 data from FirstSearch	FirstSearch	06/27/2012	01/03/2013	02/22/2013
MO	SWF/LF	Solid Waste Facility List	Department of Natural Resources	08/18/2025	08/18/2025	11/05/2025
MO	SWRCY	Solid Waste Recycling Facilities	Department of Natural Resources	11/20/2024	11/22/2024	02/13/2025
MO	TANKS	Underground Storage Tank Database	Department of Natural Resources	11/17/2025	11/21/2025	11/25/2025
MO	UIC	Underground Injection Wells Database	Department of Natural Resources	08/16/2025	08/11/2025	09/10/2025
MO	UST	Petroleum Storage Tanks	Department of Natural Resources	11/17/2025	11/21/2025	11/25/2025
MO	VCP	Sites Participating in the Voluntary Cleanup Program	Department of Natural Resources	10/02/2025	11/12/2025	11/19/2025
US	2020 COR ACTION	2020 Corrective Action Program List	Environmental Protection Agency	09/30/2017	05/08/2018	07/20/2018
US	ABANDONED MINES	Abandoned Mines	Department of Interior	09/10/2025	09/10/2025	11/12/2025
US	AQUEOUS FOAM NRC	Aqueous Foam Related Incidents Listing	Environmental Protection Agency	09/25/2025	09/26/2025	11/24/2025
US	BIOSOLIDS	ICIS-NPDES Biosolids Facility Data	Environmental Protection Agency	07/06/2025	07/10/2025	10/02/2025
US	BRS	Biennial Reporting System	EPA/NTIS	12/31/2023	02/19/2025	03/07/2025
US	COAL ASH DOE	Steam-Electric Plant Operation Data	Department of Energy	12/31/2023	10/16/2024	01/14/2025
US	COAL ASH EPA	Coal Combustion Residues Surface Impoundments List	Environmental Protection Agency	01/12/2017	03/05/2019	11/11/2019
US	CONSENT	Superfund (CERCLA) Consent Decrees	Department of Justice, Consent Decree Library	06/30/2025	07/29/2025	10/28/2025
US	CORRACTS	Corrective Action Report	EPA	06/02/2025	06/03/2025	06/16/2025
US	DEBRIS REGION 9	Torres Martinez Reservation Illegal Dump Site Locations	EPA, Region 9	01/12/2009	05/07/2009	09/21/2009
US	DOCKET HWC	Hazardous Waste Compliance Docket Listing	Environmental Protection Agency	05/06/2021	05/21/2021	08/11/2021
US	DOD	Department of Defense Sites	USGS	06/07/2021	07/13/2021	03/09/2022
US	DOT OPS	Incident and Accident Data	Department of Transporation, Office of Pipeli	06/30/2025	07/17/2025	10/13/2025
US	Delisted NPL	National Priority List Deletions	EPA	09/29/2025	10/01/2025	10/28/2025
US	E MANIFEST	Hazardous Waste Electronic Manifest System	Environmental Protection Agency	06/02/2025	06/04/2025	08/13/2025

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
US	ECHO	Enforcement & Compliance History Information	Environmental Protection Agency	09/20/2025	09/26/2025	11/24/2025
US	EDR Hist Auto	EDR Exclusive Historical Auto Stations	EDR, Inc.			
US	EDR Hist Cleaner	EDR Exclusive Historical Cleaners	EDR, Inc.			
US	EDR MGP	EDR Proprietary Manufactured Gas Plants	EDR, Inc.			
US	EPA WATCH LIST	EPA Watch List	Environmental Protection Agency	08/30/2013	03/21/2014	06/17/2014
US	ERNS	Emergency Response Notification System	National Response Center, United States Coast	06/10/2025	06/12/2025	06/16/2025
US	FEDERAL FACILITY	Federal Facility Site Information listing	Environmental Protection Agency	09/22/2025	09/23/2025	11/18/2025
US	FEDLAND	Federal and Indian Lands	U.S. Geological Survey	04/02/2018	04/11/2018	11/06/2019
US	FEMA UST	Underground Storage Tank Listing	FEMA	06/06/2025	08/26/2025	11/12/2025
US	FINDS	Facility Index System/Facility Registry System	EPA	09/04/2025	10/01/2025	11/18/2025
US	FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fu	EPA/Office of Prevention, Pesticides and Toxi	04/09/2009	04/16/2009	05/11/2009
US	FTTS INSP	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fu	EPA	04/09/2009	04/16/2009	05/11/2009
US	FUDS	Formerly Used Defense Sites	U.S. Army Corps of Engineers	07/23/2025	07/23/2025	07/29/2025
US	FUELS PROGRAM	EPA Fuels Program Registered Listing	EPA	08/07/2025	08/07/2025	11/04/2025
US	FUSRAP	Formerly Utilized Sites Remedial Action Program	Department of Energy	03/03/2023	03/03/2023	06/09/2023
US	HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing	Environmental Protection Agency	10/19/2006	03/01/2007	04/10/2007
US	HIST FTTS INSP	FIFRA/TSCA Tracking System Inspection & Enforcement Case Lis	Environmental Protection Agency	10/19/2006	03/01/2007	04/10/2007
US	HMIRS	Hazardous Materials Information Reporting System	U.S. Department of Transportation	06/11/2025	06/12/2025	06/16/2025
US	ICIS	Integrated Compliance Information System	Environmental Protection Agency	11/18/2016	11/23/2016	02/10/2017
US	IHS OPEN DUMPS	Open Dumps on Indian Land	Department of Health & Human Serivces, Indian	02/07/2024	11/13/2024	11/19/2024
US	INDIAN LUST R1	Leaking Underground Storage Tanks on Indian Land	EPA Region 1	04/21/2025	07/10/2025	10/02/2025
US	INDIAN LUST R10	Leaking Underground Storage Tanks on Indian Land	EPA Region 10	05/27/2025	07/10/2025	10/02/2025
US	INDIAN LUST R4	Leaking Underground Storage Tanks on Indian Land	EPA Region 4	04/21/2025	07/10/2025	10/02/2025
US	INDIAN LUST R5	Leaking Underground Storage Tanks on Indian Land	EPA, Region 5	04/21/2025	07/10/2025	10/02/2025
US	INDIAN LUST R6	Leaking Underground Storage Tanks on Indian Land	EPA Region 6	04/21/2025	07/10/2025	10/02/2025
US	INDIAN LUST R7	Leaking Underground Storage Tanks on Indian Land	EPA Region 7	05/22/2025	07/10/2025	10/02/2025
US	INDIAN LUST R8	Leaking Underground Storage Tanks on Indian Land	EPA Region 8	05/22/2025	07/10/2025	10/02/2025
US	INDIAN LUST R9	Leaking Underground Storage Tanks on Indian Land	Environmental Protection Agency	04/21/2025	07/10/2025	10/02/2025
US	INDIAN ODI	Report on the Status of Open Dumps on Indian Lands	Environmental Protection Agency	12/31/1998	12/03/2007	01/24/2008
US	INDIAN RESERV	Indian Reservations	USGS	12/31/2014	07/14/2015	01/10/2017
US	INDIAN UST R1	Underground Storage Tanks on Indian Land	EPA, Region 1	04/21/2025	07/10/2025	10/02/2025
US	INDIAN UST R10	Underground Storage Tanks on Indian Land	EPA Region 10	05/27/2025	07/10/2025	10/02/2025
US	INDIAN UST R4	Underground Storage Tanks on Indian Land	EPA Region 4	04/21/2025	07/10/2025	10/02/2025
US	INDIAN UST R5	Underground Storage Tanks on Indian Land	EPA Region 5	04/21/2025	07/10/2025	10/02/2025
US	INDIAN UST R6	Underground Storage Tanks on Indian Land	EPA Region 6	04/21/2025	07/10/2025	10/02/2025
US	INDIAN UST R7	Underground Storage Tanks on Indian Land	EPA Region 7	05/22/2025	07/10/2025	10/02/2025
US	INDIAN UST R8	Underground Storage Tanks on Indian Land	EPA Region 8	05/22/2025	07/10/2025	10/02/2025
US	INDIAN UST R9	Underground Storage Tanks on Indian Land	EPA Region 9	04/21/2025	07/10/2025	10/02/2025
US	INDIAN VCP R1	Voluntary Cleanup Priority Listing	EPA, Region 1	07/27/2015	09/29/2015	02/18/2016
US	INDIAN VCP R7	Voluntary Cleanup Priority Lisitng	EPA, Region 7	03/20/2008	04/22/2008	05/19/2008
US	LEAD SMELTER 1	Lead Smelter Sites	Environmental Protection Agency	09/29/2025	10/01/2025	10/28/2025
US	LEAD SMELTER 2	Lead Smelter Sites	American Journal of Public Health	04/05/2001	10/27/2010	12/02/2010
US	LIENS 2	CERCLA Lien Information	Environmental Protection Agency	09/29/2025	10/01/2025	10/28/2025
US	LUCIS	Land Use Control Information System	Department of the Navy	03/11/2025	04/02/2025	06/24/2025
US	MINES MRDS	Mineral Resources Data System	USGS	06/04/2024	11/22/2024	02/18/2025
US	MINES VIOLATIONS	MSHA Violation Assessment Data	DOL, Mine Safety & Health Admi	07/01/2025	07/01/2025	09/24/2025
US	MLTS	Material Licensing Tracking System	Nuclear Regulatory Commission	08/11/2025	08/12/2025	11/04/2025

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
US	NPL	National Priority List	EPA	09/29/2025	10/01/2025	10/28/2025
US	NPL LIENS	Federal Superfund Liens	EPA	10/15/1991	02/02/1994	03/30/1994
US	ODI	Open Dump Inventory	Environmental Protection Agency	06/30/1985	08/09/2004	09/17/2004
US	PADS	PCB Activity Database System	EPA	08/12/2025	09/30/2025	11/24/2025
US	PCB TRANSFORMER	PCB Transformer Registration Database	Environmental Protection Agency	09/13/2019	11/06/2019	02/10/2020
US	PCS	Permit Compliance System	EPA, Office of Water	12/16/2016	01/06/2017	03/10/2017
US	PCS ENF	Enforcement data	EPA	12/31/2014	02/05/2015	03/06/2015
US	PFAS ATSDR	PFAS Contamination Site Location Listing	Department of Health & Human Services	11/12/2024	07/21/2025	10/13/2025
US	PFAS ECHO	Facilities in Industries that May Be Handling PFAS Listing	Environmental Protection Agency	06/23/2025	06/26/2025	08/27/2025
US	PFAS ECHO FIRE TRAIN	Facilities in Industries that May Be Handling PFAS Listing	Environmental Protection Agency	06/23/2025	06/26/2025	08/27/2025
US	PFAS FEDERAL SITES	Federal Sites PFAS Information	Environmental Protection Agency	06/23/2025	06/26/2025	08/27/2025
US	PFAS NPDES	Clean Water Act Discharge Monitoring Information	Environmental Protection Agency	06/23/2025	06/26/2025	08/27/2025
US	PFAS NPL	Superfund Sites with PFAS Detections Information	Environmental Protection Agency	06/23/2025	06/26/2025	08/27/2025
US	PFAS PROJECT	NORTHEASTERN UNIVERSITY PFAS PROJECT	Social Science Environmental Health Research	05/15/2024	03/06/2025	06/03/2025
US	PFAS PT 139 AIRPORT	All Certified Part 139 Airports PFAS Information Listing	Environmental Protection Agency	06/23/2025	06/26/2025	08/27/2025
US	PFAS RCRA MANIFEST	PFAS Transfers Identified In the RCRA Database Listing	Environmental Protection Agency	06/23/2025	06/26/2025	09/24/2025
US	PFAS TRIS	List of PFAS Added to the TRI	Environmental Protection Agency	06/23/2025	06/26/2025	08/27/2025
US	PFAS TSCA	PFAS Manufacture and Imports Information	Environmental Protection Agency	06/23/2025	06/26/2025	08/27/2025
US	PFAS WQP	Ambient Environmental Sampling for PFAS	Environmental Protection Agency	06/23/2025	06/26/2025	08/27/2025
US	PRP	Potentially Responsible Parties	EPA	06/26/2025	07/01/2025	07/29/2025
US	Proposed NPL	Proposed National Priority List Sites	EPA	09/29/2025	10/01/2025	10/28/2025
US	RAATS	RCRA Administrative Action Tracking System	EPA	04/17/1995	07/03/1995	08/07/1995
US	RADINFO	Radiation Information Database	Environmental Protection Agency	07/01/2019	07/01/2019	09/23/2019
US	RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated	Environmental Protection Agency	06/02/2025	06/04/2025	06/16/2025
US	RCRA-LQG	RCRA - Large Quantity Generators	Environmental Protection Agency	06/02/2025	06/04/2025	06/16/2025
US	RCRA-SQG	RCRA - Small Quantity Generators	Environmental Protection Agency	06/02/2025	06/04/2025	06/16/2025
US	RCRA-TSDF	RCRA - Treatment, Storage and Disposal	Environmental Protection Agency	06/02/2025	06/04/2025	06/16/2025
US	RCRA-VSQG	RCRA - Very Small Quantity Generators (Formerly Conditionall	Environmental Protection Agency	06/02/2025	06/04/2025	06/16/2025
US	RMP	Risk Management Plans	Environmental Protection Agency	07/01/2025	07/29/2025	10/28/2025
US	ROD	Records Of Decision	EPA	10/30/2025	11/03/2025	11/18/2025
US	SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing	Environmental Protection Agency	07/30/2021	02/03/2023	02/10/2023
US	SEMS	Superfund Enterprise Management System	EPA	09/29/2025	10/01/2025	10/28/2025
US	SEMS-ARCHIVE	Superfund Enterprise Management System Archive	EPA	09/29/2025	10/01/2025	10/28/2025
US	SSTS	Section 7 Tracking Systems	EPA	07/14/2025	07/14/2025	10/13/2025
US	TRIS	Toxic Chemical Release Inventory System	EPA	12/31/2023	08/11/2025	11/10/2025
US	TSCA	Toxic Substances Control Act	EPA	12/31/2020	06/14/2022	03/24/2023
US	UMTRA	Uranium Mill Tailings Sites	Department of Energy	05/15/2025	05/15/2025	07/29/2025
US	US AIRS (AFS)	Aerometric Information Retrieval System Facility Subsystem (	EPA	10/12/2016	10/26/2016	02/03/2017
US	US AIRS MINOR	Air Facility System Data	EPA	10/12/2016	10/26/2016	02/03/2017
US	US BROWNFIELDS	A Listing of Brownfields Sites	Environmental Protection Agency	09/19/2025	10/01/2025	11/24/2025
US	US CDL	Clandestine Drug Labs	Drug Enforcement Administration	04/04/2025	06/02/2025	08/12/2025
US	US ENG CONTROLS	Engineering Controls Sites List	Environmental Protection Agency	10/30/2025	11/11/2025	11/12/2025
US	US FIN ASSUR	Financial Assurance Information	Environmental Protection Agency	06/02/2025	06/03/2025	06/16/2025
US	US HIST CDL	National Clandestine Laboratory Register	Drug Enforcement Administration	04/04/2025	06/02/2025	08/12/2025
US	US INST CONTROLS	Institutional Controls Sites List	Environmental Protection Agency	10/30/2025	11/11/2025	11/12/2025
US	US MINES	Mines Master Index File	Department of Labor, Mine Safety and Health A	08/08/2025	08/18/2025	11/12/2025
US	US MINES 2	Ferrous and Nonferrous Metal Mines Database Listing	USGS	04/08/2025	05/20/2025	08/12/2025

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
US	US MINES 3	Active Mines & Mineral Plants Database Listing	USGS	04/14/2011	06/08/2011	09/13/2011
US	UST FINDER	UST Finder Database	Environmental Protection Agency	06/08/2023	10/04/2023	01/18/2024
US	UST FINDER RELEASE	UST Finder Releases Database	Environmental Protecton Agency	06/08/2023	10/31/2023	01/18/2024
US	UXO	Unexploded Ordnance Sites	Department of Defense	07/31/2025	08/14/2025	11/04/2025
CT	CT MANIFEST	Hazardous Waste Manifest Data	Department of Energy & Environmental Protecti	07/30/2025	07/31/2025	10/16/2025
NY	NY MANIFEST	Facility and Manifest Data	Department of Environmental Conservation	12/31/2019	11/30/2023	12/01/2023
PA	PA MANIFEST	Manifest Information	Department of Environmental Protection	06/30/2018	07/19/2019	09/10/2019
RI	RI MANIFEST	Manifest information	Department of Environmental Management	12/31/2020	11/30/2021	02/18/2022
WI	WI MANIFEST	Manifest Information	Department of Natural Resources	05/31/2018	06/19/2019	09/03/2019
US	AHA Hospitals	Sensitive Receptor: AHA Hospitals	American Hospital Association, Inc.			
US	Medical Centers	Sensitive Receptor: Medical Centers	Centers for Medicare & Medicaid Services			
US	Nursing Homes	Sensitive Receptor: Nursing Homes	National Institutes of Health			
US	Public Schools	Sensitive Receptor: Public Schools	National Center for Education Statistics			
US	Private Schools	Sensitive Receptor: Private Schools	National Center for Education Statistics			
MO	Daycare Centers	Sensitive Receptor: Licensed Child Care Facilities	Department of Health & Senior Services			
US	Flood Zones	100-year and 500-year flood zones	Emergency Management Agency (FEMA)			
US	NWI	National Wetlands Inventory	U.S. Fish and Wildlife Service			
MO	State Wetlands	National Wetland Inventory of Missouri	Department of Natural Resources			
US	Topographic Map		U.S. Geological Survey			
US	Oil/Gas Pipelines		Endeavor Business Media			
US	Electric Power Transmission Line Data		Endeavor Business Media			

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

MERAMEC AMBULANCE DISTRICT
385 OLD MANCHESTER ROAD
PACIFIC, MO 63069

TARGET PROPERTY COORDINATES

Latitude (North):	38.535213 - 38° 32' 6.77''
Longitude (West):	90.742696 - 90° 44' 33.71''
Universal Tranverse Mercator:	Zone 15
UTM X (Meters):	696752.8
UTM Y (Meters):	4267409.0
Elevation:	803 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	24318366 EUREKA, MO
Version Date:	2021
Northwest Map:	24318386 LABADIE, MO
Version Date:	2021

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

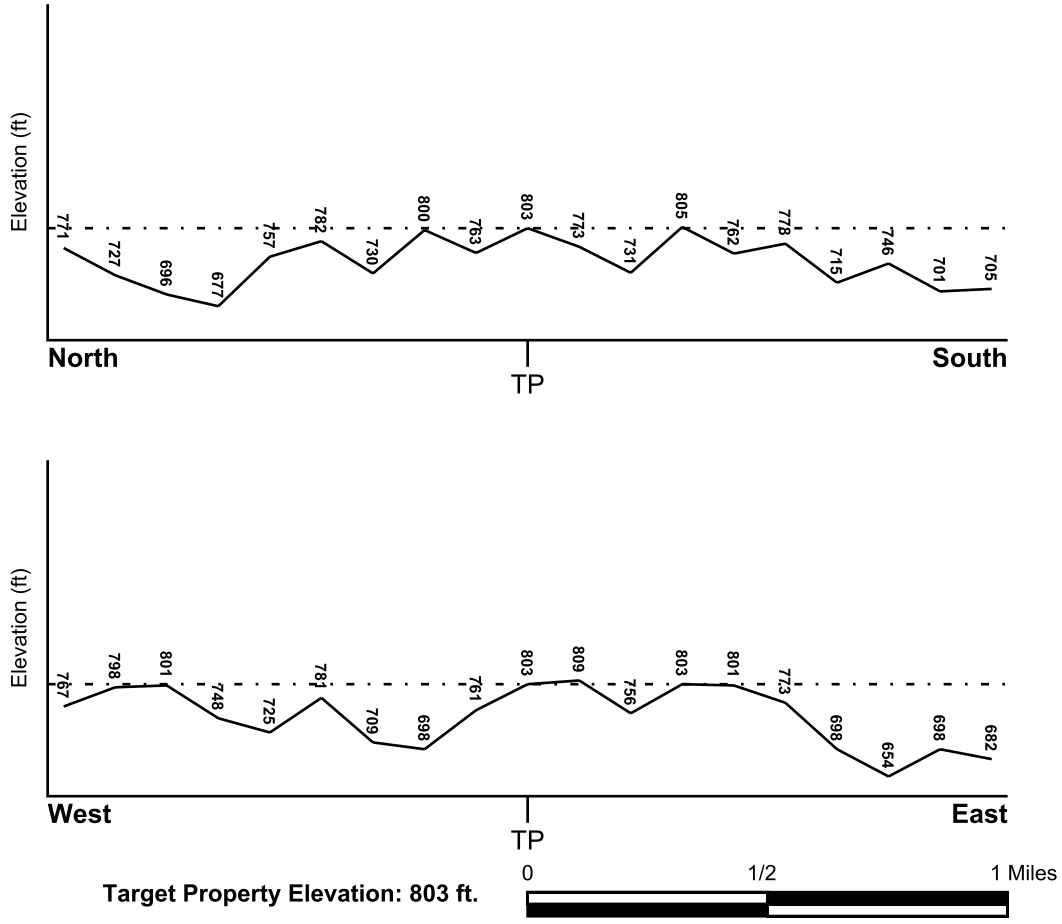
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General SW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
29071C0225D	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
29071C0195D	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
EUREKA	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

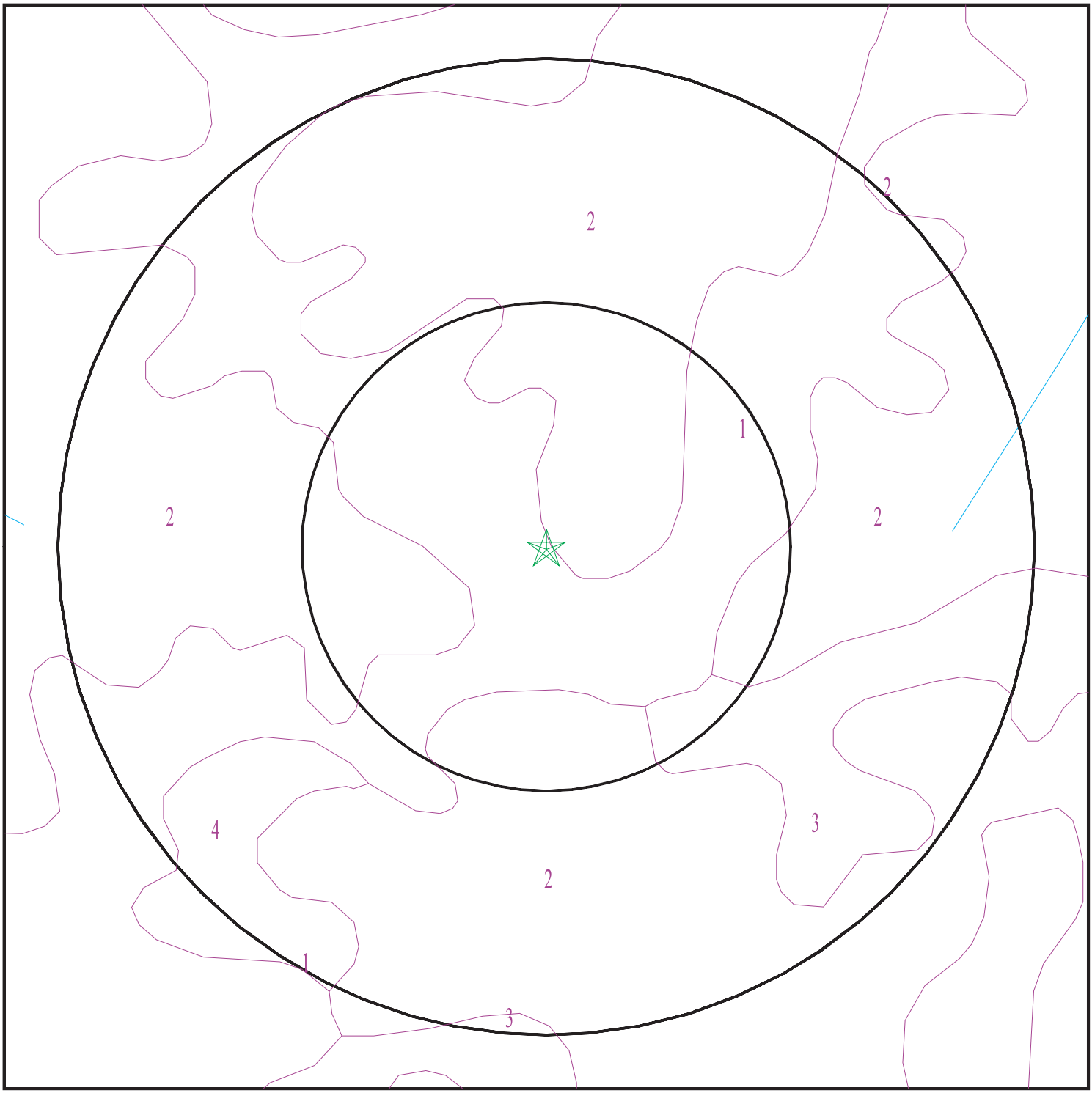
Era:	Paleozoic
System:	Ordovician
Series:	Upper Ordovician (Cincinnatian)
Code:	O3 *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratified Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 08194693.2r



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Meramec Ambulance District	CLIENT:	Sitex Environmental, Inc.
ADDRESS:	385 Old Manchester Road Pacific MO 63069	CONTACT:	Mackenzie Wagner
		INQUIRY #:	08194693.2r
LAT/LONG:	38.535213 / 90.742696	DATE:	December 10, 2025 9:59 am

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Winfield

Soil Surface Texture: silt loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Moderately well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 99 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	5 inches	silt loam	Not reported	Not reported	Max: 14 Min: 4	Max: 6.5 Min: 5.1
2	5 inches	9 inches	silt loam	Not reported	Not reported	Max: 14 Min: 4	Max: 6.5 Min: 5.1
3	9 inches	48 inches	silty clay loam	Not reported	Not reported	Max: 14 Min: 4	Max: 6.5 Min: 5.1
4	48 inches	66 inches	silt loam	Not reported	Not reported	Max: 14 Min: 4	Max: 6.5 Min: 5.1

Soil Map ID: 2

Soil Component Name: Menfro

Soil Surface Texture: silt loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 81 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	silt loam	Not reported	Not reported	Max: 14 Min: 4	Max: 7.3 Min: 5.6
2	9 inches	14 inches	silty clay loam	Not reported	Not reported	Max: 14 Min: 4	Max: 7.3 Min: 5.6
3	14 inches	44 inches	silty clay loam	Not reported	Not reported	Max: 14 Min: 4	Max: 7.3 Min: 5.6
4	44 inches	59 inches	silt loam	Not reported	Not reported	Max: 14 Min: 4	Max: 7.3 Min: 5.6

Soil Map ID: 3

Soil Component Name: Winfield

Soil Surface Texture: silt loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Moderately well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 99 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	5 inches	silt loam	Not reported	Not reported	Max: 14 Min: 4	Max: 6.5 Min: 5.1

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
2	5 inches	9 inches	silt loam	Not reported	Not reported	Max: 14 Min: 4	Max: 6.5 Min: 5.1
3	9 inches	48 inches	silty clay loam	Not reported	Not reported	Max: 14 Min: 4	Max: 6.5 Min: 5.1
4	48 inches	66 inches	silt loam	Not reported	Not reported	Max: 14 Min: 4	Max: 6.5 Min: 5.1

Soil Map ID: 4

Soil Component Name: Menfro

Soil Surface Texture: silt loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	5 inches	silt loam	Not reported	Not reported	Max: 14 Min: 4	Max: 7.3 Min: 5.6
2	5 inches	9 inches	silty clay loam	Not reported	Not reported	Max: 14 Min: 4	Max: 7.3 Min: 5.6
3	9 inches	53 inches	silty clay loam	Not reported	Not reported	Max: 14 Min: 4	Max: 7.3 Min: 5.6
4	53 inches	72 inches	silt loam	Not reported	Not reported	Max: 14 Min: 4	Max: 7.3 Min: 5.6

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
9	USGS40000694160	1/4 - 1/2 Mile WSW
16	USGS40000694166	1/2 - 1 Mile East
20	USGS40000694158	1/2 - 1 Mile East
B22	USGS40000694218	1/2 - 1 Mile ENE

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A14	MO6024213	1/2 - 1 Mile WSW

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

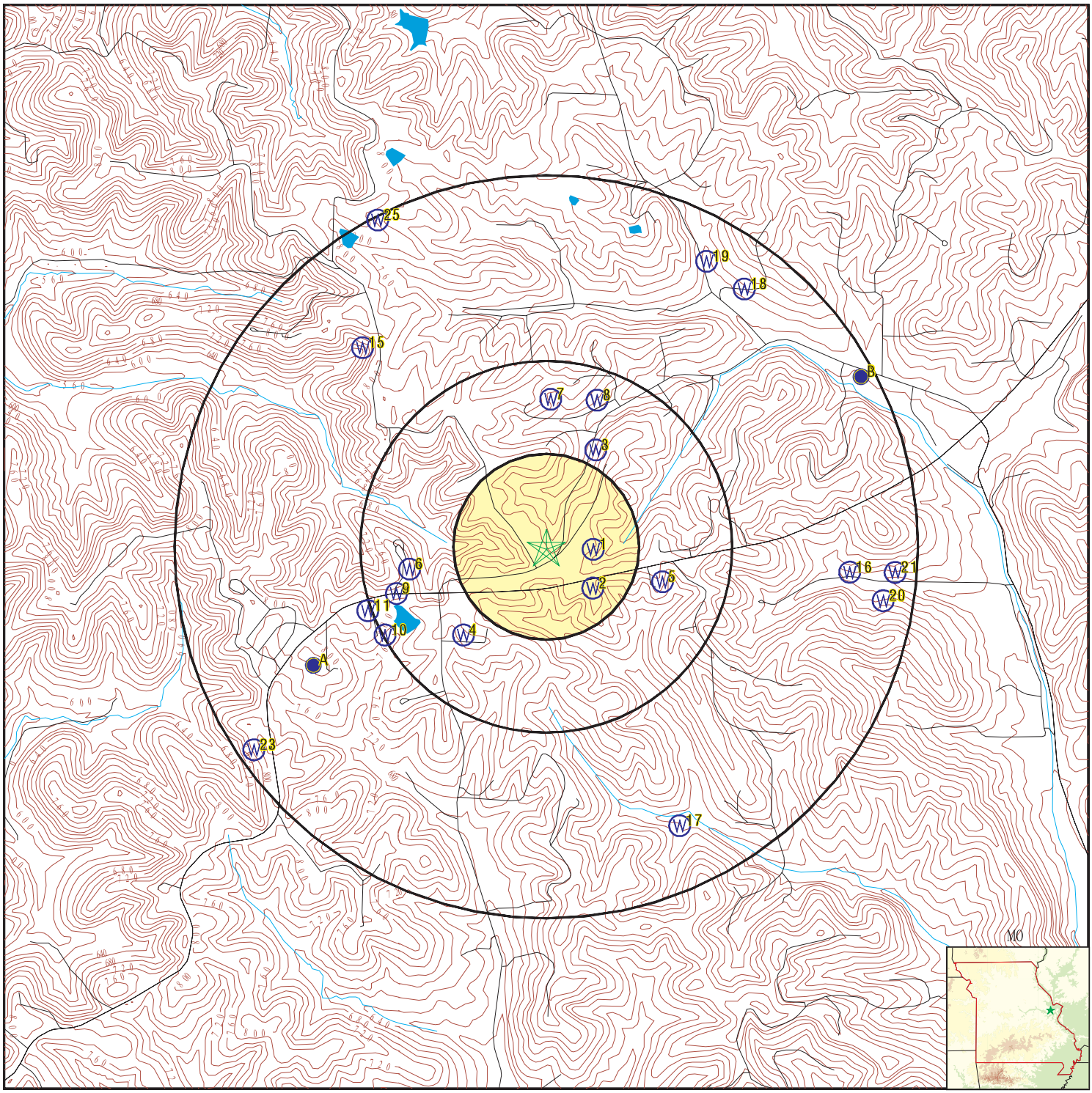
MAP ID	WELL ID	LOCATION FROM TP
1	MOLOG3000035225	1/8 - 1/4 Mile East
2	MOLOG3000035202	1/8 - 1/4 Mile SE
3	MOLOG3000035268	1/4 - 1/2 Mile NNE
4	MOLOG3000035184	1/4 - 1/2 Mile SW
5	MOLOG3000035207	1/4 - 1/2 Mile ESE
6	MOLOG3000035213	1/4 - 1/2 Mile West
7	MOLOG3000035292	1/4 - 1/2 Mile North
8	MOLOG3000035290	1/4 - 1/2 Mile NNE
10	MOLOG3000035183	1/4 - 1/2 Mile WSW
11	MOLOG3000035194	1/2 - 1 Mile WSW
A12	MOLOG3000035161	1/2 - 1 Mile WSW
A13	MO7000000002017	1/2 - 1 Mile WSW
15	MOLOG3000035307	1/2 - 1 Mile NW
17	MOLOG3000035108	1/2 - 1 Mile SSE
18	MOLOG3000035332	1/2 - 1 Mile NE
19	MOLOG3000035345	1/2 - 1 Mile NNE
21	MOLOG3000035210	1/2 - 1 Mile East

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
23	MOLOG3000035141	1/2 - 1 Mile SW
B24	MOLOG3000035297	1/2 - 1 Mile ENE
25	MOLOG3000035364	1/2 - 1 Mile NNW

PHYSICAL SETTING SOURCE MAP - 08194693.2r



- County Boundary
- Major Roads
- Contour Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- Oil, gas or related wells

SITE NAME:	Meramec Ambulance District	CLIENT:	Sitex Environmental, Inc.
ADDRESS:	385 Old Manchester Road Pacific MO 63069	CONTACT:	Mackenzie Wagner
		INQUIRY #:	08194693.2r
LAT/LONG:	38.535213 / 90.742696	DATE:	December 10, 2025 9:58 am

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation		Database	EDR ID Number
1 East 1/8 - 1/4 Mile Lower	Click here for full text details	MO WELLS	MOLOG3000035225
2 SE 1/8 - 1/4 Mile Higher	Click here for full text details	MO WELLS	MOLOG3000035202
3 NNE 1/4 - 1/2 Mile Lower	Click here for full text details	MO WELLS	MOLOG3000035268
4 SW 1/4 - 1/2 Mile Higher	Click here for full text details	MO WELLS	MOLOG3000035184
5 ESE 1/4 - 1/2 Mile Lower	Click here for full text details	MO WELLS	MOLOG3000035207
6 West 1/4 - 1/2 Mile Lower	Click here for full text details	MO WELLS	MOLOG3000035213
7 North 1/4 - 1/2 Mile Lower	Click here for full text details	MO WELLS	MOLOG3000035292
8 NNE 1/4 - 1/2 Mile Lower	Click here for full text details	MO WELLS	MOLOG3000035290
9 WSW 1/4 - 1/2 Mile Higher	Click here for full text details	FED USGS	USGS40000694160

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation		Database	EDR ID Number
10 **WSW** **1/4 - 1/2 Mile** **Lower**	Click here for full text details	**MO WELLS**	**MOLOG3000035183**
11 **WSW** **1/2 - 1 Mile** **Higher**	Click here for full text details	**MO WELLS**	**MOLOG3000035194**
A12 **WSW** **1/2 - 1 Mile** **Higher**	Click here for full text details	**MO WELLS**	**MOLOG3000035161**
A13 **WSW** **1/2 - 1 Mile** **Higher**	Click here for full text details	**MO WELLS**	**MO7000000002017**
A14 **WSW** **1/2 - 1 Mile** **Higher**	Click here for full text details	**FRDS PWS**	**MO6024213**
15 **NW** **1/2 - 1 Mile** **Lower**	Click here for full text details	**MO WELLS**	**MOLOG3000035307**
16 **East** **1/2 - 1 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000694166**
17 **SSE** **1/2 - 1 Mile** **Lower**	Click here for full text details	**MO WELLS**	**MOLOG3000035108**
18 **NE** **1/2 - 1 Mile** **Lower**	Click here for full text details	**MO WELLS**	**MOLOG3000035332**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation		Database	EDR ID Number
19 **NNE** **1/2 - 1 Mile** **Lower**	Click here for full text details	**MO WELLS**	**MOLOG3000035345**
20 **East** **1/2 - 1 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000694158**
21 **East** **1/2 - 1 Mile** **Lower**	Click here for full text details	**MO WELLS**	**MOLOG3000035210**
B22 **ENE** **1/2 - 1 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000694218**
23 **SW** **1/2 - 1 Mile** **Lower**	Click here for full text details	**MO WELLS**	**MOLOG3000035141**
B24 **ENE** **1/2 - 1 Mile** **Lower**	Click here for full text details	**MO WELLS**	**MOLOG3000035297**
25 **NNW** **1/2 - 1 Mile** **Lower**	Click here for full text details	**MO WELLS**	**MOLOG3000035364**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: MO Radon

Radon Test Results

Zipcode	Test Date	Result
63069	12/22/08	3.5
63069	02/02/08	7.1
63069	02/28/09	3.8
63069	03/15/07	3.2
63069	03/17/08	1.7
63069	06/02/08	1.1
63069	07/17/08	3.7
63069	08/30/07	1.2
63069	09/01/07	1.6
63069	09/09/08	6.9
63069	06/20/07	2.4
63069	05/05/08	3.1
63069	05/08/08	9

Federal EPA Radon Zone for FRANKLIN County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 63069

Number of sites tested: 3

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.650 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	3.167 pCi/L	67%	33%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005, 2010 and 2015 from the U.S. Fish and Wildlife Service.

State Wetlands Data: National Wetland Inventory of Missouri
Source: Department of Natural Resources
Telephone: 573-751-5110

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Missouri Public Drinking Water Wells
Source: Department of Natural Resources
Telephone: 573-526-5448

Missouri Geologic Well Log Database
Source: Department of Natural Resources
Telephone: 573-526-5448

OTHER STATE DATABASE INFORMATION

Oil and Gas Well Database
Source: Department of Natural Resources
Telephone: 573-368-2143

RADON

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary faultlines, prepared in 1975 by the United State Geological Survey

PHYSICAL SETTING SOURCE RECORDS SEARCHED

STREET AND ADDRESS INFORMATION

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Meramec Ambulance District
385 Old Manchester Road
Pacific, MO 63069

Inquiry Number: 8194693.5
December 11, 2025

The EDR-City Directory Image Report

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Report is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Report includes a search of available business directory data at approximately five year intervals.

RECORD SOURCES

The EDR City Directory Report accesses a variety of business directory sources, including Haines, InfoUSA, Polk, Cole, Bresser, and Stewart. Listings marked as EDR Digital Archive access Cole and InfoUSA records. The various directory sources enhance and complement each other to provide a more thorough and accurate report.

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RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. A check mark indicates where information was identified in the source and provided in this report.

Year	*Target Street*	*Cross Street*	*Source*
2022	☑	☑	EDR Digital Archive
2017	☑	☑	Cole Information
2014	☑	☑	Cole Information
2010	☑	☑	Cole Information
2005	☑	☑	Cole Information
2000	☑	☑	Cole Information
1995	☑	☑	Cole Information
1992	☑	☑	Cole Information
1987	☐	☐	Haines Criss-Cross Directory
1982	☐	☐	Haines Criss-Cross Directory
1979	☐	☐	Haines Criss-Cross Directory
1975	☐	☐	Haines Criss-Cross Directory
1969	☐	☐	Haines Criss-Cross Directory
1965	☐	☐	Haines Criss-Cross Directory
1963	☐	☐	Haines Criss-Cross Directory

FINDINGS

TARGET PROPERTY STREET

385 Old Manchester Road
Pacific, MO 63069

Year	*CD Image*	*Source*	
OLD MANCHESTER RD			
2022	pg A4	EDR Digital Archive	
2017	pg A6	Cole Information	
2014	pg A8	Cole Information	
2010	pg A10	Cole Information	
2005	pg A12	Cole Information	
2000	pg A14	Cole Information	
1992	pg A18	Cole Information	
1987	-	Haines Criss-Cross Directory	Street not listed in Source
1982	-	Haines Criss-Cross Directory	Street not listed in Source
1979	-	Haines Criss-Cross Directory	Street not listed in Source
1975	-	Haines Criss-Cross Directory	Street not listed in Source
1969	-	Haines Criss-Cross Directory	Street not listed in Source
1965	-	Haines Criss-Cross Directory	Street not listed in Source
1963	-	Haines Criss-Cross Directory	Street not listed in Source
OLD MANCHSTR RD			
1995	pg A16	Cole Information	

FINDINGS

CROSS STREETS

Year	*CD Image*	*Source*	
LITTLE TAVERN RD			
2022	pg. A2	EDR Digital Archive	
2017	pg. A5	Cole Information	
2014	pg. A7	Cole Information	
2010	pg. A9	Cole Information	
2005	pg. A11	Cole Information	
2000	pg. A13	Cole Information	
1995	pg. A15	Cole Information	
1992	pg. A17	Cole Information	
1987	-	Haines Criss-Cross Directory	Target and Adjoining not listed in Source
1982	-	Haines Criss-Cross Directory	Target and Adjoining not listed in Source
1979	-	Haines Criss-Cross Directory	Target and Adjoining not listed in Source
1975	-	Haines Criss-Cross Directory	Target and Adjoining not listed in Source
1969	-	Haines Criss-Cross Directory	Target and Adjoining not listed in Source
1965	-	Haines Criss-Cross Directory	Street not listed in Source
1963	-	Haines Criss-Cross Directory	Street not listed in Source

City Directory Images

Target Street	Cross Street	Source
-	✓	EDR Digital Archive

LITTLE TAVERN RD 2022

3495	BERNARD HUGER
3533	BENJAMIN STEINHART
	JACK STEINHART
	JAMIE STEINHART
	ROBERT STEINHART
	ROSE STEINHART
	SARA STEINHART
3659	BARBARA JACOBS
3661	JORDYN SMITH
3675	JOSEPH SCHNEIDER
	PATSY SCHNEIDER
3830	FLORENCE RICE
3890	SAMANTHA SACK
	STEPHANIE SACK
3900	JEANNE BOYHER
	MARY BOYHER
	MICHAEL BOYHER
	STEVE BOYHER
3960	CONNIE JONES
	LAWRENCE JONES
	MARSHALL REED
3966	ANDREW KANE
	JANET KANE
3987	MATTHEW HENRY
	TARYN HENRY
4030	GRANT STECHER
	TESSA FLEISCHLI
4050	RANDI MILLER
4065	DAVID WESTERHOLD
	TRACY SCHMITZ
	WALTER WESTERHOLD
4088	CHERYL HILL
4127	ARIEL HENRY
	CARLA HENRY
	KENT HENRY
4130	JEFF MOORE
4155	AMANDA HUGHES
	CARLA MANNING
	GABRIEL ARNOLD
	HEATHER TAYLOR
	JEROLD HARPER
	JOSEPH TAYLOR
	JULIA GASS
	KATHLEEN MCREYNOLDS
	LAWRENCE GASS
	MATTHEW MORGAN
	MILANA POGUE
	RICHARD MCREYNOLDS
	TREVA DALZELL
4165	DAVID HAM

LITTLE TAVERN RD 2022 (Cont'd)

4230	BRENDA MUELLER
4237	PATRICK BENDER
4239	KATHY HEITKAMP
	MIKE HEITKAMP
	ROBERT HEITKAMP
4275	ROBERT THACKER
4345	PAUL KULICK
4362	DENNIS GAEHLE
4365	JULIE BUSEN
4385	3 DOG RANCH
	LORRAINE HAYS
4394	MICHAEL VATTEROTT
4398	BARBARA BECKETT
	FLOYD MITTLER
	GERALDINE MITTLER

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

OLD MANCHESTER RD 2022

115	NORMA VERSHAY
150	JAMES PATCHA
	JANE PATCHA
235	JULIUS HILT
	KIMBERLY HILT
390	SCOTT MITCHELL

Target Street	Cross Street	Source
-	✓	Cole Information

LITTLE TAVERN RD 2017

3533	BEATY, TODD D
3659	JACOBS, BARBARA E
3661	SMITH, JORDYN
3675	SCHNEIDER, JOHN A
3830	RICE, FLORENCE S
3900	BOYHER, STEVE J
3960	JONES, LAWRENCE P
3966	COOPER, JERRY L
3987	HENRY, TARGA
4030	KOWALSKI, NOLAN J
4050	MILLER, RANDI S
4065	SCHMITZ, JOHN L
4088	MCQUERRY, RON A
4155	CONLEY, MIKE S
	GASS, LARRY
	HARPER, JEROLD J
	MEDLIN, FELICIA
	MINER, DENNIS
	MORGAN, MATT D
	STONE, JACQUE
	TAYLOR, JOSEPH W
4237	BENDER, PATRICK R
4239	HEITKAMP, ROBERT M
4275	THACKER, ROBERT R
4328	SCHEER, ROBERT E
4345	KULICK, PAUL J
4362	GAEHLE, DENNIS A
4370	HAMMEL, ROBERT M
4398	BECKETT, BARBARA L

Target Street	Cross Street	Source
✓	-	Cole Information

OLD MANCHESTER RD 2017

150	PATCHA, JAMES J
235	HILT, ANITA V
390	MITCHELL, SCOTT

Target Street	Cross Street	Source
-	✓	Cole Information

LITTLE TAVERN RD 2014

3495	OCCUPANT UNKNOWN,
3533	BEATY, TODD D
3659	JACOBS, BARBARA E
3661	STEUBER, DANIEL B
3675	SCHNEIDER, JOHN A
3830	SHINKLE, FLORENCE S
3890	MUELLER, KENN M
3900	BOYHER, IAN J
3960	JONES, LAWRENCE P
3966	COOPER, JERRY L
3987	HENRY, MATTHEW I
4030	MUELLER, JEFF S
4050	CASEY, DAVID R
4065	SCHMITZ, JOHN L
4088	MCQUERRY, RON A
4130	OCCUPANT UNKNOWN,
4155	CONLEY, MIKE S
	COOPER, CURTIS
	CROWELL, MELISSA A
	DAMES, ALENA M
	GASS, JULIA M
	MANNING, TROY J
	MERCURIO, CINDY J
	MORGAN, MATT D
	PARTON, MINDY L
4165	OCCUPANT UNKNOWN,
4230	HOFFMAN, EUGENE A
4237	BENDER, PATRICK R
4239	HEITKAMP, ROBERT M
4275	THACKER, ROBERT R
4302	OCCUPANT UNKNOWN,
4328	SCHEER, ROBERT E
4345	KULICK, PAUL J
4362	GAEHLE, DENNIS A
4394	STOUT, DAVE J
4398	BECKETT, BARBARA L

Target Street	Cross Street	Source
✓	-	Cole Information

OLD MANCHESTER RD 2014

115	VERSHAY, WILLIAM F
150	CATTOOR, DAVE
390	MITCHELL, SCOTT
425	OCCUPANT UNKNOWN,

Target Street	Cross Street	Source
-	✓	Cole Information

LITTLE TAVERN RD 2010

3497	PIPES, JOEY L
3533	BEATY, TODD D
3661	STEUBER, DANIEL B
3675	SCHNEIDER, K A
3830	SHINKLE, FLORENCE S
3890	CONNER, DONALD E
3900	BOYHER, STEVE J
3960	JONES, LAWRENCE P
3966	COOPER, JERRY L
4030	MUELLER, GLENN J
4050	CASEY, DAVID R
4065	SCHMITZ, JOHN L
4088	MCQUERRY, RON L
4130	MOORE, JEFF L
4155	AUSTIN, MI W
	COKLEY, ASHLEY N
	DAMES, KRIS A
	GASS, AMY
	MASEK, GERALD S
	MERCURIO, CINDY J
	MORGAN, WANDA L
4165	LARUE, LATOSHA
4230	OCCUPANT UNKNOWN,
4239	HEITKAMP, ROBERT M
4275	THACKER, ROBERT R
4302	OCCUPANT UNKNOWN,
4328	SCHEER, ROBERT E
4330	OCCUPANT UNKNOWN,
4345	LANGE, MICHAEL C
4362	GAEHLE, DENNIS A
4365	OCCUPANT UNKNOWN,
4370	OCCUPANT UNKNOWN,
4394	STOUT, DAVE J
4398	BECKETT, BARBARA L

Target Street	Cross Street	Source
✓	-	Cole Information

OLD MANCHESTER RD 2010

115	OCCUPANT UNKNOWN,
150	ADAMS, ROYAL
155	VERSHAY, WILLIAM F
203	VOELKER, CURTIS
385	OCCUPANT UNKNOWN,
390	FENCE BY DESIGN
	PAGE FENCE SUPPLY
425	OCCUPANT UNKNOWN,

Target Street	Cross Street	Source
-	✓	Cole Information

LITTLE TAVERN RD 2005

3495	HUGER, BERNARD
3497	PIPES, JOEY L
3533	BEATY, TODD D
3661	STEUBER, DANIEL B
3675	SCHNEIDER, K A
3777	MARINO, ANTHONY M
3779	ROSEMANN, DANIEL T
3830	SHINKLE, FLORENCE S
3890	OCCUPANT UNKNOWN,
3900	BOYHER & SONS CONTRACTING
	BOYHER, STEVE J
3960	JONES, LAWRENCE P
3966	OCCUPANT UNKNOWN,
4030	OCCUPANT UNKNOWN,
4050	CASEY, DAVID
4065	WESTERHOLD, WALTER F
4088	MCQUERRY, RON L
4130	MOORE, JEFF L
4155	BEERS, GARRETT
	BRUEGGANANN, ERIC S
	DAMES, KRIS A
	HAM, NANCY L
	MANNING, TROY J
	MCKAY, DENNY L
	MORGAN, WANDA L
	OEHM, JETT
	POGUE, BOBBY
	SCHIRMER, JANICE M
	SCHNEIDEWIND, RANDY M
	SPARKS, SAM
	VESSELL, SANDRA E
	WHITE, TERRY
4165	BEAVERS, ELLEN
4230	THOMPSON, RANDY V
4237	BENDER, PATRICK R
4239	OCCUPANT UNKNOWN,
4275	OCCUPANT UNKNOWN,
4302	OCCUPANT UNKNOWN,
4328	SCHEER, ROBERT E
4345	LANGE, JULIA C
4362	GAEHLE, DENNIS A
4365	DOOLING, F A
4370	OCCUPANT UNKNOWN,
4394	STOUT, DAVE J
4398	BECKETT, BARBARA L

Target Street	Cross Street	Source
✓	-	Cole Information

OLD MANCHESTER RD 2005

150	OCCUPANT UNKNOWN,
203	VOELKER, CURTIS
235	PATCHA, JAMES F
370	OCCUPANT UNKNOWN,
385	MANHART, VIRGIL J
390	FENCE DEPOT
	HOULIHAN, BEN D
425	OCCUPANT UNKNOWN,

Target Street	Cross Street	Source
-	✓	Cole Information

LITTLE TAVERN RD 2000

3495	PIPES, JOHNNY L
3533	RICKMEYER LISA & MARK DO
	RICKMEYER, MARK
3661	ANSTETH, WILLIAM R
	GRIEMAN, MARK R
3675	SCHNEIDER, JOHN G
3830	SHINKLE, F S
3890	AVAKIAN, J
3900	BOYHER & SONS CONTRACTING
	BOYHER, STEVE
3960	OCCUPANT UNKNOWN,
3966	COOPER, JERRY L
4030	MUELLER, GLENN J
4050	MCSORLEY, KEVIN
4065	WESTERHOLD, WALTER
4088	MCQUERRY, RON
4155	BAUMSTARK, ALMA
	BRUEGGEMANN, ERIC
	CAROLAN, T
	HAM, NANCY L
	MARTIN, CLAY
	MORGAN, WANDA
	OEHM, J
	POGUE, SHEILA J
	SCHIRMER, JANICE
	SPARKS, SAM
	SPRINGFIELD, MICHAEL
	TINKER, JAMES D
	WHITE, LAURA
4165	OCCUPANT UNKNOWN,
4230	OCCUPANT UNKNOWN,
4237	BENDER, PATRICK
4275	HEATH, RACHEL L
	THACKER, ROBERT
4302	ROSE, JERRY W
4325	OCCUPANT UNKNOWN,
4328	SCHEER, ROBERT E
4330	OCCUPANT UNKNOWN,
4362	OTIS, T
4365	BUSEN, JOHN G
4398	BECKETT, DAVID L

Target Street	Cross Street	Source
✓	-	Cole Information

OLD MANCHESTER RD 2000

115	VERSHAY, BILL
150	MACKLIN, HUBERT P
205	VOELKEL, CURTIS
231	ALBERS, WALTER R
	CROWE, JACK W
235	CATTOOR, JANE M
364	OCCUPANT UNKNOWN,
366	OCCUPANT UNKNOWN,
370	OCCUPANT UNKNOWN,
385	NULL, STEVEN L

Target Street	Cross Street	Source
-	✓	Cole Information

LITTLE TAVERN RD 1995

3495	PIPES, JOHNNY L
3830	SHINKLE, F S
3890	MUELLER, ANDREW
3960	OCCUPANT UNKNOWNN
3966	COOPER, JERRY L JR
4030	MUELLER, GLENN J
4050	MCSORLEY, KEVIN
4155	BAUMSTARK, ALMA
	BEERS, GARRETT
	BRUEGGEMANN, ERIC
	CZESCHIN, KEN
	MCAVOY, TOM
	POGUE, SHEILA J
	SCHIRMER, JANICE
	SPARKS, SAM
	WILLIS, BETTY
4165	MAKARA, H
4302	FRYER, AMIE
4325	MCDOWELL, CAROL
4330	SONTAG, REED
4362	JAMBORITZ, LARRY G
4365	BUSEN, JOHN G
4370	EDMONDSON, CATHY
	TOP JOB JANITORIAL SVC
4398	BECKETT, DAVID L

Target Street	Cross Street	Source
✓	-	Cole Information

OLD MANCHSTR RD 1995

115	VERSHAY, BILL
385	JABIN, JULIUS

Target Street	Cross Street	Source
-	✓	Cole Information

LITTLE TAVERN RD 1992

3777	MARINO, ANTHONY
3830	SHINKLE, F S
4030	MUELLER, GLENN J
4050	CUMMINGS, MICHAEL
4155	BAUMSTARK, ALMA
4230	QUICKE, ROBERT
4302	PARTON, CONNIE
4362	JAMBORETZ, LARRY G
4365	BUSEN, JOHN G
4398	BECKETT, DAVID L

Target Street	Cross Street	Source
✓	-	Cole Information

OLD MANCHESTER RD 1992

115 BRANSON, TIMOTHY N
385 JABIN, JULUIS

C.

Photographs



1: Septic System on Subject property



2: Drains on Subject property



3: North view of Subject property



4: South view of Subject property



5: Well on Subject property



6: East adjacent Subject property



7: North west view of Subject property



8: East adjacent property



9: West view of Subject property



10: North view of Subject property with shed and garage



11: Old shed on Subject property



12: North adjacent property



13: South view of Subject property



14: West view of Subject property



15: South west view of Subject property



16: North view of garage on Subject property

Meramec Ambulance District

385 Old Manchester Road

Pacific, MO 63069

Inquiry Number: 8194693.8

December 09, 2025

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

12/09/25

Site Name:

Meramec Ambulance District
385 Old Manchester Road
Pacific, MO 63069
EDR Inquiry # 8194693.8

Client Name:

Sitex Environmental, Inc.
1525 South Broadway
Saint Louis, MO 63104
Contact: Mackenzie Wagner

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Search Results:

Year	*Scale*	*Details*	*Source*
2022	1"=500'	Flight Year: 2022	USDA/NAIP
2018	1"=500'	Flight Year: 2018	USDA/NAIP
2014	1"=500'	Flight Year: 2014	USDA/NAIP
2010	1"=500'	Flight Year: 2010	USDA/NAIP
2007	1"=500'	Flight Year: 2007	USDA/NAIP
1996	1"=500'	Flight Year: 1996	USGS/DOQQ
1990	1"=500'	Flight Date: April 01, 1990	USGS
1986	1"=500'	Flight Date: March 21, 1986	NHAP
1980	1"=500'	Flight Date: April 01, 1980	USGS
1974	1"=500'	Flight Date: May 01, 1974	USGS
1970	1"=500'	Flight Date: December 05, 1970	USGS
1968	1"=500'	Flight Date: March 17, 1968	USGS
1965	1"=500'	Flight Date: October 10, 1965	USGS
1958	1"=500'	Flight Date: October 24, 1958	USGS
1953	1"=500'	Flight Date: July 23, 1953	USDA
1945	1"=500'	Flight Date: February 24, 1945	USGS

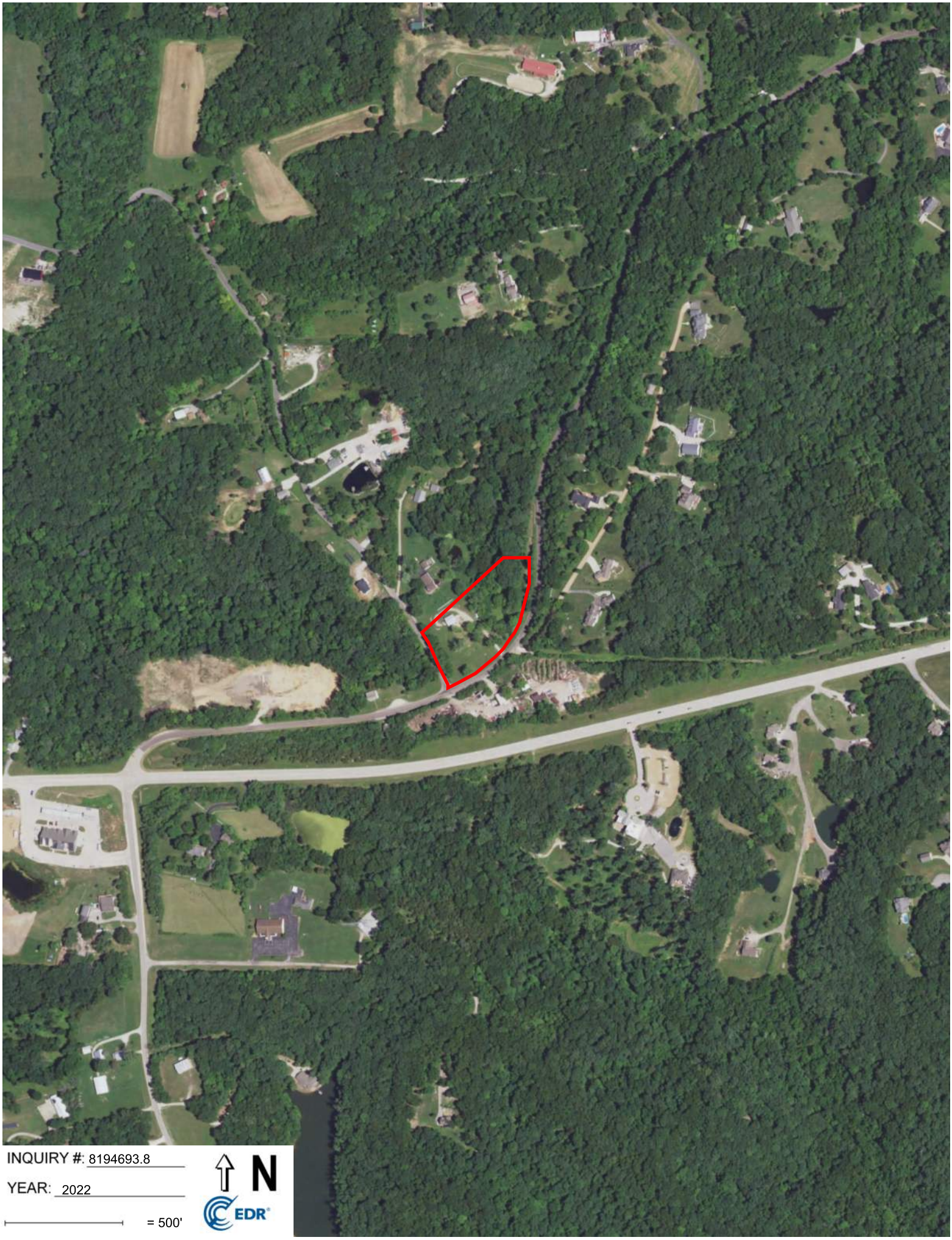
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INQUIRY #: 8194693.8
YEAR: 2022
= 500'
N
EDR


INQUIRY #: 8194693.8
YEAR: 2018
= 500'
N
EDR


INQUIRY #: 8194693.8
YEAR: 2014
= 500'
N
EDR


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EDR


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EDR

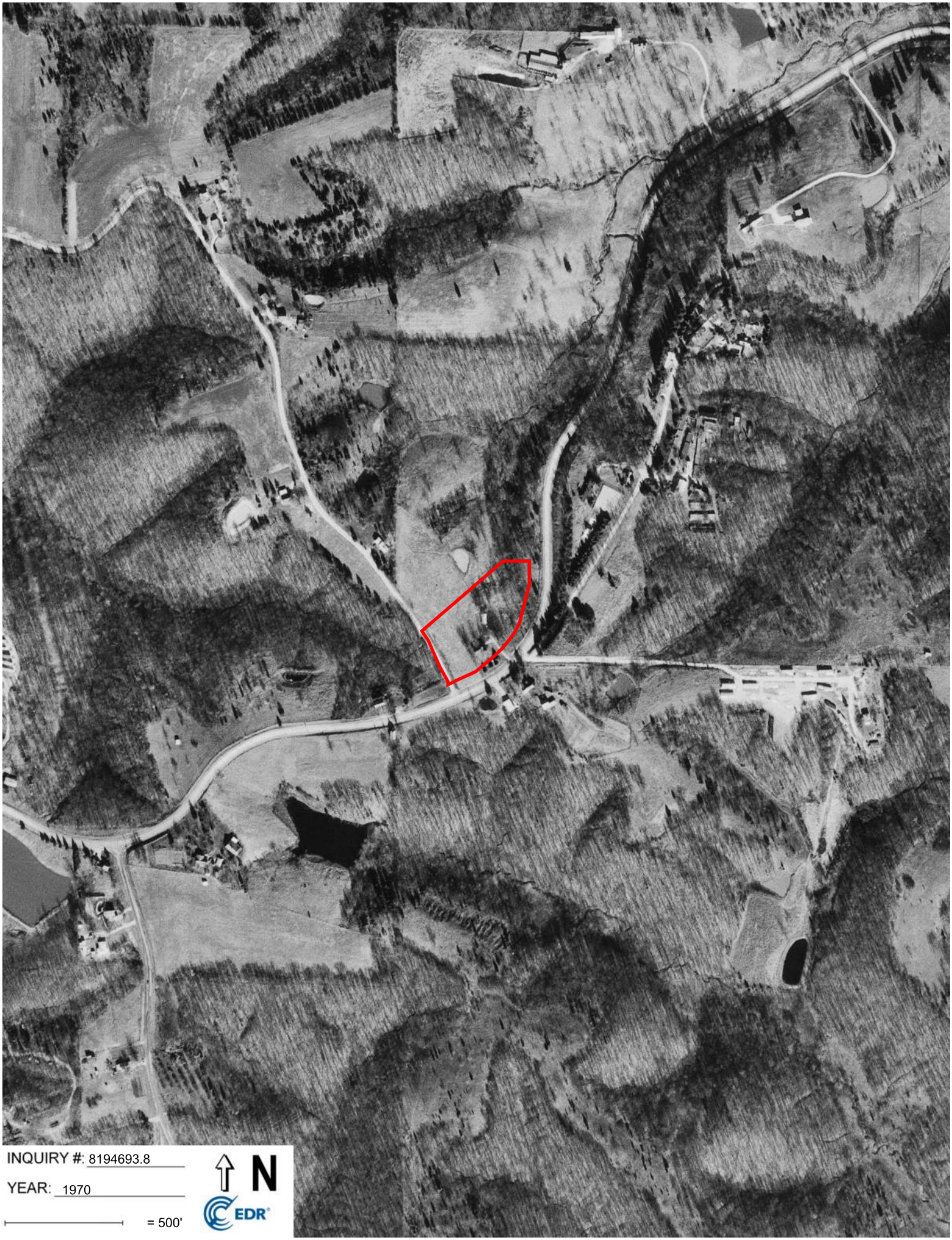

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EDR

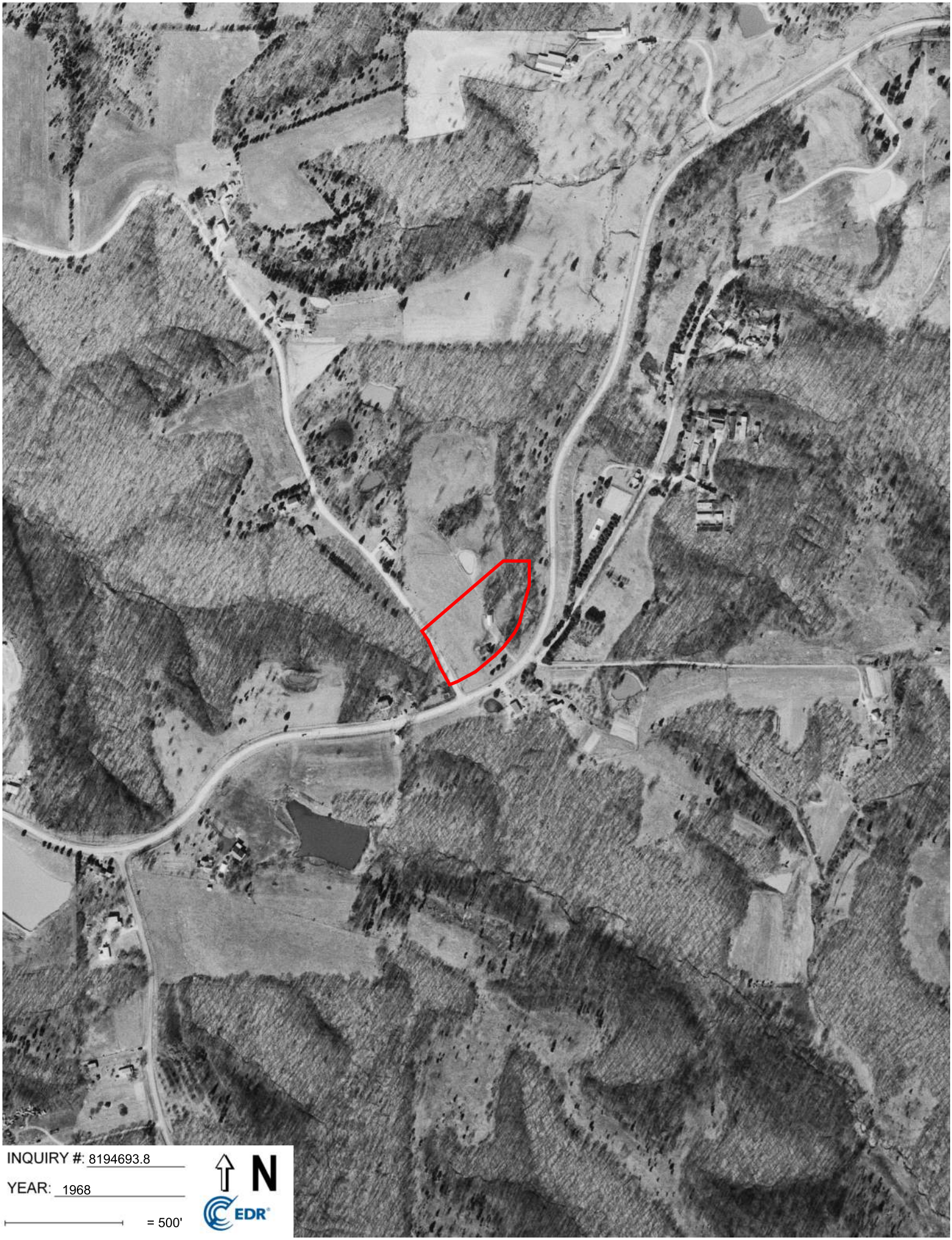

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N
EDR


INQUIRY #: 8194693.8
YEAR: 1986
= 500'
N
EDR


INQUIRY #: 8194693.8
YEAR: 1980
= 500'
N
EDR


INQUIRY #: 8194693.8
YEAR: 1974
= 500'
N
EDR


INQUIRY #: 8194693.8
YEAR: 1970
= 500'
N
EDR


INQUIRY #: 8194693.8
YEAR: 1968
= 500'
N
EDR


INQUIRY #: 8194693.8
YEAR: 1965
= 500'
N
EDR



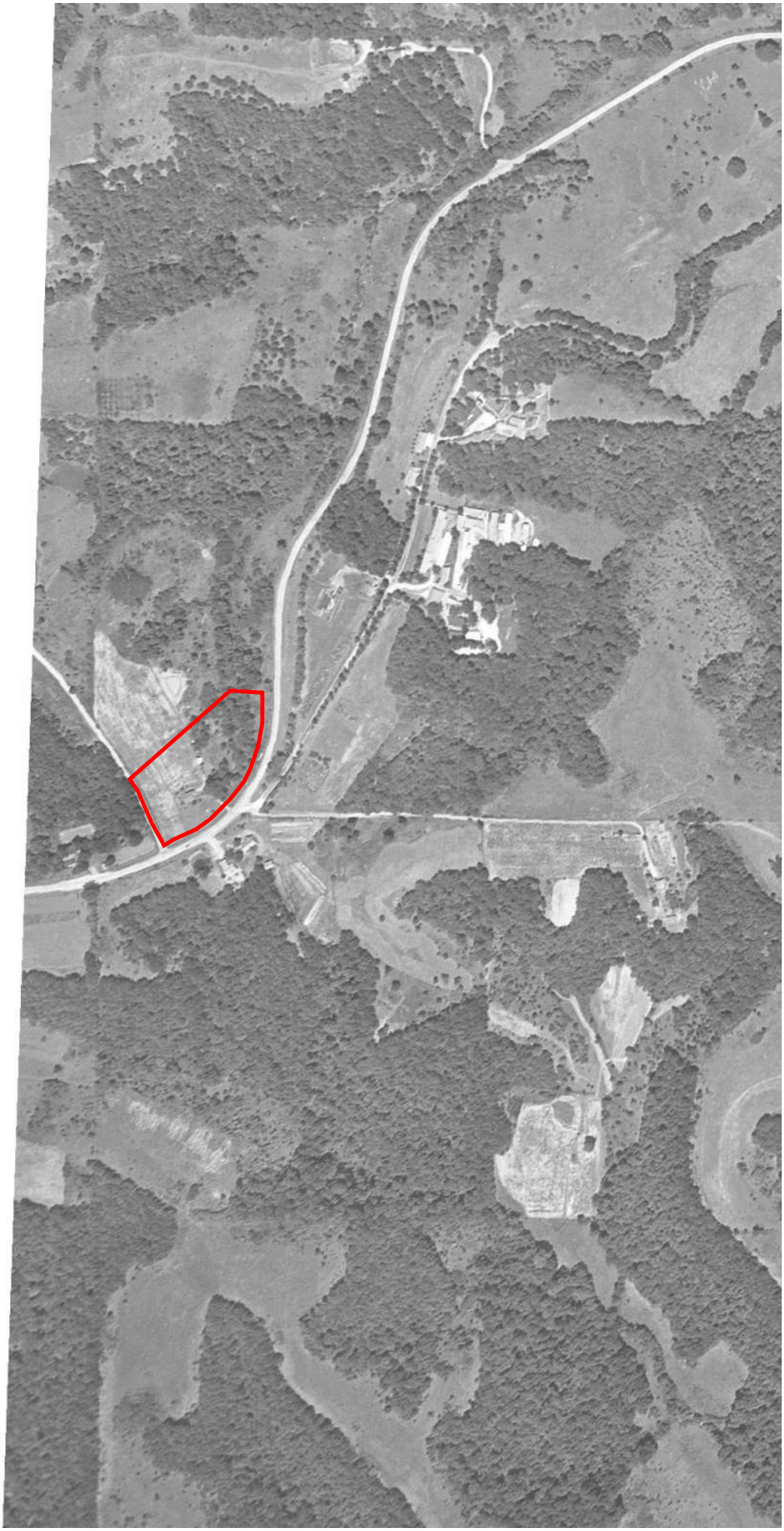
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YEAR: 1958

= 500'

N

EDR



INQUIRY #: 8194693.8

YEAR: 1953

= 500'

N

EDR



INQUIRY #: 8194693.8

YEAR: 1945

= 500'

N

EDR

D.

Correspondence

ASTM E1527-21USER QUESTIONNAIRE

When the "user" (the party for whom the assessment is being prepared) of the Phase I is required to help the environmental professional identify recognized environmental conditions at the property, a "User Questionnaire" is completed by the user to help gather information that may identify recognized environmental conditions at the property.

We ask that you answer the six questions below to the best of your knowledge. We understand that, in some circumstances, you may have little or no information. Still, we encourage you to complete and return the questionnaire as soon as possible. This will allow us to reflect the fact that the Questionnaire was completed when we issue our report as is required. Completion of the assessment to the new standard, when conducted in connection with the asset purchase of a real property, may entitle the user to certain federal liability protections that result from conducting "All Appropriate Inquiries" into the previous ownership and uses of a property.

On the second page of this form is a list of documentation. The E1527-13 Standard requires that the User will ensure that the consultant is made aware that any of these materials exist for a site, and if so, that these documents be provided for the consultant's review. Please indicate whether any of these documents are available, and ensure that Environmental Services Company will either receive copies or be provided an opportunity to review the relevant materials.

We appreciate your assistance. If you have any questions, feel free to contact us.

1. Are you aware of any environmental cleanup liens against the property that are filed or recorded under federal, tribal, state or local law?

   No

2. Are you aware of any Activity and Use Limitations (AULs), such as engineering controls, land use restrictions or institutional controls that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state or local law?

   No

3. As the user of this ESA do you have any specialized knowledge or experience related to the property or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the property or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of business?

   Yes, I have knowledge of the business.

4. Does the purchase price/loan amount for this property reasonably reflect the fair market value of the property? If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the property?

   The property is not for sale.

5. Are you aware of commonly known or reasonably ascertainable information about the property that would help the environmental professional to identify conditions indicative of releases or threatened releases? For example, as user, (a.) Do you know the past uses of the property? (b.) Do you know of specific chemicals that are present or once were present at the property? (c.) Do you know of spills or other chemical releases that have taken place at the property? (d.) Do you know of any environmental cleanups that have taken place at the property?

   I have a reasonable amount of information about the property.

6. As the user of this ESA, based on your knowledge and experience related to the property are there any obvious indicators that point to the presence or likely presence of contamination at the property?

   No

ASTM E1527-21USER QUESTIONNAIRE

As part of this study, which of the following are you providing?

1. Previous environmental site assessment reports ◯ Yes ✓ No
2. Environmental compliance audit reports ◯ Yes ✓ No
3. Environmental permits (including but not limited to solid waste disposal permits, hazardous waste disposal permits, wastewater permits, NPDES permits, underground injection permits) ◯ Yes ✓ No
4. Registrations for underground and aboveground storage tanks ◯ Yes ✓ No
5. Registrations for underground injection systems ◯ Yes ✓ No
6. Material safety data sheets ◯ Yes ✓ No
7. Community Right-to-Know plan ◯ Yes ✓ No
8. Safety plans; preparedness and prevention plans; spill prevention, countermeasure, and control plans; etc. ◯ Yes ✓ No
9. Reports regarding hydrogeologic conditions on the property or surrounding area ◯ Yes ✓ No
10. Notices or other correspondence from any government agency relating to past or current violations of environmental laws with respect to the property or relating to environmental liens encumbering the property ◯ Yes o No
11. Hazardous waste generator notices or reports ◯ Yes ✓ No
12. Geotechnical studies ● Yes o No
13. Risk assessments ◯ Yes ✓ No
14. Recorded Activity and Use Limitations (AULs). ◯ Yes ✓ No

Please contact us if you have any questions regarding these ASTM requirements.

Please return the completed document to Environmental Services Company, Inc. via fax at 314-421-0234 or email to bobh@sitexenvironmental.com.

Completed by:	Taz Meyer
Signature:	Taz Meyer
Title:	Chief
Company:	Meramec Ambulance District
Relationship to site (i.e. lender, purchaser,owner):	Owner
Date:	12/18/25

Docusign Envelope ID: D57F44B9-E4D2-4516-91ED-CFBC0B33AB4B

SCI ENGINEERING, INC.
130 Point West Boulevard
St. Charles, Missouri 63301
636-949-8200
www.sciengineering.com

Geotechnical Report

MERAMEC AMBULANCE DISTRICT - STATION #4
PACIFIC, MISSOURI

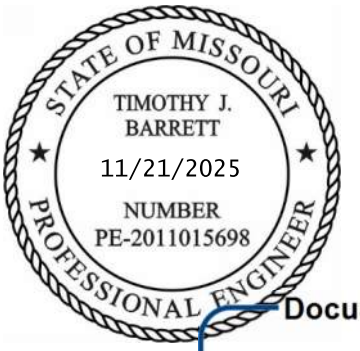
November 2025

MERAMEC AMBULANCE DISTRICT
Owner

NAVIGATE BUILDING SOLUTIONS, LLC
Owner's Representative

CIVIL ENGINEERING DESIGN CONSULTANTS
Civil Engineer

SCI No. 2025-1484.10



DocuSigned by:
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SCI ENGINEERING, INC.
EARTH • SCIENCE • SOLUTIONS
GEOTECHNICAL
ENVIRONMENTAL
NATURAL RESOURCES
CULTURAL RESOURCES
CONSTRUCTION SERVICES

November 18, 2025

Chief Taz Meyer
Meramec Ambulance District
429 East Osage Street
Pacific, Missouri 63069

RE: Geotechnical Report
Meramec Ambulance District - Station #4
Pacific, Missouri
SCI No. 2025-1484.10

Dear Chief Taz Meyer:

Attached is SCI Engineering, Inc.'s *Geotechnical Report*, dated November 2025. It should be read in its entirety, and our recommendations applied to the design and construction of the project. Selected excerpts from the report are highlighted below:

- Auger refusal on limestone bedrock was encountered in seven of the eight borings at depths of 3.5 to 18 feet (approximate elevations 810.5 to 794). Based on the finished floor elevation of 814, rock is not anticipated to be encountered during foundation excavations; however, rock excavation may likely be necessary for utilities at least in the vicinity of B-402. Chipping or blasting will likely be required for bedrock below the auger refusal depths.

- Fat clay was encountered within the native soils throughout the site. Where bearing soil consists of clays with a liquid limit (LL) of 45 or higher, we recommend they be removed to a minimum depth of 2 feet beneath the bearing level of the perimeter building foundations, and 3 feet beneath the bottom of the floor slab. Based a FFE of 814 for the station, expansive clay remediation should be anticipated beneath the floor slab and foundations near B-402, B-404, B-405, and the foundations near B-406. The actual need for and extents of expansive soil remediation should be delineated by SCI personnel in the field during construction.

- Shallow spread footings bearing on remediated fat clay, or newly placed, low-plastic structural fill may be sized for a maximum net allowable bearing pressure of 2,500 pounds per square foot (psf) for continuous wall footings and 3,000 psf for isolated spread footings.

- Seismic Site Class C should be used for the project, with seismic design parameters as follows: $F_a = 1.30$, $F_v = 1.50$, $S_{DS} = 0.32$, and $S_{D1} = 0.15$, which results in a Seismic Design Category (SDC) of C for Risk Categories I, II, or III, or a SDC of D for Risk Category IV.

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We appreciate the opportunity to be of service and look forward to working with you during the remainder of the project. If you have any questions or comments, please do not hesitate to contact us.

Respectfully,

SCI ENGINEERING, INC.

Gabrielle M. Kowalik, E.I.
Staff Engineer

Timothy J. Barrett, P.E., CFM
Geotechnical Services Manager

GMK/TJB/tlw

Enclosure
Geotechnical Report

C: Stevie Schneider; Meramec Ambulance District
Dustin Roberts; Navigate Building Solutions, LLC
Collette Kescielski; Navigate Building Solutions, LLC
Roy Mangan; Archimages
Brandon Harp; Civil Engineering Design Consultants

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APPENDIX

Appendix A – Boring Log Legend and Nomenclature, Boring Logs

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Geotechnical Report

MERAMEC AMBULANCE DISTRICT - STATION #4
PACIFIC, MISSOURI

1.0 INTRODUCTION

At the request of Chief Taz Meyer of the Meramec Ambulance District, SCI Engineering, Inc. (SCI) performed a geotechnical study for the proposed ambulance base station. The purpose of our exploration was to characterize and evaluate the subsurface conditions, provide recommendations for foundations and pavements, and address other geotechnical aspects. Our services were provided in general accordance with our proposal, dated September 5, 2025, and authorized on October 3, 2025, by you.

2.0 SITE AND PROJECT DESCRIPTION

A new ambulance base station (Station #4) is planned for a site located at 385 Old Manchester Road in Pacific, Missouri. The location of the site is shown on the *Vicinity and Topographic Map*, Figure 1. The site is developed with a residence in the north-central portion of the site with a detached garage to the east. A gravel drive lane is oriented north to south through the property and connects the residence and garage to Old Manchester Road. The remainder of the site is grass-covered with a few mature trees throughout. Topography across the site slopes downwards from the center of the site to the east and west with maximum relief on the order of 55 feet. The existing site conditions are shown on the *Aerial Photograph*, Figure 2.

Based on our site observations, the exterior of the existing structures appear to be performing satisfactorily, with no significant tilting, bowing, or cracking observed, and we are unaware of any performance issues. We understand the northern structure will remain while the detached garage will be demolished to accommodate the new construction. Historic aerial imagery indicates a second residence was previously located in the central portion of the site but appears to have been demolished between 2021 and 2022. The previous building footprint is included on the *Aerial Photograph* and *Site Plan*, Figures 2 and 3.

Based on the *Site and Grading Plan*, prepared by Civil Engineering Design Consultants (CEDC), dated September 2025, the new construction will consist of an approximate 5,300-square-foot (sf) ambulance house/station. Two future additions planned to the east and west of the structure. Drive lanes will surround the station to the south, west, and north, with parking to the north of the station. An entrance/exit will be located off Manchester Road. A detention basin (assumed to be “dry”) will be located to the west of the station and will have a depth of 1 foot. A septic field is planned to the east of the station. The proposed construction is shown on the *Site Plan*, Figure 3.

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Structural loads were not available at the time of this proposal; however, we assume column loads of less than 150 kips and wall loading of less than 5 kips per linear foot. The station will have a finished floor elevation (FFE) of 814, requiring maximum cuts and fills of 1 and 4 feet, respectively. Cuts and fills throughout the remainder of the site will be on the order of 3 feet or less.

3.0 SUBSURFACE CONDITIONS

Eight borings (designated B-401 through B-408) were drilled at the approximate locations shown on the *Aerial Photograph* and *Site Plan*, Figures 2 and 3. The borings were staked in the field by SCI personnel using a handheld global positioning system (GPS) unit. Approximate ground surface elevations at the boring locations were interpolated from the *Site and Grading Plan* prepared by CEDC. Detailed information regarding the nature and thickness of the soils and rock encountered, and the results of the field sampling and laboratory testing, are shown on the *Boring Logs* contained in Appendix A.

3.1 Surficial Material

Surficial material consisting of 8 inches of crushed rock was encountered in B-403, B-406, and B-407.

3.2 Native Soils

The native soils generally consisted of interbedded layers of fat and lean clay (CL and CH in accordance with the Unified Soil Classification System and ASTM D 2488-06) with varying amounts of gravel to the depths of clayey gravel (GC) encountered at a depth of 8 feet or auger refusal at 3.5 to 13.5 feet. The clayey gravel extended to depths of 9.5 to 12.5 feet, where it was underlain by shaley fat clay (CH) to the depth of weathered limestone at 13.5 feet, or auger refusal at depths of 15 to 18 feet.

Standard Penetration Tests (SPTs) within the clays generally resulted in N-values that ranged from 7 to 69 blows per foot (bpf), averaging 20 bpf, which indicate the consistency of the clays ranged from medium stiff to hard, and were generally very stiff. As an exception split spoon refusal (SSR), where 50 hammer blows do not penetrate 6 inches, was encountered in the shaley fat clay at a depth of 13.5 in B-405. Moisture contents within the clays ranged from 7 to 39 percent, averaging 18 percent. SPTs within the clayey gravel resulted in N-values ranging from 42 bpf to 50 blows per 5.5 inches of penetration, indicating they were dense to very dense.

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3.3 Site Geology

Documented geology, including the *Bedrock Geologic Map of the St. Louis Quadrangle*, Missouri and Illinois indicates that bedrock at the site consists of the Keokuk and Burlington Limestone, which are medium to coarsely crystalline limestone with erratically stratified layers of chert and fossils.

Auger refusal was encountered in seven of the eight borings at depths ranging from 3.5 to 18 feet as shown in Table 3.1. Auger refusal was not encountered in B-407 which terminated at a depth of 10 feet. Auger refusal is a designation applied to any material that cannot be further penetrated by the drill rig without extraordinary effort and is indicative of a very hard or very dense material, usually boulders or bedrock. Weathered limestone was encountered in B-408 at a depth of 13.5 feet. Weathered limestone was not encountered in any of the remaining borings.

Table 3.1 – Auger Refusal Summary

Boring	Approximate Ground Surface Elevation (feet)	Approximate Weathered Limestone Depth (feet)	Approximate Weathered Limestone Elevation (feet)	Approximate Auger Refusal Depth (feet)	Approximate Auger Refusal Elevation (feet)
B-401	815	NE	---	10.5	804.5
B-402	814	NE	---	3.5	810.5
B-403	810	NE	---	13.5	796.5
B-404	815	NE	---	18	797
B-405	815	NE	---	15	800
B-406	811	NE	---	17	794
B-407	809	NE	---	NE	---
B-408	815	13.5	801.5	16	799

3.4 Groundwater

Groundwater was not observed during drilling at any of the eight boring locations. The groundwater level depends on seasonal and climatic variations and may be present at different depths in the future. In addition, without extended periods of observation, accurate groundwater level measurements may not be possible, particularly in low permeability soils.

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4.0 DESIGN RECOMMENDATIONS

4.1 Shallow Rock

Auger refusal on limestone bedrock was encountered at depths of 3.5 to 18 feet, approximate elevations (Els.) 794 to 810.5. **Based on the finished floor elevation of 814, rock is not anticipated to be encountered during foundation excavations; however, rock excavation will likely be necessary for utilities in the vicinity of B-402 at a minimum.** Chipping or blasting will likely be required for bedrock below the auger refusal depths. If blasting will be performed at the site, SCI should be contacted for further consultation regarding peak velocities, a pre-blast survey of the surrounding structures, and vibration monitoring considerations.

Due to the significant difference in the compressibility of soil and bedrock, differential settlement will occur if all the foundations of the building are not bearing on similar subgrade materials (i.e., all engineered fill bearing or all rock-bearing). Significant differential settlement can affect the serviceability of the building and poses the potential for cracks to develop within the foundations if mitigation measures are not considered during construction. **If bedrock is encountered in the foundation excavations it is recommended that the rock should be overexcavated to a minimum depth of one foot below the foundations and backfilled with compacted minus gradation limestone.**

4.2 Expansive Clay

Fat clay was encountered within the native soils throughout the site. Fat clay is susceptible to excessive volume change with variations in moisture content, which can lead to movement of concrete slabs and foundations of lightly loaded structures. Where bearing soil consists of clays with a liquid limit (LL) of 45 or higher, we recommend they be removed to a minimum depth of 2 feet beneath the bearing level of the perimeter building foundations, and 3 feet beneath the bottom of the floor slab, as shown on the *Expansive Clay Remediation Detail*, Figure 4. **Based a FFE of 814 for the station, expansive clay remediation should be anticipated beneath the floor slab and foundations near B-402, B-404, B-405, and the foundations near B-406.** The actual need for and extents of expansive soil remediation should be delineated by SCI personnel in the field during construction.

The overexcavation should extend at least 2 feet beyond the outside edge of the footings and addition footprint to facilitate uniform compaction of the replacement materials and may require additional widening at building corners to allow equipment access for proper compaction. The overexcavation should be

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backfilled with properly compacted low plastic soil or 1-inch minus crushed limestone. The footings and floor slab would then be constructed on the newly placed fill. As an alternate, footing overexcavations may be backfilled with lean concrete. With this option, widening of the footing excavation is not required.

As an alternative to overexcavation and replacement, the expansive soils may be remediated by the addition of lime in combination with a recompaction operation or during fill placement for general site grading. If lime stabilization is performed, we recommend thoroughly mixing in "Code L" (a locally available calcium oxide by-product also known as lime kiln dust) at a rate of 7 percent, or approximately 8 pounds of Code L per cubic foot of soil, to the depths and lateral limits described in the preceding paragraph. Water may need to be added during mixing to allow for proper hydration of the lime. Pulverizing and tilling equipment, such as “gators,” are preferred for mixing the lime into the soil. The treated soil should be placed in compacted lifts as discussed in Section 5.2.

The methods of treatment described above are based on generally accepted standards in the local engineering community; however, swell pressures and volume change potential greater than can be mitigated by this method may exist. Consequently, the owner should recognize that there is an inherent, but reduced risk that foundation and floor slab damage may occur, even after remedial treatment of the subgrade soil.

4.3 Shallow Foundation Recommendations

Shallow spread footings bearing on native lean clay, remediated fat clay, or newly placed, low plastic structural fill are appropriate for support of the proposed building. Shallow foundations can be sized for a maximum net allowable bearing pressure of 2,500 pounds per square foot (psf) for continuous wall footings and 3,000 psf for isolated spread footings. The footings may be designed with an ultimate coefficient of friction of 0.3 between the base of the concrete footing and the soil subgrade.

If encountered, inadequate bearing materials should be undercut and replaced with properly compacted, low-plastic soil or 1-inch minus crushed limestone following the methods provided in Sections 5.1 and 5.2 of this report.

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Exterior footings, as well as foundations in unheated areas of the facility, should be provided with at least 30 inches of soil cover for frost protection. Interior footings in heated areas can be located at nominal depths below the finished floor. For footings designed and constructed in accordance with our recommendations, total settlement should be less than 1 inch, and differential settlement between adjacent footings should be less than ¾ inch.

4.4 Seismic Considerations

Ground shaking at the foundation of structures and liquefaction of the soil under the foundations are the principle seismic hazards to be considered in design of earthquake-resistant structures. Liquefaction occurs when a rapid buildup in water pressure, caused by the ground motion, pushes sand particles apart, resulting in a loss of strength and later densification as the water pressure dissipates. This loss of strength can cause bearing capacity failure, while the densification can cause excessive settlement. Potential earthquake damage can be mitigated by structural and/or geotechnical measures or procedures common to earthquake resistant design.

4.4.1 International Building Code Site Classification

Seismic design parameters, as determined from data provided by the 2018 International Building Code (IBC 2018) and the United States Geological Survey (USGS) National Seismic Hazard Mapping Project are shown in Table 4.1.

Table 4.1 – Seismic Design Parameters

Site Class	C
M_W	7.52
PGA	0.20
F_{PGA}	1.21
Site Modified PGA_M	0.24
S_S	0.36
S_1	0.15
F_a	1.30
F_v	1.50
S_{DS} (Design Spectral Acceleration at 0.2 sec)	0.32
S_{D1} (Design Spectral Acceleration at 1.0 sec)	0.15
Seismic Design Category (Risk Categories I, II, and III)	C
Seismic Design Category (Risk Category IV)	D

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4.4.2 Liquefaction Potential Analysis

The liquefaction potential analysis for the site was conducted using data from the field exploration and laboratory test results and the techniques outlined in the National Center for Earthquake Engineering (NCEER) Technical Report NCEER-97-0022. Based on our analyses, the soils at the project site have sufficient strength values to resist liquefaction and/or plasticity index that make the threat of liquefaction minimal during the design earthquake. While the amount of the seismically induced settlement is dependent on the magnitude and distance from the seismic event, we estimate that the settlements from the design earthquake will be negligible and relatively uniform in nature, so liquefaction mitigation techniques are not required.

4.5 Floor Slab

The following recommendations assume average uniform floor slab load of 150 psf or less. If sections of the floor slab will support loads greater than the assumed floor slab load, then we should be provided the opportunity to review the final design plans and specifications to determine if the underlying subsurface soils can adequately support the loads. Proofrolling, as discussed in Section 5.1, should be accomplished to identify soft or unstable soils that should be removed from the floor slab area prior to fill placement and/or floor slab construction.

We recommend that the floor slab be designed using a modulus of subgrade reaction, *k* value, of 150 pounds per cubic inch, based on values typically obtained from 1-foot by 1-foot plate load tests. This value assumes the slab will bear on newly placed, low plastic structural fill, or remediated expansive clay. Depending on how the slab load is applied, the value will have to be geometrically modified. The value should be adjusted for larger areas using the following expression for cohesive and cohesionless soil:

Modulus of Subgrade Reaction, $k_s = (\frac{k}{B})$ for cohesive soil; and

$k_s = k\left(\frac{B+1}{2B}\right)^2$ for cohesionless soil.

Where: k_s = coefficient of vertical subgrade reaction for loaded area;
k = coefficient of vertical subgrade reaction for 1x1 square foot area; and
B = width of area loaded, in feet.

The floor slab should be supported on a minimum 4-inch-thick layer of crushed stone. This will help to distribute concentrated loads and equalize moisture conditions beneath the slab.

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It is generally preferable to maintain structural separation between the floor slab and the foundation walls and column pads using isolation joints. We also suggest that joints be placed in the floor slab with spacing (in feet) equal to approximately three times the thickness of the slab (in inches) in both directions. Such joints permit slight movements of the independent elements and help reduce random cracking that might otherwise be caused by restraint of shrinkage, slight rotations, heave, or settlement.

Where occupied space or moisture sensitive floor coverings are planned, we recommend a 6-mil-thick polyethylene sheeting be placed immediately beneath the floor slab and above the crushed rock or gravel to reduce the transfer of capillary moisture to the slab. However, without careful attention to curing of the floor slab, the polyethylene sheeting can cause excessive shrinkage cracking and "curling".

The precautions listed below should be followed for construction of slab-on-grade pads. These details will not reduce the amount of movement, but are intended to reduce potential damage, should some settlement of the supporting subgrade take place. Some increase in moisture content is inevitable as a result of development and associated landscaping. However, extreme moisture content increases can be largely controlled by proper and responsible site drainage, building maintenance and irrigation practices.

- Cracking of slab-on-grade concrete is normal and should be expected. Cracking can occur not only as a result of heaving of the supporting soil, but also as a result of concrete curing stresses. The occurrence of concrete shrinkage cracking, and problems associated with concrete curing may be reduced and/or controlled by limiting the slump of the concrete, proper concrete placement, finishing, curing, and by the placement of crack control joints at frequent intervals, particularly where re-entrant slab corners occur.

- Areas supporting slabs should be properly moisture conditioned and compacted. Backfill in all interior and exterior water and sewer line trenches should be carefully compacted to reduce the shear stress in the concrete extending over these areas.

Exterior slabs should be isolated from the station. These slabs should be reinforced to function as independent units. Movement of these slabs should not be transmitted to the stations' foundations or superstructure.

4.6 Pavements

Selection of the pavement section is dependent on the design life, traffic loads, subgrade strength, drainage characteristics, and the desired level of maintenance. Neither California Bearing Ratio testing nor formal pavement design was a part of our scope for this project. However, for planning purposes, the following recommendations typically result in pavements that perform satisfactorily on similar subgrades. They are

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intended to roughly provide a pavement requiring routine maintenance for a 5-year period, minor repair and maintenance during the 5- to 10-year life of the pavement, and possibly major repairs and restoration after a 10-year service life.

4.6.1 Flexible Pavement

A flexible pavement section may be used for automobile and light truck parking, and entrance and truck areas. The following sections are recommended for the different loading conditions. Asphalt mixes and Aggregate base gradations are referenced to the *Missouri Standard Specifications for Highway Construction* (MoDOT specs).

Table 4.2 – Recommended Flexible Pavement Thickness

Traffic Category	Asphaltic Concrete Surface Course (BP-1) (inches)	Asphaltic Concrete Base Course (BB) (inches)	Aggregate Base Thickness (Type 5) (inches)	Total Thickness (inches)
Drives for Automobiles, Light Trucks	3	--	8	11
Entrance and Drives for Ambulance	2	2	8	12
Parking stalls	3	--	6	9

Care should be taken to provide drains or drainable transitions at locations where pavement sections of varying thickness abut, as to not trap water within the crushed stone base, which could saturate and soften the subgrade.

4.6.2 Rigid Pavement

Alternately, a rigid concrete pavement section may be used with less anticipated long-term maintenance. The recommended rigid pavement sections are shown in Table 4.3.

Table 4.3 – Recommended Rigid Pavement Thickness

Traffic Category	Portland Cement Concrete (inches)	Type 5 Aggregate Base Thickness (inches)	Total Thickness (inches)
Dumpster Pad	8	4	12
Entrance and Drives for Ambulance, Automobiles and Light Trucks	6	4	10
Parking Stalls	5	4	9

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To provide resistance against salt and freeze-thaw cycles, we recommend the concrete have a minimum 28-day compressive strength of 4,000 pounds per square inch (psi) and air entrainment of 5 to 7 percent by volume. We also recommend that the maximum joint spacing be approximately 15 feet.

4.6.3 Pavement Subgrade Considerations

Care should be taken to provide drains or drainable transition at locations where pavement sections of varying thickness abut, so as not to trap water within the crushed stone base, which could saturate and soften the subgrade.

The fat clay could cause some distress in the pavement. To reduce long-term maintenance, consideration could be given to remediating the upper 12 inches of subgrade in paved areas. Options include removal and replacement with crushed stone or low plastic soil, lime treatment, geogrid reinforcement in combination with crushed rock, or use of thicker pavement sections. At a minimum, the pavement subgrade should be proofrolled under SCI's observation and any soft areas repaired prior to the placement of the aggregate base. Any soft areas identified during the proofroll should be removed to firmer soils and backfilled with engineered fill material in accordance with Sections 5.1 and 5.2.

Pavement subgrades may be subjected to construction traffic and exposure to weather for an extended period, and significant problems may be incurred.

4.7 Site Grading and Drainage

Positive site drainage should be provided to reduce surface water infiltration around the perimeter of the building and beneath the floor slab. All grades should be sloped away from the building. Roof and surface drainage should be collected and discharged such that water is not permitted to infiltrate the backfill of the addition.

Large trees and shrubs should be planted away from exterior footings as they may cause drying and shrinkage of the foundation soils and, with the passage of time, potentially detrimental settlement of the floor slab and foundations. A minimum distance of 20 feet or the mature tree's dripline, whichever is greater, is suggested.

We recommend that all final slopes have a maximum inclination of 3 horizontal to 1 vertical (3H:1V), and that a crest of at least 10 feet in width or a distance equivalent to the total height of the slope, whichever is less, be provided around the building before the surface slopes down and away.

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4.8 Underground Utilities

Underground utilities can provide a pathway for water to migrate below the floor slab. Drain and utility pipes beneath the floors should have tight joints to prevent leakage. If utility excavations are backfilled with free-draining granular materials, then cutoffs should be provided at the exterior walls to reduce the potential for water to migrate beneath the building. Impermeable cutoffs may consist of a 3-foot-long "plug" of cohesive soil or bentonite soil mix, or a 1-foot-long plug of lean concrete. Soil may be used for the balance of the backfill.

Depending on the proposed utility alignments and depths, it is possible that rock excavation will be required for the placement of deeper site utilities, particularly in the vicinity of B-402, and should be brought to the attention of the installation contractor. Rock excavation methods are discussed in Section 4.1.

Groundwater is not anticipated to impact construction. In most situations, small amounts of groundwater seepage into shallow excavations can be handled by means of gravity ditching and a sump pump. If greater flows are experienced, SCI should be retained to provide additional consultation.

Except for individual service lines to the facility that intersect foundations perpendicularly, below-grade utilities should not be located within the stress influence zone of the building foundations. Accordingly, below-grade utilities should be located outside a zone extending 45 degrees downward and outward from the edge of the footings.

4.9 Detention Basin Recommendations

A detention basin approximately 1 foot in depth is planned for the southwestern perimeter of the site. The basin will be "dry" (i.e., will not have a permanent normal pool elevation). Based on the *Grading Plan* provided, the slopes of the detention basin embankments will be sloped at a 3 horizontal to 1 vertical (3H:1V).

The entire embankments should consist of cohesive soils with a plasticity index (PI) of at least 20. Sandy, rocky, organic soils or high silt content soils are not suitable for the construction of the embankments because of their potential for erosion and piping. We anticipate suitable soils will be encountered. However, if any unsuitable soils are encountered, we recommend that unsuitable soil within the embankment areas be removed and replaced with at least 2 feet of cohesive soil with a plasticity index (PI) of at least 20, and less than 15 percent sand or gravel.

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Rock bedding should not be used for the outlet piping of the detention basin. Instead, the outlet pipe should be placed on a cohesive soil subgrade shaped to fit the pipe barrel, and the trench backfilled with properly compacted cohesive soil. Alternately, the trench can be backfilled to the springline of the pipe with lean concrete or flowable fill. A filter diaphragm should be incorporated around the outlet pipe.

5.0 SITE DEVELOPMENT AND CONSTRUCTION CONSIDERATIONS

5.1 Site Preparation

The detached garage and any below-grade components should be properly demolished, and the debris removed from the site. Existing foundation walls and footings, floor slabs, pavements, septic fields, and utilities, as well as their associated backfill, should be removed from below and at least 10 feet beyond the proposed station footprint. As an exception, deep utilities, such as existing sewers, may be grouted in place rather than being removed. However, the existing backfill associated with deep utilities should be removed. Outside of the station footprint, existing foundation walls and footings deeper than 3 feet below the proposed subgrade may be left in place. Excavations resulting from the removal of existing improvements should be backfilled with engineered fill in accordance with Section 5.2.

Areas to be cut, or to receive fill, should be stripped of surface vegetation and organic topsoil. The strippings should be removed and stockpiled for later placement in landscaped areas.

After removal of the existing site features, the station footprint should be checked for fat clay and remediated in accordance with Section 4.2. The site should then be proofrolled by systematically passing over the subgrade to achieve complete coverage with proper compaction or loaded construction equipment, and observing the subgrade for pockets of excessively soft, wet, or disturbed soil, or otherwise unacceptable materials.

Disturbed areas should be undercut and replaced with properly compacted structural fill. Soft areas or otherwise unacceptable materials, if encountered, should be removed and replaced with structural fill or stabilized prior to placing additional fill. If removal of soft soils is impractical due to their excessive depth, they should be stabilized or “bridged over” in a manner approved by SCI. “Bridging” of the soft soils can often be accomplished by placing a geofabric, such as RS380i, or a geogrid such as Tensar HX-145, or equivalents, then placing compacted crushed minus gradation rock. The thickness and gradation of the crushed rock should be evaluated by SCI personnel in the field on a case-by-case basis; however, thicknesses of 1 to 2 feet are common.

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Slopes to receive fill, which are steeper than 5 horizontal to 1 vertical (5H:1V), should be benched prior to the placement of fill. Benching will provide level surfaces for compaction and reduce the potential for development of inclined planes of weakness between the natural soil and newly compacted fill. The benches should be spaced such that the height of the cut at the up-slope end of the bench is less than 5 feet.

5.2 Fill Materials and Compaction

Prior to fill placement and compaction, the upper 8 inches of the exposed subgrade should be scarified, moisture conditioned and recompacted. Structural fill should be placed in maximum 8-inch-thick loose lifts and mechanically compacted in accordance with Table 5.1. We recommend that any fill placed in building areas have a LL less than 45 and a plasticity index (PI) less than 25. If higher plasticity soils are placed within 3 feet of the floor slab subgrades, or 2 feet of the bottom of the footings, then remediation will be required. Acceptable non-organic fill soils include materials designated CL, ML, CL-ML, GC, GM, GC-GM by ASTM D 2487-11. Demolished concrete is typically suitable for use as structural fill provided the materials are processed as described below and placed as approved by SCI.

Table 5.1 – Typical Compaction Requirements for Fill

Material Tested	Proctor Type	Minimum Percentage Dry Density
Structural Fill (Cohesive)	Modified (ASTM D 1557)	90
	Standard (ASTM D 698)	95
Structural Fill (Granular)	Modified	95
	Standard	98
Landscaped Areas (Non-load Bearing)	Modified	88
	Standard	92
Utility Trench Backfill	Modified	90
	Standard	95

Prior to compaction, the soil may require moisture adjustment. During warm weather, moisture reduction can generally be accomplished by disking or otherwise aerating the soil. When air drying is not feasible, a moisture reducing chemical additive, such as hydrated lime, could be incorporated into the soil. During dry weather, some addition of moisture may be required to facilitate compaction. This should also be done in a controlled manner using a tank truck with a spray bar. The moistened soil should be thoroughly

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blended with a disk or pulverizer to produce a uniform moisture content. If construction is performed during the winter season, fill materials should be carefully observed to see that no frozen soil is placed as fill or remains in the base materials upon which fill is placed.

Rubble fill, such as concrete from demolition activities or excavated bedrock, may be used as fill material; however, to the maximum extent practicable, reinforcing steel should be removed from the concrete. Rubble fill placed within 3 feet from the proposed finished grade, or within 3 feet of the bottom of footings, the floor slab, and utilities should be broken down to a 4-inch minus gradation. The rubble should have sufficient fines to fill voids around the rubble particles. For mixtures of soil and rock, the moisture content of the soil portion should be compatible with the desired results, i.e., approximately the same as would be required to obtain the recommended compaction if rock were not present. If the mixture is soil-dominated, a sheepsfoot roller will likely be most efficient in achieving compaction. If the mixture is rubble-dominated, compaction can often be better achieved with a vibratory roller or heavy tracked equipment.

If 4-inch-minus rubble is used as fill it should be placed in horizontal lifts not exceeding 12 inches in thickness, and compacted with a D8 dozer, heavy vibratory roller, or other equipment acceptable to SCI. Compaction testing of these materials will not be practical using conventional methods (i.e., nuclear density gauge or drive tubes), due to the particle size; therefore, compaction is usually based on a performance guideline in the field. Poorly compacted areas can generally be detected by observing the fill subgrade during the passing of a loaded scraper or compactor over the fill area and should be recompacted with additional passes or removed and replaced with more stable material. As a guide, we would anticipate that a minimum of four tracked passes of a D8 dozer, or equivalent, would be required to achieve proper compaction.

Backfill for foundation walls may consist of lean clay, 1-inch minus crushed limestone, or controlled low strength material. We advise performing field density tests on at least every other lift to monitor compaction. As an alternate, we suggest using 1-inch clean crushed limestone to provide improved drainage and to reduce lateral pressures on the walls. Due to a slight risk of migration of soil fines into the clean rock, a synthetic filter fabric, such as Mirafi 140N or equivalent, should be placed between the soil face of the excavation and the crushed limestone. If clean rock is used, it may be placed in 2-foot-thick lifts and tamped or tracked to achieve adequate densification. Exterior clean rock backfill should be capped with cohesive soil to reduce the potential for surface water infiltration and should also be drained to daylight, or to a sump with a pump.

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Backfill placed next to walls should be compacted with hand operated equipment and not large, self-propelled or machine operated equipment, which could result in potential overcompaction and higher lateral pressures. Compaction should be reduced within approximately 1 foot of the walls, and the walls should be observed periodically for signs of movement. If movement is detected, it may be necessary to provide bracing and/or change backfill procedures.

In addition to the minimum density requirements listed above, the soil must be stable, i.e., not "pumping" or rutting excessively under construction traffic, prior to placing additional fill or constructing foundations, floor slab, or pavements. Field density tests should be performed on each lift of fill to document that proper compaction is achieved.

5.3 Shallow Foundation Excavations

SCI should observe all footing and floor slab excavations for problem areas, such as fat clay, shallow rock, or otherwise unsuitable material, prior to placing new fill or concrete. Evaluation of the soil subgrade present at the bearing elevation of the foundations should be performed by geotechnical personnel utilizing a hand auger to verify soil conditions. Excessive disturbance of siltier soils in footing excavations should be avoided and could complicate construction. The potential for such disturbance will increase during wetter times of the year. Footing excavations that have been excessively disturbed should be overdeepened to approved undisturbed soils. Overexcavation and replacement with structural fill should be performed where inadequate bearing materials are present in footing excavations.

The base of all excavations should be clean, free of loose soil or uncompacted fill, relatively dry, and maintained near their optimum moisture content. Excavations should be protected from extreme temperatures, precipitation, and construction disturbances. To reduce the possibility of desiccation or saturation of the foundation soils, we recommend that the concrete be placed as soon as possible after excavations are made.

Groundwater is not anticipated to impact shallow excavations during construction. Small amounts of groundwater seepage into the excavations for footings and can be handled by means of gravity ditching and a sump pump. If greater flows are experienced, SCI should be retained to provide additional consultation.

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5.4 Subgrade Considerations

The floor slab and pavement subgrades may be subjected to construction traffic and exposure to weather for an extended period and significant problems may be incurred. It will likely be necessary to proofroll the subgrade in both cut and fill areas and recompact the subgrade immediately prior to placing base rock for the floor slab or pavement. In addition, subgrades covered with base rock may be very slow to dry if precipitation occurs after placing the base rock. Therefore, we recommend that proofrolling and placement of the base rock be done as close to the time of pouring the floor slab or paving as is practical. Proofroll passes should be limited, particularly on silty subgrades, to reduce the potential for pumping of moisture from deeper within the soil profile.

Special measures may be required to facilitate construction during wet or cold weather, or where excessive areas of soft/loose soils are identified. These measures may include, but are not limited to, the addition of lime to the subgrade soils for drying purposes, or the removal of soft spongy soils and their replacement with crushed limestone. Soft areas should be selectively undercut and backfilled with properly compacted cohesive soil. A geotechnical stabilization fabric, such as RS380i, Tensar HX-145, or equivalent, may be used to help stabilize particularly soft areas. Where possible, the subgrade should be sloped to provide drainage.

5.5 Excavation Bracing Requirements

In the *Federal Register*, Volume 54, No. 209 (October 1989), the United States Department of Labor, OSHA amended its "Construction Standards for Excavations, 29 CFR, Part 1926, Subpart P". This document was issued to provide for the safety of workers entering excavations, including utility trenches, basements, footings, and others. All operations should be performed under the supervision of qualified site personnel in accordance with OSHA regulations.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor’s “responsible person”, as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor’s safety procedures. In no case should slope height, sloped inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations.

SCI does not assume responsibility for construction site safety or the contractor’s or other party’s compliance with local, state, and federal safety or other regulations.

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5.6 Erosion Control and Land Disturbance Monitoring Program

Appropriate erosion and sediment control measures, such as proper contouring during site grading activities, the installation of siltation fences, and/or inlet protection, should be used during construction to keep eroded materials from being carried into adjacent waterbodies. Depending on the length of time the subgrade is exposed and the amount of siltation that occurs, it may be necessary to periodically remove materials collected by the sediment control systems. Timely sodding and/or seeding of sloped surfaces will help reduce this potential problem.

SCI recommends following the procedures detailed in the Stormwater Pollution Prevention Plan (SWPPP). Any site disturbing more than one acre of ground must obtain a Land Disturbance Permit from the Missouri Department of Natural Resources. As part of the permit compliance procedures, weekly and rain-event site observations must be performed to document the changing site conditions and maintenance of control measures.

6.0 CONSTRUCTION MONITORING PROGRAM

The following list summarizes SCI's recommendations for a construction monitoring program. These services are recommended to provide quality assurance in assessing design assumptions and to document earth-related construction procedures for compliance with plans, specifications, and good engineering practice. SCI should be retained to:

- Participate in a formal preconstruction meeting with the Owner's Representative, Civil Engineer, and Contractor, prior to construction at the site;
- Observe site preparation activities prior to construction, including demolition of the existing site features, stripping, and proofrolling;
- Conduct and document weekly and rain-event observations at the site, maintain and update on-site paperwork, and provide submittals required by the SWPPP and Land Disturbance Permit;
- Assess the suitability of potential fill materials, including both on-site and off-site sources;
- Monitor placement and compaction of structural fill and backfill;
- Observe the foundation excavations and floor slab subgrade to assess the impact of expansive clay, shallow rock, or other unsuitable material, and to recommend the extent of remedial measures;
- Observe footing excavations for adequacy of bearing materials;
- Observe the floor slab subgrade prior to placing base rock;

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- Monitor placement and compaction of backfill for below-grade utilities;
- Observe pavement subgrade preparation and provide observation and testing services for the base course and pavement section;
- Check the thickness of pavement sections and, for asphaltic concrete, its density; and
- Provide quality assurance testing of structural concrete and pavement materials.

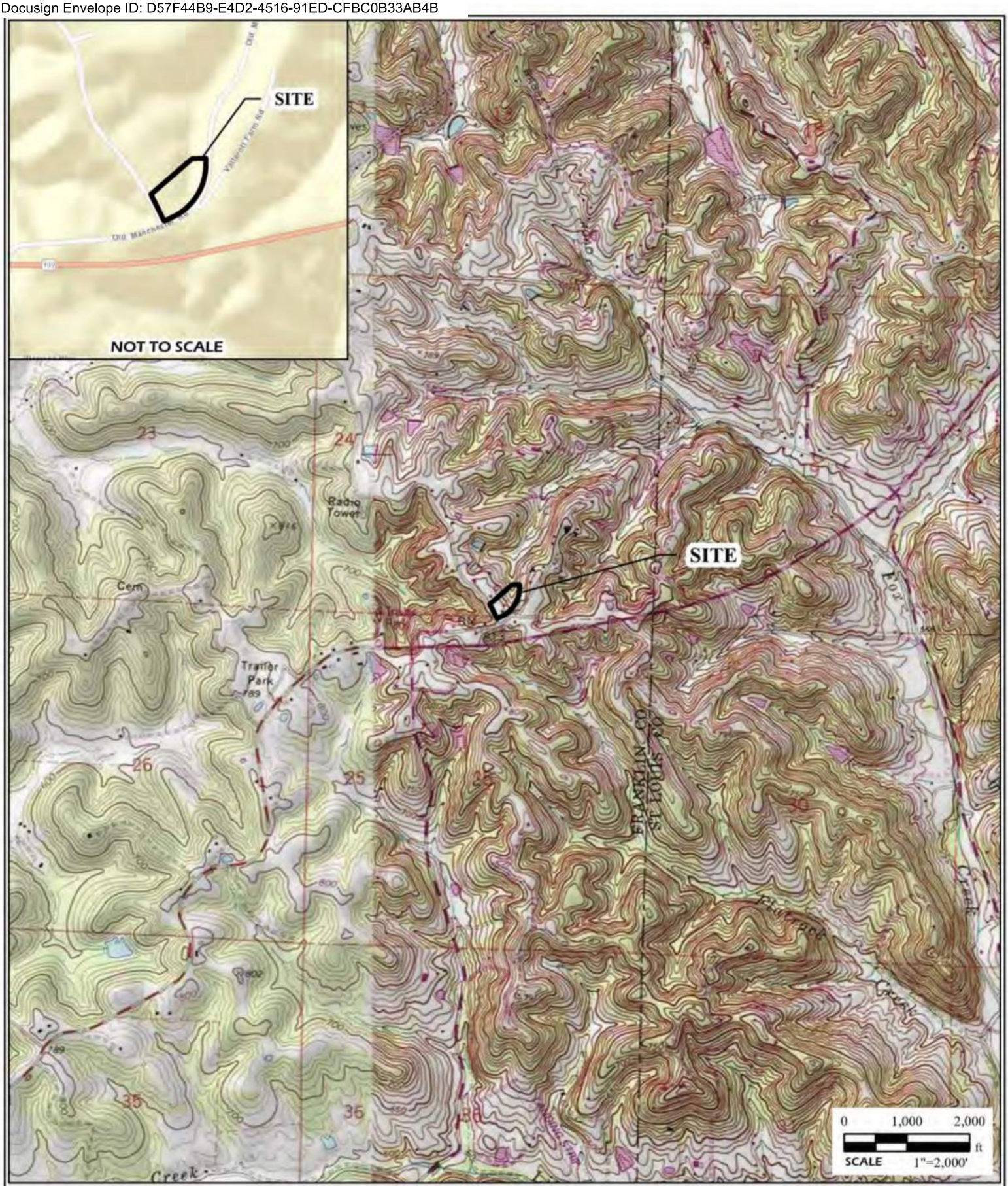
7.0 LIMITATIONS

The recommendations provided herein are for the exclusive use of Meramec Ambulance District (MAD); Navigate Building Solutions, LLC (Navigate); CEDC; or as otherwise provided in the Agreement between the parties. It is imperative that SCI be contacted by any third-party interests to evaluate the applicability of this report relative to use by anyone other than MAD; Navigate, or CEDC. Our recommendations are specific only to the project described and are not meant to supersede more stringent requirements of local ordinances. They are based on subsurface information obtained at eight widely spaced boring locations within the project area, our understanding of the project as presented in Section 2.0, “Site and Project Description”, and geotechnical engineering practice consistent with the standard of care. No other warranty is expressed or implied. SCI should be contacted if conditions encountered are not consistent with those described.

We should also be provided with a set of development plans, once they are available, to review whether our recommendations have been understood and applied correctly, and to assess the need for additional exploration or analysis. Failure to provide these documents to SCI may nullify some or all of the recommendations provided herein. In addition, any changes in the planned project or changed site conditions may require revised or additional recommendations on our part.

The final part of our geotechnical service should consist of direct observation during construction to observe that conditions actually encountered are consistent with those described in this report and to assess the appropriateness of the analyses and recommendations contained herein. SCI cannot assume responsibility or liability for the adequacy of its recommendations without being retained to observe construction.

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PROJECT NAME	MERAMEC AMBULANCE DISTRICT - STATION #4 PACIFIC, MISSOURI			
	VICINITY AND TOPOGRAPHIC MAP			
DRAWN BY: RCV		FIGURE DATE	JOB NUMBER	
CHECKED BY: GMK		10/21/2025	2025-1484.10	

GENERAL NOTES

USGS TOPOGRAPHIC MAP
LABADIE, MISSOURI QUADRANGLE
DATED 1972
20' CONTOURS
EUREKA, MISSOURI QUADRANGLE
DATED 1954, PHOTO REVISED 1993
10' CONTOURS

STREET MAP
HTTP://GOTO.ARCGISONLINE.COM/MAPS/WORLD_STREET_MAP

N
W
E
S

FIGURE
1

Docusign Envelope ID: D57F44B9-E4D2-4516-91ED-CFBC0B33AB4B



GENERAL NOTES

APPROXIMATE SOIL BORING LOCATIONS

AERIAL PHOTOGRAPH OBTAINED FROM ARCGIS ONLINE, WORLD IMAGERY.

DIMENSIONS AND LOCATIONS ARE APPROXIMATE; ACTUAL MAY VARY. DRAWING SHALL NOT BE USED OUTSIDE THE CONTEXT OF THE REPORT FOR WHICH IT WAS GENERATED.

PROJECT NAME

MERAMEC AMBULANCE DISTRICT - STATION #4
PACIFIC, MISSOURI

AERIAL PHOTOGRAPH

JOB NUMBER	2025-1484.10
FIGURE DATE	11/18/2025
DRAWN BY	RCV
CHECKED BY	GMK
FIGURE	2

Docusign Envelope ID: D57F44B9-E4D2-4516-91ED-CFBC0B33AB4B



GENERAL NOTES

APPROXIMATE SOIL BORING LOCATIONS

PLAN DATED 9/2025 BY CEDC.

DIMENSIONS AND LOCATIONS ARE APPROXIMATE; ACTUAL MAY VARY. DRAWING SHALL NOT BE USED OUTSIDE THE CONTEXT OF THE REPORT FOR WHICH IT WAS GENERATED.

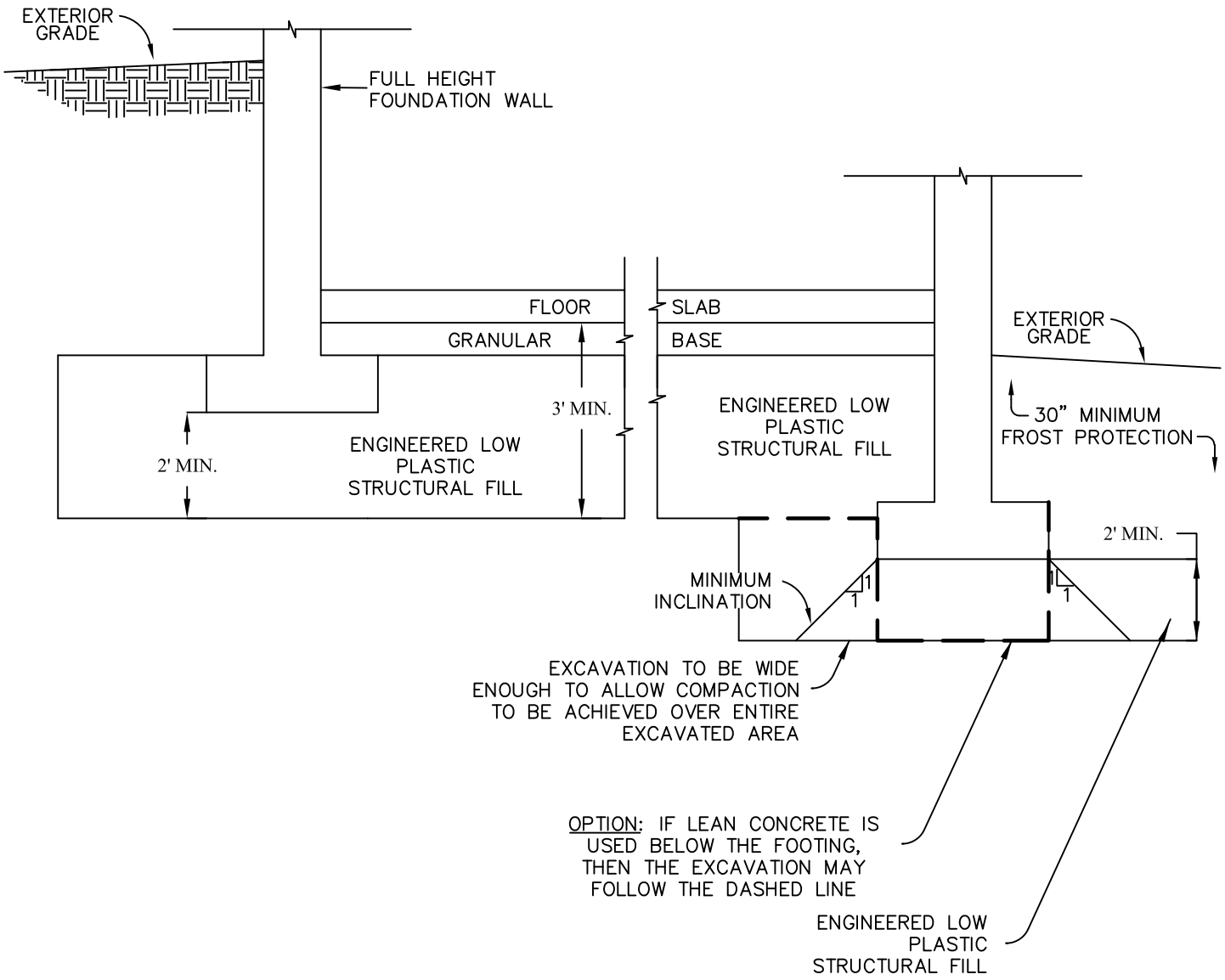
PROJECT NAME

MERAMEC AMBULANCE DISTRICT - STATION #4
PACIFIC, MISSOURI

SITE PLAN

JOB NUMBER	2025-1484.10
FIGURE DATE	11/18/2025
DRAWN BY	RCV
CHECKED BY	GMK
FIGURE	3

Docusign Envelope ID: D57F44B9-E4D2-4516-91ED-CFBC0B33AB4B



PROJECT NAME: MERAMEC AMBULANCE DISTRICT - STATION #4 PACIFIC, MISSOURI		General Notes/Legend	
EXPANSIVE CLAY REMEDIATION DETAIL			
DRAWN BY: ACV	FIGURE DATE: 11/12/2025	JOB NUMBER: 2025-1484.10	SCALE: N. T. S
CHECKED BY: GMK			FIGURE: 4

Docusign Envelope ID: D57F44B9-E4D2-4516-91ED-CFBC0B33AB4B

Appendix A

Docusign Envelope ID: D57F44B9-E4D2-4516-91ED-CFBC0B33AB4B

SCI ENGINEERING, INC.
130 Point West Boulevard
St. Charles, Missouri 63301
636-949-8200
www.sciengineering.com

BORING LOG LEGEND AND NOMENCLATURE

Depth is in feet below ground surface. **Elevation** is in feet in reference to sea level, site datum, or as otherwise noted.

Sample Type

- **SS** Split-spoon sample, disturbed, obtained by driving a 2-inch-O.D. split-spoon sampler (ASTM D 1586).
- **NX** Diamond core bit, nominal 2-inch-diameter rock sample (ASTM D 2113).
- **NQ** Diamond core bit, nominal 1 7/8-inch diameter rock sample
- **ST** Thin-walled (Shelby) tube sample, relatively undisturbed, obtained by pushing a 3-inch-diameter, tube (ASTM D 1587).
- **CS** Continuous sample tube system, relatively undisturbed, obtained by split-barrel sampler in conjunction with auger advancement.
- **SV** Shear vane, field test to determine strength of cohesive soil by pushing or driving a 2-inch-diameter vane, and then shearing by torquing soil in existing and remolded states (ASTM D 2573).
- **BS** Bag sample, disturbed, obtained from cuttings.
- **MC** Modified California Sampler, disturbed, obtained by driving a 2.5-inch O.D. ring-lined split-barrel sampler (ASTM D 3550).

Recovery is expressed as the sample length recovered / the total length pushed, driven, or cored.

Blows Numbers indicate blows per 6 inches of split-spoon sampler penetration when driven with a 140-pound hammer falling freely 30 inches. The number of total blows obtained for the second and third 6-inch increments is the N value (Standard Penetration Test or SPT) in blows per foot (ASTM D 1586). Practical refusal is considered to be 50 or more blows without achieving 6 inches of penetration and is expressed as a ratio of 50 to actual penetration, e.g., 50/2 (50 blows for 2 inches).

For analysis, the N value is used when obtained by a cathead and rope system. When obtained by an automatic hammer, the N value may be increased by a factor of 1.3.

Vane Shear Strength is expressed as the peak strength (existing state) / the residual strength (remolded state).

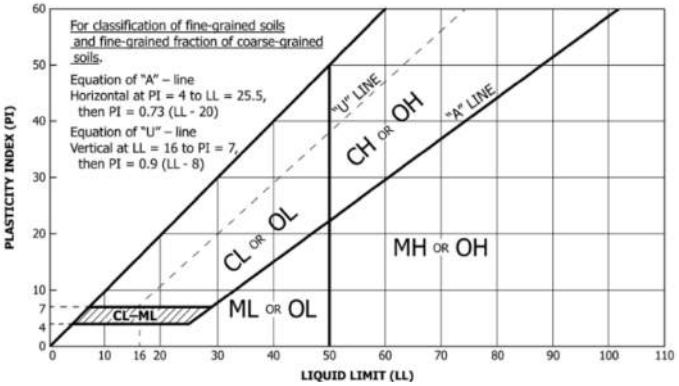
Description indicates soil constituents and other classification characteristics (ASTM D 2488) and the Unified Soil Classification (ASTM D 2487).

SOIL GRAIN SIZE

Soil Component	Particle Size Range
Boulders	> 12 in.
Cobbles	12 in. -3 in.
Gravel	3 in. - #4 sieve (4.75 mm)
Coarse Gravel	3 in. - ¾ in.
Fine Gravel	¾ in. - #4 sieve (4.75 mm)
Sand	#4 sieve (4.75 mm) - #200 sieve (0.075 mm)
Coarse Sand	#4 sieve (4.75 mm) - #10 sieve (2 mm)
Medium Sand	#10 sieve (2 mm) - #40 sieve (0.425 mm)
Fine Sand	#40 sieve (0.425 mm) - #200 sieve (0.075 mm)
Fines (Silt & Clay)	< #200 sieve (0.075 mm)

in – inches
mm – millimeters

PLASTICITY CHART



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BORING LOG LEGEND AND NOMENCLATURE

Strength of Cohesive Soils		
Consistency	*N-Value*	*Unconfined Comp. Strength (ksf)*
Very Soft	0 – 2	< 0.50
Soft	3 – 4	0.50 – 1.00
Medium Stiff	5 – 8	1.0 – 2.0
Stiff	9 – 15	2.0 – 4.0
Very Stiff	16 – 30	4.0 – 6.0
Hard	Over 30	> 8.0

Density of Granular Soils	
Descriptive Term	*N-Value*
Very Loose	0 – 4
Loose	5 – 10
Medium Dense	11 – 29
Dense	30 – 49
Very Dense	Over 50

ksf – kips per square foot

USCS SOIL CLASSIFICATION

		Major Divisions		Group Symbol	Typical Names
Coarse-Grained Soils (Less than 50% Passing the #200 Sieve)	Gravels	Clean Gravels		GW	Well graded gavels, gravel-sand mixture
				GP	Poorly graded gravels, gravel-sand mixture
		Gravels with fines	Limits plot below "A" line on plasticity chart	GM	Silty gravels, gravel-sand-silt mixture
			Limits plot above "A" line on plasticity chart	GC	Clayey gravels, gravel-sand-clay mixture
	Sands	Clean Sands		SW	Well graded sands, gravelly sands
				SP	Poorly graded sands, gravelly sands
		Sands with fines	Limits plot below "A" line on plasticity chart	SM	Silty sands, sand-silt mixture
			Limits plot above "A" line on plasticity chart	SC	Clayey sands, sand-clay mixture
Fine-Grained Soils (50% or More Passing #200 Sieve)	Silts	Silts of low plasticity (LL<50)		ML	Inorganic silts, clayey silts
		Silts of high plasticity (LL≥50)		MH	Inorganic silts, elastic silts
	Clays	Clays of low plasticity (LL<50)		CL	Inorganic lean clays, sandy and silty clays
		Clays of high plasticity (LL≥50)		CH	Inorganic fat clays, sandy clays
	Organic Silts and Clays	Organic silts and clays of low plasticity (LL<50)		OL	Organic silts and lean clays
		Organic silts and clays of high plasticity (LL≥50)		OH	Organic silts and fat clays
Organic Soils		Primarily organic matter		PT	Peat

*Table per Unified Soil Classification System (USCS)

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BORING LOG LEGEND AND NOMENCLATURE

SECONDARY SOIL CONSTITUENT RELATIVE COMPOSITION

If Primary Soil Constituent is	Clay or Silt		Sand or Gravel	
	Trace	0-5%	Trace	0-5%
	Few	6-15%	With	6-12%
	With	>15%	Silty/Clayey/Gravelly/Sandy	>12%
	Sandy/Gravelly	>30%		

Stratigraphic Breaks may be observed or interpreted and are indicated by a dashed line (inferred) or solid line (observed). Transition between described materials may be gradual.

Laboratory Test Results

- Natural moisture content (ASTM D 2216) in percent.
- Dry density in pounds per cubic foot (pcf).
- Hand penetrometer value of apparently intact cohesive sample in kips per square foot (ksf).
- Unconfined compressive strength (ASTM D 2166) in ksf.
- Liquid and Plastic Limits (ASTM D 4318) in percent.

Rock Quality Designation (RQD) is the ratio between the total length of core segments 4 inches or more and the total length of core drilled. RQD indicates in-situ rock quality as follows:

Excellent	90 - 100%
Good	75 – 90%
Fair	50 – 75%
Poor	25 – 50%
Very Poor	0 – 25%

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BORING LOG

PROJECT Meramec Ambulance District - Station #4 **BORING NUMBER** B-401
LOCATION Pacific, Missouri **SHEET** 1 **of** 1
DRILLER Midwest Drilling, Inc. **HAMMER** Automatic **PROJECT NO.** 2025-1484.10
EQUIPMENT CME-750 w/CFA **ELEVATION** 815± **DATE DRILLED** 10/15/2025

DEPTH (ft)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE RECOVERY (in/in)	SAMPLE BLOWS (per 6 in)	DESCRIPTION (UNIFIED SOIL CLASSIFICATION)	GRAPHIC	SEE REMARK NO.	LAB: MOISTURE CONTENT (%)	LAB: DRY DENSITY (pcf)	LAB: HAND PENETROMETER (ksf)	LAB: UNCONFINED COMPRESSIVE STRENGTH (ksf)	LAB: LIQUID LIMIT	LAB: PLASTICITY INDEX	ELEVATION (ft)
					LEAN CLAY (CL): Brown									
	1	SS	9/18	4 6 5				19		4.0				813
3														
	2	SS	17/18	5 5 7	Becomes brown and gray			22		5.0				810
6														
	3	ST	22/24					21	112.3		2.6	32	13	807
9	4	SS	7/18	15 24 36	GRAVELLY LEAN CLAY (CL): Brown, gravel is fine to coarse			10		--				
					Auger refusal on limestone at 10.5 feet.									804
12														
														801
15														
														798
18														

WATER LEVEL:

X	NONE OBSERVED WHILE DRILLING
	ft WHILE DRILLING
	ft ___ HRS AFTER DRILLING
	ft ___ DAYS AFTER DRILLING

REMARKS:

Docusign Envelope ID: D57F44B9-E4D2-4516-91ED-CFBC0B33AB4B

BORING LOG

PROJECT Meramec Ambulance District - Station #4 **BORING NUMBER** B-402
LOCATION Pacific, Missouri **SHEET** 1 **of** 1
DRILLER Midwest Drilling, Inc. **HAMMER** Automatic **PROJECT NO.** 2025-1484.10
EQUIPMENT CME-750 w/CFA **ELEVATION** 814± **DATE DRILLED** 10/15/2025

DEPTH (ft)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE RECOVERY (in/in)	SAMPLE BLOWS (per 6 in)	DESCRIPTION (UNIFIED SOIL CLASSIFICATION)	GRAPHIC	SEE REMARK NO.	LAB: MOISTURE CONTENT (%)	LAB: DRY DENSITY (pcf)	LAB: HAND PENETROMETER (ksf)	LAB: UNCONFINED COMPRESSIVE STRENGTH (ksf)	LAB: LIQUID LIMIT	LAB: PLASTICITY INDEX	ELEVATION (ft)
					FAT CLAY (CH): Brown with gray, trace fine to coarse gravel									
	1	SS	7/18	3 5 6				16		>9.0		51	31	813
3														
	2	SS	1/1	50/1"	Auger refusal on limestone at 3.5 feet.									810
6														807
9														804
12														801
15														798
18														795

WATER LEVEL:

X	NONE OBSERVED WHILE DRILLING
	ft WHILE DRILLING
	ft ___ HRS AFTER DRILLING
	ft ___ DAYS AFTER DRILLING

REMARKS:

Docusign Envelope ID: D57F44B9-E4D2-4516-91ED-CFBC0B33AB4B

BORING LOG

PROJECT Meramec Ambulance District - Station #4 **BORING NUMBER** B-403
LOCATION Pacific, Missouri **SHEET** 1 **of** 1
DRILLER Midwest Drilling, Inc. **HAMMER** Automatic **PROJECT NO.** 2025-1484.10
EQUIPMENT CME-750 w/CFA **ELEVATION** 810± **DATE DRILLED** 10/15/2025

DEPTH (ft)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE RECOVERY (in/in)	SAMPLE BLOWS (per 6 in)	DESCRIPTION (UNIFIED SOIL CLASSIFICATION)	GRAPHIC	SEE REMARK NO.	LAB: MOISTURE CONTENT (%)	LAB: DRY DENSITY (pcf)	LAB: HAND PENETROMETER (ksf)	LAB: UNCONFINED COMPRESSIVE STRENGTH (ksf)	LAB: LIQUID LIMIT	LAB: PLASTICITY INDEX	ELEVATION (ft)
					8" CRUSHED ROCK									
					LEAN CLAY (CL): Brown									
	1	SS	7/18	4 5 5	FAT CLAY (CH): Brown			17		9.0				
3					LEAN CLAY (CL): Brown with gray									807
	2	ST	24/24					23	105.2		5.0	37	17	
6														804
	3	SS	11/18	3 4 5				23		3.0				
					FAT CLAY (CH): Brown to reddish-brown, with fine to coarse gravel									
9	4	SS	14/18	16 6 7				27		5.5				801
12														798
					Auger refusal on limestone at 13.5 feet.									
15														795
18														792

WATER LEVEL:

X	NONE OBSERVED WHILE DRILLING
	ft WHILE DRILLING
	ft ___ HRS AFTER DRILLING
	ft ___ DAYS AFTER DRILLING

REMARKS:

Docusign Envelope ID: D57F44B9-E4D2-4516-91ED-CFBC0B33AB4B

BORING LOG

PROJECT Meramec Ambulance District - Station #4 **BORING NUMBER** B-404
LOCATION Pacific, Missouri **SHEET** 1 **of** 1
DRILLER Midwest Drilling, Inc. **HAMMER** Automatic **PROJECT NO.** 2025-1484.10
EQUIPMENT CME-750 w/CFA **ELEVATION** 815± **DATE DRILLED** 10/15/2025

DEPTH (ft)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE RECOVERY (in/in)	SAMPLE BLOWS (per 6 in)	DESCRIPTION (UNIFIED SOIL CLASSIFICATION)	GRAPHIC	SEE REMARK NO.	LABORATORY TEST RESULTS: MOISTURE CONTENT (%)	DRY DENSITY (pcf)	HAND PENETROMETER (ksf)	UNCONFINED COMPRESSIVE STRENGTH (ksf)	LIQUID LIMIT	PLASTICITY INDEX	ELEVATION (ft)
					LEAN CLAY (CL): Brown and gray									
	1	SS	8/18	6 6 5				12		9.0		47	26	813
3														
	2	SS	14/18	11 12 15				18		9.0				810
6														
	3	SS	15/18	3 3 4				23		3.5				
					CLAYEY GRAVEL (GC): Brown, fine to coarse, clay is lean									807
9	4	SS	10/18	25 30 12										804
12					SHALEY FAT CLAY (CH): Tan with gray, some fine to coarse gravel									
	5	SS	15/18	5 8 22				18		7.5				801
15														
														798
18					Auger refusal on limestone at 18 feet.									

WATER LEVEL:

X	NONE OBSERVED WHILE DRILLING
	ft WHILE DRILLING
	ft ___ HRS AFTER DRILLING
	ft ___ DAYS AFTER DRILLING

REMARKS:

Docusign Envelope ID: D57F44B9-E4D2-4516-91ED-CFBC0B33AB4B

BORING LOG

PROJECT Meramec Ambulance District - Station #4 **BORING NUMBER** B-405
LOCATION Pacific, Missouri **SHEET** 1 **of** 1
DRILLER Midwest Drilling, Inc. **HAMMER** Automatic **PROJECT NO.** 2025-1484.10
EQUIPMENT CME-750 w/CFA **ELEVATION** 815± **DATE DRILLED** 10/15/2025

DEPTH (ft)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE RECOVERY (in/in)	SAMPLE BLOWS (per 6 in)	DESCRIPTION (UNIFIED SOIL CLASSIFICATION)	GRAPHIC	SEE REMARK NO.	LABORATORY TEST RESULTS: MOISTURE CONTENT (%)	DRY DENSITY (pcf)	HAND PENETROMETER (ksf)	UNCONFINED COMPRESSIVE STRENGTH (ksf)	LIQUID LIMIT	PLASTICITY INDEX	ELEVATION (ft)
					LEAN CLAY (CL): Brown with gray									
	1	SS	8/18	7 7 5	FAT CLAY (CH): Brown with gray			9		9.0				813
3														
	2	SS	17/18	4 4 7				25		5.5				810
					becomes Brown, trace fine to coarse gravel									
6	3	SS	18/18	3 4 5			1	7		3.0				
					CLAYEY GRAVEL (GC): Brown, fine to coarse, clay is fat									807
9	4	SS	13/18	22 46 23										
														804
12					SHALEY FAT CLAY (CH): Tan with brown, with fine to coarse gravel									
	5	SS	13/18	15 24 50/5.5"				11		>9.0				801
15					Auger refusal on limestone at 15 feet.									
														798
18														

WATER LEVEL:

X	NONE OBSERVED WHILE DRILLING
	ft WHILE DRILLING
	ft ___ HRS AFTER DRILLING
	ft ___ DAYS AFTER DRILLING

REMARKS:

1) Percent passing the number 200 sieve: 95.9%

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BORING LOG

PROJECT Meramec Ambulance District - Station #4 **BORING NUMBER** B-406
LOCATION Pacific, Missouri **SHEET** 1 **of** 1
DRILLER Midwest Drilling, Inc. **HAMMER** Automatic **PROJECT NO.** 2025-1484.10
EQUIPMENT CME-750 w/CFA **ELEVATION** 811± **DATE DRILLED** 10/15/2025

DEPTH (ft)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE RECOVERY (in/in)	SAMPLE BLOWS (per 6 in)	DESCRIPTION (UNIFIED SOIL CLASSIFICATION)	GRAPHIC	SEE REMARK NO.	LAB: MOISTURE CONTENT (%)	LAB: DRY DENSITY (pcf)	LAB: HAND PENETROMETER (ksf)	LAB: UNCONFINED COMPRESSIVE STRENGTH (ksf)	LAB: LIQUID LIMIT	LAB: PLASTICITY INDEX	ELEVATION (ft)
					8" CRUSHED ROCK									
					FAT CLAY (CH): Brown									810
	1	SS	10/18	4 5 7				20		6.0				
3					LEAN CLAY (CL): Brown and gray									807
	2	SS	15/18	5 6 6				24		5.0				
6					FAT CLAY (CH): Brown and gray									804
	3	SS	18/18	4 4 4				22		3.5		62	37	
					CLAYEY GRAVEL (GC): Brown, fine to coarse, clay is lean									
9	4	SS	14/18	24 13 7	FAT CLAY (CH): Brown to reddish-brown, trace fine- to coarse-grained sand, trace fine to coarse gravel			39		5.0				801
12					SHALEY FAT CLAY (CH): Tan with gray, with fine chert gravel									798
	5	SS	16/18	5 13 14				16		9.0				
15														795
18					Auger refusal on limestone at 17 feet.									792

WATER LEVEL:

X	NONE OBSERVED WHILE DRILLING
	ft WHILE DRILLING
	ft ___ HRS AFTER DRILLING
	ft ___ DAYS AFTER DRILLING

REMARKS:

Docusign Envelope ID: D57F44B9-E4D2-4516-91ED-CFBC0B33AB4B

BORING LOG

PROJECT Meramec Ambulance District - Station #4 **BORING NUMBER** B-407
LOCATION Pacific, Missouri **SHEET** 1 **of** 1
DRILLER Midwest Drilling, Inc. **HAMMER** Automatic **PROJECT NO.** 2025-1484.10
EQUIPMENT CME-750 w/CFA **ELEVATION** 809± **DATE DRILLED** 10/15/2025

DEPTH (ft)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE RECOVERY (in/in)	SAMPLE BLOWS (per 6 in)	DESCRIPTION (UNIFIED SOIL CLASSIFICATION)	GRAPHIC	SEE REMARK NO.	LABORATORY TEST RESULTS: MOISTURE CONTENT (%)	DRY DENSITY (pcf)	HAND PENETROMETER (ksf)	UNCONFINED COMPRESSIVE STRENGTH (ksf)	LIQUID LIMIT	PLASTICITY INDEX	ELEVATION (ft)
					8" CRUSHED ROCK									
					FAT CLAY (CH): Brown									
	1	SS	6/18	4 10 7				16		9.0				807
3					LEAN CLAY (CL): Brown with gray									
	2	SS	17/18	4 4 5				23		5.5				804
					GRAVELLY LEAN CLAY (CL): Brown, gravel is fine to coarse									
6	3	SS	15/18	10 15 26				13		--				
					GRAVELLY FAT CLAY (CH): Reddish-brown, gravel is fine to coarse									801
9	4	SS	10/18	8 9 15				9		--				
					Boring terminated at 10 feet.									798
12														
														795
15														
														792
18														

WATER LEVEL:

X NONE OBSERVED WHILE DRILLING
_____ ft WHILE DRILLING
_____ ft ____ HRS AFTER DRILLING
_____ ft ____ DAYS AFTER DRILLING

REMARKS:

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BORING LOG

PROJECT Meramec Ambulance District - Station #4 **BORING NUMBER** B-408
LOCATION Pacific, Missouri **SHEET** 1 **of** 1
DRILLER Midwest Drilling, Inc. **HAMMER** Automatic **PROJECT NO.** 2025-1484.10
EQUIPMENT CME-750 w/CFA **ELEVATION** 815± **DATE DRILLED** 10/15/2025

DEPTH (ft)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE RECOVERY (in/in)	SAMPLE BLOWS (per 6 in)	DESCRIPTION (UNIFIED SOIL CLASSIFICATION)	GRAPHIC	SEE REMARK NO.	LAB: MOISTURE CONTENT (%)	LAB: DRY DENSITY (pcf)	LAB: HAND PENETROMETER (ksf)	LAB: UNCONFINED COMPRESSIVE STRENGTH (ksf)	LAB: LIQUID LIMIT	LAB: PLASTICITY INDEX	ELEVATION (ft)
					LEAN CLAY (CL): Brown with gray									
	1	SS	13/18	4 5 5				9		9.0				
813					FAT CLAY (CH): Brown and gray									
3														
	2	SS	12/18	7 10 13				17		>9.0				
810														
					LEAN CLAY (CL): Brown and gray									
6														
	3	SS	15/18	8 9 15				15		8.5				
807														
					CLAYEY GRAVEL (GC): Brown, fine to coarse, clay is lean									
	4	SS	3/5	50/5"										
9														
804														
					SHALEY FAT CLAY (CH): Brown, with fine to coarse gravel									
12														
	5	SS	6/6	50/5.5"	WEATHERED LIMESTONE: With chert			20		--				
801														
15														
					Auger refusal on limestone at 16 feet.									
798														
18														

WATER LEVEL:

X NONE OBSERVED WHILE DRILLING
____ ft WHILE DRILLING
____ ft ____ HRS AFTER DRILLING
____ ft ____ DAYS AFTER DRILLING

REMARKS:

Docusign Envelope ID: D57F44B9-E4D2-4516-91ED-CFBC0B33AB4B

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, you can benefit from a lowered exposure to problems associated with subsurface conditions at project sites and development of them that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed herein, contact your GBA-member geotechnical engineer. Active engagement in GBA exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Understand the Geotechnical-Engineering Services Provided for this Report

Geotechnical-engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical-engineering services is typically a geotechnical-engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical-engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

Geotechnical-Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

Likewise, geotechnical-engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical-engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will not be adequate to develop geotechnical design recommendations for the project.

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project or purpose;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read the report in its entirety. Do not rely on an executive summary. Do not read selective elements only. *Read and refer to the report in full.*

You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project or site changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept*

Docusign Envelope ID: D57F44B9-E4D2-4516-91ED-CFBC0B33AB4B

responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface using various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing is performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgement to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team through project completion to obtain informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are <u>not</u> final, because the geotechnical engineer who developed them relied heavily on judgement and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* exposed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a continuing member of the design team, to:

- confer with other design-team members;
- help develop specifications;
- review pertinent elements of other design professionals' plans and specifications; and
- be available whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction-phase observations.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for information purposes only.* To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are <u>Not</u> Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer's services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will <u>not</u> of itself be sufficient to prevent moisture infiltration. Confront the risk of moisture infiltration*** by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are <u>not</u> building-envelope or mold specialists.***



Telephone: 301/565-2733
e-mail: info@geoprofessional.org www.geoprofessional.org

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1525 South Broadway
St. Louis, Missouri 63104
Phone: (314) 421-0600
Fax: (314) 421-0234

Your Sole Provider of Environmental Health & Safety Services

POLARIZED LIGHT MICROSCOPY ANALYSIS REPORT

(Method : EPA/600/R-93/116)

Project No. : 23490 Received Date: 12/18/2025 Customer: Meramec Ambulance District
Report No. : 25-12-0148 Analyzed Date: 12/19/2025 Project Name: Station #4
Contact : Dustin Roberts Customer PO: N/A Project Address: 385 Old Manchester Rd
Pacific, MO

Sample Info		Client Provided Information		Analytical Info			Non-Asbestos		Asbestos
Sample ID	Lab ID	Sample Description	Material Type	Appearance	Texture	Color	% Non-Fibrous	% Fibrous	% Type
23490-AS-01A	1274	Asphalt Shingle	Miscellaneous	Heterogeneous, Mixed	Rough, Grainy, Fibrous	Black	20-30% Other	70-80% Cellulose	None Detected
23490-AS-01B	1275	Asphalt Shingle	Miscellaneous	Heterogeneous, Mixed	Rough, Grainy, Fibrous	Black	20-30% Other	70-80% Cellulose	None Detected
23490-AS-01C	1276	Asphalt Shingle	Miscellaneous	Heterogeneous, Mixed	Rough, Grainy, Fibrous	Black	20-30% Other	70-80% Cellulose	None Detected
23490-WG-02A	1277	Window Glazing	Miscellaneous	Homogeneous, Non-Fibrous	Rough	Off-White	>95% Other	<1% Cellulose	None Detected
23490-WG-02B	1278	Window Glazing	Miscellaneous	Homogeneous, Non-Fibrous	Rough	Off-White	>95% Other	<1% Cellulose	None Detected
23490-WG-02C	1279	Window Glazing	Miscellaneous	Homogeneous, Non-Fibrous	Rough	Off-White	>95% Other	<1% Cellulose	None Detected

ANALYST: E Nelson REVIEWED BY: Robert H Hill II

Samples 6 SAMPLES ANALYZED

Laboratory Disclaimer:
The test data only pertains to the items tested. No assumptions or conclusions should be made to materials or samples not analyzed in this report.
SITEX maintains liability limited to cost of analysis.
Interpretation and uses of test results are the responsibility of the client.
This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by SITEX.
SITEX participates in the American Industrial Hygiene Association (AIHA) Bulk Asbestos Proficiency Analytical Testing (BAPAT) Program , Participant Number 286604.

CHAIN OF CUSTODY / LABORATORY WORK REQUEST

~~Page 1 of 2~~ Page 1 of 1

EJW 18DEC2025

SITEX Environmental Inc.
1525 S. Broadway
St. Louis, MO 63104-4014

Phone: (314) 421-0600
FAX: (314) 421-0234

Project Name: Station #4
Project Address: 395 old Manchester Rd Pacific, MO

Project # : 23490
Client Contact: Dustin Roberts
E-Mail: Dustin@navigatebuildingsolutions.com

Invoice to:

Date : 12/18/25
P.O. # :

Sample ID	Description	Date/Time Sampled	# of Cont	Type	Matrix: Bulk	Air	Water	Soil	Sludge	Preservative: Unpres.	HNO_3	NaOH	H_2SO_4	HCl	Cold	Analysis Required: PLM / DS
23490-AS-01A	Asphalt Shingle	12/17/25	1	Bagsic	X					X						X
-AS-01B	"	"	"	"	"					"						"
-AS-01C	"	"	"	"	"					"						"
-WG-02A	Window Glazing	"	"	"	"					"						"
WG-02B	"	"	"	"	"					"						"
WG-02C	"	"	"	"	"					"						"

Comments:

Turn Around Time

- ___ 1 hour
- ___ 2-3 hour
- ___ 6-8 Hours
- ___ 24 Hour
- ___ Same Day
- ___ 48 Hours
- X 3-5 Day

Samples Taken By: RHH + AMW

25-12-0148
EJW
18DEC2025

Relinquished By	Date/Time	Received By	Date/Time
Mackenzie Weston	12/18/25 ; 11:10a.m.	E Nelson	18DEC2025 12:22pm

McCRONE RESEARCH INSTITUTE

certifies that

Elizabeth Nelson

has successfully completed an intensive course of instruction in

Microscopical Identification of Asbestos

given by the McCrone Research Institute

Presented this 11th ***day of*** October, 2024

Course Date: October 7-11, 2024

McCRONE RESEARCH INSTITUTE

certifies that

Robert H. Hill, II

has successfully completed an intensive course of instruction in

"Microscopical Identification of Asbestos"

given by the McCrone Research Institute

Presented this 13th *day of* Jan. 1989

3.5 CEU's
4.5 ABIH CM

Robert D. McCrone

John G. Delly

E.

Qualifications

INSTITUTE OF HAZARDOUS MATERIALS MANAGEMENT

THIS CERTIFIES THAT

Robert H. Hill

HAS SUCCESSFULLY MET ALL THE REQUIREMENTS OF EDUCATION, EXPERIENCE AND EXAMINATION, AND IS HEREBY DESIGNATED A

CERTIFIED HAZARDOUS MATERIALS MANAGER®

CHMM®

INSTITUTE OF HAZARDOUS MATERIALS MANAGEMENT

1/31/2007	14171
DATE OF CERTIFICATION	CREDENTIAL NUMBER
1/31/2028	
CERTIFICATION EXPIRES	

EUGENE K. GUILFORD, JR.
EXECUTIVE DIRECTOR

INSTITUTE OF HAZARDOUS MATERIALS MANAGEMENT
CERTIFIED HAZARDOUS MATERIALS MANAGER
CHMM
IHMM

VERIFIABLE AS AUTHENTIC AT
https://online.ihmm.org/ihmmssa/censsacustlkup.query_page

ANAB
ANSI National Accreditation Board
ACCREDITED
PERSONNEL CERTIFICATION BODY

Accredited by the American National Standards Institute and the Council of Engineering and Scientific Specialty Boards

Missouri
Division of Labor Standards
WAGE AND HOUR SECTION

MIKE KEHOE, Governor

Annual Wage Order No. 33

Section 036
FRANKLIN 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
Logan Hobbs, Director
Division of Labor Standards

Filed With Secretary of State: **March 10, 2026**

Last Date Objections May Be Filed: **April 9, 2026**

Prepared by Missouri Department of Labor and Industrial Relations

FRANKLIN COUNTY

OCCUPATIONAL TITLE	**Prevailing Hourly Rate
Asbestos Worker	$45.98
Boilermaker	$30.66*
Bricklayer - Stone Mason	$69.57
Carpenter	$69.50
Lather	
Linoleum Layers & Cutter	
Millwright	
Pile Driver	
Cement Mason	$61.32
Plasterer	
Communication Technician	$30.66*
Electrician (Inside Wireman)	$77.65
Electrician (Outside Lineman)	$30.66*
Outside - Groundman	
Outside - Groundman Tree Trimmer	
Outside - Lineman Operator	
Outside - Lineman Tree Trimmer	
Elevator Constructor	$30.66*
Glazier	$71.65
Iron Worker	$74.68
Laborer	$56.22
Laborer - First Semi-Skilled	
Laborer - General	
Laborer - Second Semi-Skilled	
Laborer - Skilled	
Mason	$30.66*
Marble Finisher	
Marble Mason	
Terrazzo Finisher	
Terrazzo Worker	
Tile Finisher	
Tile Setter	
Operating Engineer	$76.26
Operating Engineer - Group I	
Operating Engineer - Group II	
Operating Engineer - Group III	
Operating Engineer - Group III - A	
Operating Engineer - Group IV	
Operating Engineer - Group V	
Painter	$58.48
Plumber	$83.78
Pipe Fitter	
Roofer/WaterProofer	$62.07
Sheet Metal Worker	$78.47
Sprinkler Fitter - Fire Protection	$72.60
Truck Driver	$30.66*
Truck Control Service Driver	
Truck Driver, Teamsters Group I	
Truck Driver, Teamsters Group II	
Truck Driver, Teamsters Group III	
Truck Driver, Teamsters Group IV	

*** The Division of Labor Standards received fewer than 1,000 reportable hours for this occupational title. The 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 as defined in RSMo Section 290.210.**

FRANKLIN COUNTY

OCCUPATIONAL TITLE	**Prevailing Hourly Rate
Carpenter	$68.50
Millwright	
Pile Driver	
Electrician (Outside Lineman)	$88.04
Outside - Groundman	
Outside - Groundman Tree Trimmer	
Outside - Lineman Operator	
Outside - Lineman Tree Trimmer	
Laborer	$57.52
Laborer - General	
Laborer - Skilled	
Operating Engineer	$76.73
Operating Engineer - Group I	
Operating Engineer - Group II	
Operating Engineer - Group III	
Operating Engineer - Group IV	
Truck Driver	$49.71
Truck Control Service Driver	
Truck Driver, Teamsters Group I	
Truck Driver, Teamsters Group II	
Truck Driver, Teamsters Group III	
Truck Driver, Teamsters Group IV	

Use Heavy Construction Rates on Highway and Heavy construction in accordance iwth 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 shown on the Building Construction Rate Sheet.

***The Division of Labor Standards received fewer 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 00 31 00
AVAILABLE PROJECT INFORMATION

PART 1 GENERAL

1.01 EXISTING CONDITIONS

A. Certain information relating to existing surface and subsurface conditions and structures is available to bidders but will not be part of Contract Documents, as follows:

B. Geotechnical Reports:
   1. A copy of the report prepared by SCI Engineering, Inc. is included in the Project Manual.
   2. This report identifies properties of below grade conditions and offers recommendations for the design of foundations, prepared primarily for the use of Architect.
   3. The recommendations described shall not be construed as a requirement of this Contract, unless specifically referenced in Contract Documents.
   4. This report, by its nature, cannot reveal all conditions that exist on the site. Should subsurface conditions be found to vary substantially from this report, changes in the design and construction of foundations will be made, with resulting credits or expenditures to the Contract Price accruing to Owner.

C. Hazardous Material Survey: Phase 1 Environmental Assessment.
   1. A copy of the report prepared by Sitex is included in the Project Manual.
   2. A separate ACM Survey is also included in the Project Manual.

1.02 PREVAILING WAGE

A. The Missouri Prevailing Wage Law requires that all workers employed on public works projects be paid the proper prevailing wage rate. The Missouri Division of Labor Standards Annual Wager Order No. 33 is included in Project Manual. Additional information is available on the Missouri Department of Labor website.
   1. Contractor shall provide required notice to the Department of Labor prior to beginning work.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

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SECTION 00 41 00
BID FORM – STATION #4

This Bid Form must be completed, sealed in an envelope, and received by Meramec Ambulance District (Owner) no later than **2:00 PM local time on November 11, 2026**.

The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an agreement with Owner in the form included in the Bid Documents, and to perform all Work as specified or indicated in the Bid Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bid Documents.

Below is the contact for the BIDDER submitting this bid, who will be responsible for any questions that may arise during bid review and who may also be contacted to discuss the acceptance or rejection of this bid:

BIDDER Company Name	
BIDDER Contact Person Name	
Address	
City/State/Zip	
Phone Number	
Email Address	
Fax Number	

STIPULATED SUM BID FORM

Name of Project: **Meramec Ambulance District Station No. 4**

Date: _____

Proposal from: _____

(Hereinafter called Bidder), a corporation organized and existing under the laws of the state of_____, a partnership, or an individual doing business as_____ (cross out inapplicable).

SUBMIT BIDS TO:

ATTN: Taz Meyer, Chief
Meramec Ambulance Station No. 3
7390 State Highway O
Robertsville, MO 63072

The Bidder, in compliance with the Instructions to Bidders for the project and having carefully examined the Bid Documents as set forth in the Project Manual, which documents are made a part hereof, as well as the site and all conditions surrounding and affecting the work, agrees to furnish all labor, materials, and supplies necessary to perform all the work in accordance with said documents and within the time and at the prices stated below.

BASE BID – MERAMEC AMBULANCE DISTRICT STATION #4

ITEM NO.	ITEM DESCRIPTION	SUB-TOTAL
1	Base Bid	
2	Unforeseen Subsurface Conditions Allowance	$100,000
3	Payment & Performance Bond	
4	Builder's Risk	
	TOTAL	

Total of lines above shall equal the Total Lump Sum Bid Below.

Furnish all labor, tools, equipment, and material required to perform all work indicated for the Meramec Ambulance District: Station #4 project, as defined in the Bid Documents for the TOTAL LUMP SUM AMOUNT of

$_____

TIME

Board approval and issuance of the Notice to Proceed is tentatively anticipated to occur by the end of December 2026. Bidder hereby states that the time required to perform all work indicated in the Bid Documents (and any accepted alternates) and work necessary to complete the project per the project per the duration proposed on this Bid Form is acceptable. Liquidated Damages shall be assessed for delays to Substantial Completion and are further described in the bid documents.

Bidders shall propose a contractual duration for achieving Substantial Completion in the blank space below. The proposed duration will be utilized as criteria for selection of the General Contractor. Bidder shall include anticipated adverse weather in the proposed contractual duration below.

Complete all work related to the new construction, site improvements, bid alternates, and anticipated base bid soil treatment / remediation to achieve Substantial Completion within _____ calendar days from the issuance of the Notice to Proceed.

Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use and the remaining outstanding work is considered

minor. Additionally, Substantial Completion is the date by which all life safety and authorities having jurisdiction inspections have been approved and the punch list has been created.

ALTERNATES - To be submitted at the time of Bid. Bids will not be accepted if these alternates are not provided at the time of bid. Refer to Section 01 23 00 for full description of alternates.

Alternate 4-1 – Asphalt Paving

Add / Deduct (circle one): $ _____

Alternate 4-2 – Epoxy Floor Finish in Apparatus Bay

Add / Deduct (circle one): $ _____

UNIT PRICES - To be submitted to Owner within 24 hours of the Bid Date and Time. Unit Prices for scope adjustments after award shall be provided for the items listed in section 01 22 00 – UNIT PRICES. Provide Unit Prices on the "Supplemental Bid Information" form provided in the Project Manual.

LIST OF PROPOSED SUBCONTRACTORS – To be submitted to Owner within 24 hours of the Bid Date and time. List all proposed subcontractors on the "Supplemental Bid Information" form provided in the Project Manual.

REFERENCES – To be submitted at the time of Bid.
Bids will not be accepted if references are not provided at the time of bid. Bidder shall provide at least three references of similar projects.

Company: _____

Address: _____

Contact Person: _____

Telephone: _____

Email: _____

Type of service provided: _____

Dates/year(s) service was provided: _____

Company: _____

Address: _____

Contact Person: _____

Telephone: _____

Email: _____

Type of service provided: _____

Dates/year(s) service was provided: _____

Company: _____

Address: _____

Contact Person: _____

Telephone: _____

Email: _____

Type of service provided: _____

Dates/year(s) service was provided: _____

QUALIFICATIONS – To be submitted at the time of Bid. All requested attachments and responses shall accompany the Bid.

Organization

1. How many years has your organization been in business as a Contractor?_____
2. How many years has your organization been in business under its present business name?_____
3. Under what other or former names has your organization operated?
   _____
   _____
4. How many persons do you have working for the company?
   Operators:____ Carpenters: _____ Laborers: _____
   Superintendents: _____ Office Management: _____ Other Trades: _____
5. What is your company's EMR? _____
6. State the amount of the deductibles on all insurance that you will be providing for the Project:

   Workers Compensation Insurance: _____
   Commercial General Liability Insurance: _____
   Automobile Liability Insurance: _____

Experience

1. On a separate sheet list all projects completed by your firm in the past five (5) years, with a contract value of $3,000,000 or greater. List project name, client, architect, total contract value, date of completion and percentage of the cost of work performed with your own forces.
2. List the categories of work that your organization normally performs with its own forces:

1. _____
2. _____
3. _____
4. _____
5. _____

Relevant Project Experience

1. Identify at least three (3) comparable projects completed within the past five (5) years, each with a contract value of $3,000,000 or greater. For each, provide the owner, architect, original and final contract amounts, scheduled and actual completion dates, and an owner contact. This information may be included in the project list requested above.

   1._____
   _____
   2._____
   _____
   3._____
   _____

2. Identify any fire station, ambulance station, emergency services, or similar public facility projects completed within the past five (5) years. If none, state "None."

   1. _____
   2. _____
   3. _____
   4. _____

Proposed Project Personnel

3. Identify the proposed Project Manager and Superintendent and the length of experience of each.

   Project Manager - _____

   Superintendent - _____

4. Will a full-time, on-site Superintendent be assigned to this Project during active construction?

   Yes:_____ No: _____

5. How many active projects is the proposed Project Manager currently managing? _____

Project Execution and Management

4. Identify major anticipated long-lead materials or equipment

   1. _____
   2. _____
   3. _____
   4. _____

Claims And Suits

If the answer to any of the questions below is "yes", please attach written description of details.

1. Has your organization ever failed to complete any work awarded to it?

   Yes: _____ No:_____

2. Are there any judgments, claims, arbitration proceedings, or suits pending or outstanding against your organization or its officers?

   Yes: _____ No:_____

3. Has your organization filed any lawsuits or requested arbitration with regard to construction contracts within the last five (5) years?

   Yes: _____ No:_____

Other Construction Work

1. On a separate sheet, list major construction projects your organization has in backlog and in progress, giving the name of project, owner, architect, contract amount, percent complete and scheduled completion date.

2. State total worth of work in progress and under contract: $_____

3. State average annual amount of construction work performed during the past five years: $_____

4. State current bonding capacity: $_____

5. State name of scheduling system currently being used:

   _____

6. On a separate sheet, list the construction experience and present commitments of the key individuals of your organization. Please identify which individuals you intend to commit to this project if awarded the Contract.

BID DOCUMENTS

A. Bidder acknowledges receipt of the following Documents and Addenda:

1. Drawings and Specifications
2. Addenda
   - Addenda No. _____ Dated _____
   - Addenda No. _____ Dated _____
   - Addenda No. _____ Dated _____
   - Addenda No. _____ Dated _____
   - Addenda No. _____ Dated _____

MISCELLANEOUS BID REQUIREMENTS

A. The undersigned understands that this bid shall be good and may not be withdrawn for a period of sixty (60) calendar days after the scheduled closing time and date for receiving bids.

B. The undersigned understands that the Owner reserves the right to reject any or all bids or subcontractors.

C. The undersigned further agrees to indemnify and save the Owner from and against all losses, judgments of every nature and description made, brought, or recovered against the Owner by reason of any act or omission of the undersigned, his agents, subcontractors, or employees in the execution of the work or in guarding the same.

D. The undersigned hereby declares that this Stipulated Sum Bid is based solely upon the materials and equipment described in the bidding documents (including Addenda), and that no substitutions are contemplated.

E. The Bidder declares that he/she has had an opportunity to examine the site of the work and he/she has examined the bidding Documents therefore, and that he/she has carefully prepared his/her Bid upon the basis thereof and that he/she has carefully examined and checked this Bid and the materials, equipment and labor required thereunder, the cost thereof, and the figures therefor, and hereby states that the amount or amounts set forth in this Bid is, or are, correct and that no mistake or error has occurred in this bid.

F. See next page for signatures.

IF A CORPORATION

_____ _____

Name of Corporation Signature of Officer

_____

Name and Title of Officer

Incorporated under the laws of the State of _____ (Print)

Licensed to do business in Missouri? (Check one) [ ] Yes [ ] No

Address for Communications _____

_____

(Seal if bid is by a corporation.)

IF A PARTNERSHIP State name and address of all partners. Each partner shall execute the Bid Form under their respective seals. Attach a copy of the Partnership / Joint Venture agreement to the Bid Form.

_____ _____

Name of Partnership

_____

_____ _____

Signature of Authorized Partner

_____

IF INDIVIDUAL

_____ _____

Name of Firm (if any)

Address for Communications

_____

Signature of Individual _____

_____ _____

Name of Individual (Print)

IF BIDDING AS A JOINT VENTURE List all parties, and indicate which party will be designated as the 'Lead.' Each party of the Joint Venture shall execute the Bid Form under their respective seals. Attach a copy of the Partnership / Joint Venture agreement to the Bid Form.

_____ _____

_____ _____

END OF SECTION

SECTION 00 41 01
SUPPLEMENTAL BID INFORMATION
Submit Separate Form for Each Station

This form shall be completed and submitted in its entirety no later than 24 hours following the receipt of the bids to the Owner. Bidder must submit Supplemental Bid Information via email as follows:

Re: Meramec Ambulance District – New Construction – Supplemental Bid Information
Attn: Collette Koscielski, Navigate Building Solutions, LLC. josh@navigatebuildingsolutions.com and Taz Meyer, Meramec Ambulance District, meyer.t@meremecems.org.

Name of Project: Meramec Ambulance District – New Construction

Station No. _____

General Contractor Package RFP

Date: _____

Contractor: _____

COST BREAKOUT for Base Bid:

Bidder shall provide the breakout of costs for the following divisions of work that are **included** in the Base Bid.

Divisions 00-12 Scopes of Work

_____ DOLLARS ($_____).

Divisions 21 Scope of Work

_____ DOLLARS ($_____).

Divisions 22 Scope of Work

_____ DOLLARS ($_____).

Divisions 23, 24, 25 Scopes of Work

_____ DOLLARS ($_____).

Divisions 26, 27, 28 Scopes of Work

_____ DOLLARS ($_____).

Divisions 31, 32, 33 Scopes of Work (excluding New Water Well and New Septic Field)

_____ DOLLARS ($_____).

New Water Well Scope of Work (Station #4)

_____ DOLLARS ($_____).

New Septic Field Scope of Work (Station #4)

_____ DOLLARS ($_____).

UNIT PRICES: The unit prices below are to include all general conditions, overhead, profit, labor, materials, equipment and/or services necessary to fully complete the work. Rates are to be applied either as add or deduct rates; the same rate will apply for either condition. There will be only one rate allowed per unit price regardless of when in the construction process the rate is being applied, where the work is taking place, or what trade is performing it.

Unit Price Description	Unit	$/Unit
Unit Price No. 1: Excavation and haul-off of unsuitable soils and import & compaction of suitable soils.	Per CY	
Unit Price No. 2: Removal and haul-off of rippable rock.	Per CY	
Unit Price No. 3: Removal and haul-off of non-rippable rock.	Per CY	
Unit Price No. 4: Removal and haul-off of trench rock.	Per CY	
Unit Price No. 5: Removal and disposal of existing buried concrete man-made structures.	Per CY	
Unit Price No. 6: Removal, haul-off, and disposal of unsuitable soils and placement of lean concrete for soil remediation.	Per CY	
Unit Price No. 7: Load and haul-off of surplus soils.	Per CY	
Unit Price No. 8: Load, haul-off of and disposal of contaminated soils at a facility certified to receive such material.	Per CY	
Unit Price No. 8: Soil import, placement and compaction.	Per CY	
Unit Price No. 10: 1" clean rock placement and compaction.	Per CY	
Unit Price No. 11: 1" minus rock placement and compaction.	Per CY	
Unit Price No. 12: 2" clean rock placement and compaction.	Per CY	

Unit Price No. 13: 2" minus rock placement and compaction.	Per CY	
Unit Price No. 14: Topsoil place and final grade.	Per CY	
Unit Price No. 15: Removal, haul-off, and disposal of unsuitable soils and import & compaction of 1" granular material per Geotechnical Engineer recommendations.	Per CY	
Unit Price No. 16: 6" Casing, including material and installation with grouting (Station #4)	Per LF	
Unit Price No. 17: Drilling below casing (Station #4)	Per LF	
Unit Price No. 18: 4" Sch 40 PVC Pipe (Station #4)	Per LF	
Unit Price No. 19: 1.25" Sch 40 PVC Pipe (Station #4)	Per LF	

LIST OF PROPOSED SUBCONTRACTORS

Please list the two subcontractors (if not your own workforce) in each category that the referenced Bidder is considering for subcontract award for materials, services, supplies, specialty contractors, etc. below. Also indicate if your firm has previously worked with the listed Subcontractor. Where not applicable for this Bid Package, please indicate "N/A." If you do not plan to use subcontractors, indicate below and return this form with your bid.

Scope of Work	Proposed Subcontractors	Have You Worked with Previously?
Concrete Foundations	1. 2.	
Concrete Flatwork	1. 2.	
Masonry	1. 2.	
Structural Steel	1. 2.	
Rough Carpentry	1. 2.	

Finish Carpentry	1. 2.	
Casework	1. 2.	
Countertops	1. 2.	
Siding	1. 2.	
Sheet Metal	1. 2.	
Roofing	1. 2.	
Doors and Frames	1. 2.	
Overhead Doors	1. 2.	
Windows, Glazing, Storefront, and Curtainwall	1. 2.	
Gypsum Board Assemblies	1. 2.	
Acoustical Ceilings	1. 2.	
Flooring	1. 2.	
Painting	1. 2.	
Specialties	1. 2.	

Roller Window Shades	1. 2.	
Fire Suppression	1. 2.	
Plumbing	1. 2.	
HVAC	1. 2.	
Electrical and Communications	1. 2.	
Earthwork	1. 2.	
Site Utilities	1. 2.	
Well Drilling	1. 2.	
Septic Field	1. 2.	
Concrete Paving	1. 2.	
Landscaping	1. 2.	

Submitted By:

Bidder: _____

Address: _____

_____

Business Telephone: _____ Fax: _____

Typed/Printed Name: _____

Authorized Signature: _____

Title: _____

Date: _____

(Seal, if bid by a Corporation)

END OF SECTION

SECTION 00 41 10
CONTRACTOR AFFIDAVIT FOR PUBLIC CONSTRUCTION PROJECTS

STATE OF _____

COUNTY OF _____

The undersigned being duly sworn does now state and depose as follows:

I am the_____(Title) of_____(Company) which is a Contractor for the and authorized to sign this Affidavit, on said Company's behalf.

I have verified the information set forth within this Affidavit, for the Contractor. If any Subcontractors have been retained for this Project, I have also verified said information, as to any Subcontractor.

The Contractor and all Subcontractors have Workers' Compensation Insurance that will cover all employees working on this Project and said Insurance shall meet or exceed all Requirements Established by Law.

The Contractor and all Subcontractors have confirmed the United States Citizenship or lawful status of all Workers employed on this Project and does not knowingly employ any person who is an unauthorized alien, in connection with said contracted services.

The Contractor and all Subcontractors have been informed by the Owner, of the requirements to pay Prevailing Wages and will pay said Prevailing Wages to all Workers employed on this Project, as established by the applicable Annual Wage Order No. 33 , for Franklin County, State of Missouri or Federal Wage Order, or whichever may be greater.

The Contractor and all Subcontractors shall follow all applicable Federal Laws, requiring any Accredited Apprenticeship Program, wherever applicable.

The Contractor and all Subcontractors shall be enrolled and participate within a Federal Work Authorization Program, with respect to all employees working in connection with any contracted services.

The Contractor and all Subcontractors shall be in full accordance with 34.600, RSMo. The Contractor hereby affirms that they are not currently engaged in and shall not, for the duration of this Agreement, engage in any boycott of goods or services from the State of Israel, companies doing business in or with the State of Israel, or authorized by, licensed by, or organized under, the laws of the State of Israel, or persons, or entities doing business within the State of Israel.

Further Affiant sayeth naught.

_____
Authorized Officer of Contractor

Subscribed and sworn before me this _____ day of _____ , 2026.

_____
Notary Public

My commission expires:

_____

END OF SECTION

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SECTION 00 41 20

NON-COLLUSION AFFIDAVIT

State of:_____

County:_____

_____, being first duly sworn, deposes and says that

he/she is_____*(Sole Owner, Partner, President, Secretary, etc.)

of_____, the party making the foregoing Bid, that such bid is not made in the interest of, or on behalf of, any undisclosed Person, Partnership, Company, Association, Organization or Corporation. That such Bid is genuine and not sham or collusive, that said Bidder has not directly or indirectly induced or solicited any other Bidder to put in a false or sham Bid and has not directly or indirectly colluded, conspired, connived, or agreed with any other Bidder, or anyone else to put in a sham Bid, or that anyone shall refrain from Bidding, that said Bidder has not, in any manner, directly or indirectly, sought by agreement, communication or conference with anyone, to fix said Bid price of the Bidder, or of any other Bidder, or to fix any Overhead, Profit or Cost Element of such Bid price, or that of any other Bidder, or to secure any advantage against this Public Body awarding the Contract or anyone interested in this Proposed Contract, that all statements contained in such Bid are true and further, that said Bidder has not, directly or indirectly, submitted his Bid Price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid and will not pay any fee in connection therewith to any Corporation, Partnership, Company, Association, Organization, Bid Depository, or to any Member or Agent thereof, or to any other individual, except to such person or persons as have a Partnership or other financial interest with said Bidder in his general business.

Affiant further certifies that Bidder is not financially interested in, or financially affiliated with, any other Bidder for the above stated Project.

SIGNED:_____

TITLE:_____

Subscribed and sworn before me this _____day of_____, 20____.

_____

Notary Public

My commission expires:_____

*In completing this form any Title that is not applicable should be struck out. For example if the Contractor is a Corporation and this form is to be executed by its President, the words “Sole Owner, a Partner, Secretary, etc.” should be struck out.

END OF SECTION

WORKER ELIGIBILITY VERIFICATION AFFIDAVIT

(for joint ventures, a separate affidavit is required for each business entity)

STATE OF _____, COUNTY OF _____

On this _____ day of _____, 2026, before me appeared _____, personally known to me or proved to me on the basis of satisfactory evidence to be a person whose name is subscribed to this affidavit, who being by me duly sworn, deposed as follows:

My name is _____, and I am of sound mind, capable of making this affidavit, and personally certify the facts herein stated, as required by Section 285.530, RSMo, to enter into any contract agreement with the state to perform any job, task, employment, labor, personal services, or any other activity for which compensation is provided, expected, or due, including but not limited to all activities conducted by business entities.

I am the _____ of _____, and I am duly authorized, directed, and/or empowered to act officially and properly on behalf of this business entity.

I hereby affirm and warrant that the aforementioned business entity is enrolled in a federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, and the aforementioned business entity shall participate in said program with respect to all employees working in connection to work under the within contract agreement. I have attached documentation to this affidavit to evidence enrollment/participation by the aforementioned business entity in a federal work authorization program, as required by Section 285.530, RSMo.

In addition, I hereby affirm and warrant that the aforementioned business entity does not and shall not knowingly employ, in connection to work under the within contract agreement, any alien who does not have the legal right or authorization under federal law to work in the United States, as defined in 8 U.S.C. § 1324a(h)(3).

I am aware and recognize that, unless certain contract and affidavit conditions are satisfied pursuant to Section 285.530, RSMo, the aforementioned business entity may be held liable under Sections 285.525 through 285.550, RSMo, for subcontractors that knowingly employ or continue to employ any unauthorized alien to work within the state of Missouri.

I acknowledge that I am signing this affidavit as a free act and deed of the aforementioned business entity and not under duress.

Further Affiant sayeth nnaught.

Affiant Signature

Subscribed and sworn to before me this _____ day of _____, 20_____.

Notary Public

My commission expires: _____

AIA® Document A101® – 2017

Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum

AGREEMENT made as of the day of in the year 2026
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, legal status, address and other information)

Meramec Ambulance District
3279 Highway 100
Villa Ridge, MO 63089

and the Contractor:
(Name, legal status, address and other information)

[TBD]

for the following Project:
(Name, location and detailed description)

Meramec Ambulance District
Station No. 4

385 Old Manchester Road
Pacific, MO 63069

The Architect:
(Name, legal status, address and other information)

Archimages, Inc.
143 W. Clinton Place
Kirkwood, MO 63122

The Owner and Contractor agree as follows.

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

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

The parties should complete A101®–2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement. AIA Document A201®–2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

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TABLE OF ARTICLES

1 THE CONTRACT DOCUMENTS

2 THE WORK OF THIS CONTRACT

3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

4 CONTRACT SUM

5 PAYMENTS

6 DISPUTE RESOLUTION

7 TERMINATION OR SUSPENSION

8 MISCELLANEOUS PROVISIONS

9 ENUMERATION OF CONTRACT DOCUMENTS

EXHIBIT A INSURANCE AND BONDS

The Owner's Representative for the Project shall be NAVIGATE Building Solutions ("NAVIGATE"). All communications between Contractor and Owner shall be through NAVIGATE on behalf of Owner. NAVIGATE has the authority to take all actions on behalf of the Owner permitted by the Contract Documents, with the sole exception of agreeing to any Modifications to the Contract. Only theDistrict's Chief, Taz Meyer, has the authority on behalf of the Owner to agree to any Change Order and/or to otherwise agree to authorize any Modifications, with it being understood and agreed that any Modifications to the Contract must be executed by Chief Taz Meyer on behalf of the Owner in order to be effective.

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be:
(Check one of the following boxes.)

[ ] The date of this Agreement.

[X] A date set forth in a notice to proceed issued by the Owner.

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[ ] Established as follows:
(Insert a date or a means to determine the date of commencement of the Work.)

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

§ 3.2 The Contract Time shall be measured from the date of commencement of the Work.

§ 3.3 Substantial Completion

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work within [XXX] calendar days from issuance of the Notice to Proceed. The Contract Time will not be adjusted for claims of adverse weather; Contractor has anticipated adverse weather in the proposed and accepted Contract Time.

[ ] Not later than ( ) calendar days from the date of commencement of the Work.

[ ] By the following date:

§ 3.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work are to be completed prior to Substantial Completion of the entire Work, the Contractor shall achieve Substantial Completion of such portions by the following dates:

Portion of Work	Substantial Completion Date

§ 3.3.3 If the Contractor fails to achieve Substantial Completion as provided in this Section 3.3, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be ($), subject to additions and deductions as provided in the Contract Documents.

§ 4.2 Alternates

§ 4.2.1 Alternates, if any, included in the Contract Sum:

Item	Price

§ 4.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement.
(Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Item	Price	Conditions for Acceptance

§ 4.3 Allowances, if any, included in the Contract Sum:
(Identify each allowance.)

Item	Price

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User Notes: (6ad0b5a3c94169817ee11c51)

§ 4.4 Unit prices, if any:
(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit ($0.00)

§ 4.5 Liquidated damages, if any:
(Insert terms and conditions for liquidated damages, if any.)

Time is of the essence. If the Contractor fails to achieve Substantial Completion of the Contractor's Work within the period of XX calendar days from issuance of the Notice to Proceed (as such Contract Time may be adjusted by time extensions otherwise permitted by the Contract Documents), the Contractor shall pay, and the Owner will assess, Liquidated Damages in the amount of $2,000.00 per day for each calendar day until Substantial Completion of the Contractor's Work is achieved. The Owner may deduct any such Liquidated Damages from any amount due or payable to the Contractor.

Final Completion: In the event that the Contractor fails to timely complete all punch list items and all requirements necessary to achieve Final Completion of the Contractor's Work within 30 calendar days following Substantial Completion, Contractor shall be responsible to Owner for any actual damages that the Owner incurs due to such delay with regard to additional costs the Owner expends to its Architect and/or Owner's Representative. The Owner may deduct any such damages from amounts otherwise due the Contractor at Final Completion.

§ 4.6 Other:
(Insert provisions for bonus or other incentives, if any, that might result in a change to the Contract Sum.)

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the 25th day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the last day of the following month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than ( ) days after the Architect receives the Application for Payment.
(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

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§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 In accordance with AIA Document A201™–2017, General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.6.1 The amount of each progress payment shall first include:

.1 That portion of the Contract Sum properly allocable to completed Work;

.2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and supported by the following documentation:

a) proof of stored materials, photographs of the material clearly labeled as "Property of Meramec Ambulance District";

b) certificate of insurance for facility where materials are stored, with indication of coverage for the stored materials;

c) copies of itemized invoices for the materials from the vendor/supplier

d) Bill of Sale;

.3 and that portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

§ 5.1.6.2 The amount of each progress payment shall then be reduced by:

.1 The aggregate of any amounts previously paid by the Owner;

.2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017;

.3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;

.4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017; and

.5 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:
(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

5%

Retainage shall be invoiced and paid upon Substantial Completion of the Contractor's Work, less such amounts as are attributable to 150% of the value of incomplete work and unsettled claims.

§ 5.1.7.1.1 The following items are not subject to retainage:
(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:
(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)

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§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, upon Substantial Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:

§ 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201–2017.

§ 5.1.9 Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 5.2 Final Payment

§ 5.2.1

Final payment, constituting the entire unpaid balance of the Contract Sum minus disputed sums and authorized deductions, shall be made by the Owner to the Contractor thirty (30) days after all of the following conditions have been satisfied:

.1 The Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12.2.2 of AIA Document A201–2017, and to satisfy other requirements, if any, which extend beyond final payment; and

.2 The Contractor has completed all Punch List items to the satisfaction of the Owner's Representative, Architect and Owner;

.3 A final Certificate for Payment has been issued by the Architect;

.4 The Contractor has delivered all closeout Documentation required under the Contractor Documents, which include

i. one original final release of claims from Contractor (AIA G706 and G706A);
ii. operation and maintenance instructions/manuals;
iii. marked-up as-built drawings;
iv. standard and extended warranties from every subcontractor;
v. list of names, addresses and telephone numbers for all subcontractors and others providing guarantees and warranties;
vi. one original of final certified payrolls from Contractor and all lower tiered subcontractors;
vii. original affidavit of compliance with prevailing wage laws from Contractor and all lower tiered subcontractors;
viii. testing and balancing reports, reviewed and approved by the Architect;
ix. any other closeout documents reasonably required by the Owner;

.5 The Contractor can provide proof that surveyed utility as-builts required by project documents have been submitted to the AHJ's;

.6 the applicable governmental authorities have released to the Owner any escrows or deposits held for the restoration of the site, for stormwater or water quality measures, or for other Work that falls under this Contractor's scope; and

.7 The applicable governmental authorities have issued to the Owner the final use and occupancy permit for the Project.

.8 The Contractor has provided proof of continuing insurance as required by the Contract;

.

§ 5.2.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect's final Certificate for Payment, or as follows:

§ 5.3 Interest

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Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.
(Insert rate of interest agreed upon, if any.)

%

ARTICLE 6 DISPUTE RESOLUTION
§ 6.1 Initial Decision Maker – Not Used

§ 6.2 Binding Dispute Resolution
For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201–2017, the method of binding dispute resolution shall be as follows:
(Check the appropriate box.)

[X] Arbitration pursuant to Section 15.4 of AIA Document A201–2017

[ ] Litigation in a court of competent jurisdiction

[ ] Other *(Specify)*

If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.

ARTICLE 7 TERMINATION OR SUSPENSION
§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2017.

§ 7.1.1

Not Used

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2017.

ARTICLE 8 MISCELLANEOUS PROVISIONS
§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner's representative:
(Name, address, email address, and other information)

Taz Meyer, Chief
Meramec Ambulance District

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3279 Highway 100
Villa Ridge, MO 63089

§ 8.3 The Contractor's representative:
(Name, address, email address, and other information)

§ 8.4 Neither the Owner's nor the Contractor's representative shall be changed without ten days' prior notice to the other party.

§ 8.5 Insurance and Bonds
§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents. All insurance policies shall include an ISO Additional Insured Endorsement listing the Owner and the Owner's Representative as additional insureds on a primary basis with Owner and Owner's Representative insurance excess and not contributory. General Liability and Auto policies shall contain a waiver of subrogation in favor of the Owner and its officers, directors and employees. Insurance company shall provide thirty (30) days' written notice prior to modification or cancellation of such insurance.

§ 8.5.2 The Contractor shall provide bonds as set forth in Exhibit A, and elsewhere in the Contract Documents.

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A201–2017, may be given in accordance with AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, if completed, or as otherwise set forth below:
(If other than in accordance with AIA Document E203–2013, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)

§ 8.7 Other provisions:

§8.7.1 Tax Exemption: The Owner intends to use the tax exempt purchase procedure authorized by Section 144.062 MoRS.

§8.7.2 Prevailing Wage: Not less than the prevailing hourly rate of wages, as set out in the wage order attached to and made part of the specification for work under the contract, shall be paid to all workers performing work under this contract. The Contractor will forfeit a penalty to the contracting public body of $100 per day (or portion of a day) for each worker that is paid less than the prevailing wage rate for any work done under the contract by the Contractor or by any subcontractor. The Contractor and all subcontractors to the contract must require all on-site employees to complete the ten-hour construction safety training program required under Section 292.675, RSMo, unless they have previously completed the program and have documentation of having done so. The Contractor will forfeit a penalty to the contracting public body of $2500 plus an additional $100 for each employee by the Contractor or subcontractor, for each calendar day, or portion thereof, such employee is employeed without the required training.

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§8.7.3 Certified Payroll: The Contractor and each Subcontractor shall submit, monthly, certified payroll for each week from the start of their Work through the completion of their Work. Refer to Missouri Department of Labor – Contractor Check-off List and Instructions Sheet for Contractor Payroll Records.

§8.7.4 Permits: Owner shall pay for the building permit and fire permit. Contractor shall pick up the building and fire permits. Contractor shall obtain and pay for all other permits, licenses and approvals as applicable to the Contractor's Work.

§8.7.5 Equal Employment Opportunity:

A. During performance of this contract, the Contractor agrees as follows:

1. The Contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex, or national origin. The Contractor will take positive action to insure that applicants are employed and that employees are treated during employment without regard to their race, religion, color, sex, or national origin. Such action shall include but not be limited to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertisement; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notice setting forth the requirements of these nondiscrimination provisions.
2. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex, or national origin.
3. The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding a notice advising the labor union or worker's representative of the Contractor's equal opportunity commitments, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
4. In the event of the Contractor's non-compliance with the Equal Opportunity conditions of this contract or with any of such rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part.
5. The Contractor will include all of clauses 1 through 4 inclusive in every subcontract or purchase order, so that such provisions will be binding upon each subcontractor or vendor.

B. Exemptions to the above Equal Opportunity Conditions are construction contracts and subcontracts not exceeding $10,000.

C. Unless otherwise provided, the above Equal Opportunity provisions are required to be inserted in subcontracts at the site of construction.

D. Certification of Nonsegregated Facilities - Bidders are cautioned as follows: By signing this bid or offer, the bidder will be deemed to have signed and agreed to the provisions of the "Certification of Nonsegregated Facilities" in this solicitation. The certification provides that the bidder does not maintain or provide for his employees facilities which are segregated on a basis of race, creed, color, or national origin, whether such facilities are segregated by directive or on a de facto basis. The certification also provides that he will not maintain such segregated facilities. Failure of a bidder to agree to the Certification of Nonsegregated Facilities will render his bid or offer non-responsive to the terms of solicitations involving award of contracts exceeding $10,000.

E. Contractor hereby represents, warrants and certifies that Contractor, its subcontractors, or any of the employees of either are not currently engaged in, and shall not for the duration of the Contract engage in, a boycott of goods or services from: the State of Israel; companies doing business in or with Israel or authorized by, licensed by, or organized under the State of Israel; or, persons or entities doing business in the State of Israel. This certification shall be interpreted consistent and in conformity with the Missouri Anti-Discrimination Against Israel Act, 34.600 Revised Statutes of Missouri.

§8.7.6 Domestic Procurement Act: The Owner encourages the purchases of products above $25,000 to be manufactured or produced in the United States. This policy shall apply to all purchases or leases of manufactured goods or commodities by vendors and contractors engaged by the Owner, and shall apply to construction, alteration, repair, or maintenance of any public works respecting the Owner's operations.

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§8.7.7 Consequential Damages: Contractor waives all claims for consequential damages against the Owner and Owner's Representative arising out of this Agreement and/or the performance of the Owner's obligations thereunder.

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

.1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor
.2 AIA Document A201™–2017, General Conditions of the Contract for Construction
.3 Exhibit A, Insurance and Bonds

.4 Exhibit B: Bid Proposal Form and Bid Bond
.5 Exhibit C: Supplemental Bid Information Form
.6 Exhibit D: Not Used
.7 Exhibit E: Change Order Calculations
.8 *Exhibit F: Contract Document Log (Drawings, Specifications and Front Ends)*

[ ] AIA Document E204™–2017, Sustainable Projects Exhibit, dated as indicated below:

[ ] The Sustainability Plan:

[ ] Supplementary and other Conditions of the Contract:

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AIA® Document A201® – 2017

General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)

Meramec Ambulance District Station No. 4
385 Old Manchester Road
Pacific, MO 63069

THE OWNER:
(Name, legal status and address)

Meramec Ambulance District
3279 Highway 100
Villa Ridge, MO 63089

THE ARCHITECT:
(Name, legal status and address)

Archimages, Inc.
143 W. Clinton Place
Kirkwood, MO 63122

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

For guidance in modifying this document to include supplementary conditions, see AIA Document A503™–2017, Guide for Supplementary Conditions.

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The Owner's Representative for the Project shall be Navigate Building Solutions ("Navigate"). All communications between Contractor and Owner shall be through Navigate on behalf of Owner. Navigate has the authority to take all actions on behalf of the Owner permitted by the Contract Documents, with the sole exception of agreeing to any Modifications to the Contract. Only the District Chief, Taz Meyer, has the authority on behalf of the Owner to agree to any Change Order and/or to otherwise agree to authorize any Modifications, with it being understood and agreed that any Modifications to the Contract must be executed by Chief Taz Meyer on behalf of the Owner in order to be effective.

ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

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

§ 1.1.2 The Contract

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

§ 1.1.3 The Work

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

§ 1.1.4 The Project

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

§ 1.1.5 The Drawings

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

§ 1.1.6 The Specifications

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

§ 1.1.7 Instruments of Service

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

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§ 1.1.8 Initial Decision Maker
There will be no Initial Decision Maker on this Project.

§ 1.1.9 Float
Float is a measurement of time indicating how late any activity or group of activities in a schedule can be completed without impacting the critical path and the scheduled end date of the Project. Float belongs to the Project and is not for exclusive use of the Contractor and is not intended to be used for non-excused delays identified in 8.3.1.

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

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

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

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

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

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

§ 1.4.1 In the event of discrepancies or conflicts among or between the Contract Documents or observable conditions exist, the Contractor shall request an interpretation in writing from the Owner and Architect before proceeding with the Work. If the Contractor fails to request such interpretation from the Architect, it is presumed that the more stringent, better quality or higher quantity requirement is included in the Work. The Contractor shall be responsible for the cost and installation of such requirement at no additional cost to the Owner. Before ordering any materials or doing any Work, the Contractor shall verify measurements at the Project site and shall be responsible for correctness of such measurements. Any difference which may be found shall be submitted to the Architect for interpretation before proceeding with the Work as a condition precedent to any claim for an increase in the Contract Sum. If conflict among various provisions of the Contract Documents is found, and the quality or stringency of the conflicts are not in question, the terms shall be interpreted in the following order of priority:

.1 Modifications to the Contract
.2 The Contract
.3 Special Conditions
.4 General Conditions

Drawings shall control over Specifications, and details in drawings shall control over large-scale drawings.

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§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The drawings, specifications, and other instruments of service are owned by the Owner. The Contractor, Subcontractors, Sub- subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Owner's reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

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

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§ 2.3 Information and Services Required of the Owner

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

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

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

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

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

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2. Digital copies will be provided at no cost.

§ 2.4 Owner's Right to Stop the Work

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

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15. In lieu of correcting defective Work, the Owner may in its discretion decide to accept such defective Work and backcharge the Contractor a reasonable amount equivalent to what it would have cost to replace the defective Work.

§ 2.6 Architect's and Owner's Representative's Compensation for Services to Remedy Defective Work

When the Architect's and Owner's Representative's additional services are required because of defective work, neglect, failure, deficiencies, or default by the Contractor, the Contractor shall be responsible to the Owner for the cost of such additional services.

ARTICLE 3 CONTRACTOR

§ 3.1 General

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

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

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

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

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

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

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

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.2.5 If the Contractor performs any Work involving an apparent error, inconsistency, ambiguity, construction impracticality, omission or code violation in the Contract Documents of which the Contractor has actual knowledge, without prompt written notice to the Owner and the Architect and request for correction, clarification or additional information, as appropriate, the Contractor does so at its own risk and expense and all claims relating thereafter are specifically waived.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction.

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Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

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

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

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

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

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

§ 3.4.3.1 The Contractor / Sub Contractors / Sub-Sub Contractors shall provide a sworn affidavit and verification that they are registered with the U.S. Citizenship and Immigration Services E-Verify service and have records of all employees working on this project. Provide records to Owner.

§ 3.4.3.2 The Contractor is responsible for OSHA required safety railings, including installation, maintenance, and removal) and appropriate OSHA approved roof edge protection for all trades.

§ 3.4.3.3 The Contractor shall, at all times, employ sufficient labor and equipment for prosecuting the Work to full completion in the manner and time required by the Contract Documents. All workmen shall have sufficient skill and experience to properly perform the work assigned to them.

§ 3.4.3.4 The Contractor is responsible for securing the building once it is reasonably possible to do so with temporary or permanent measures at the close of every
day. Any temporary openings in walls are to be secured at the end of the workday.

§ 3.5 Warranty

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

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

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§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect. The Owner intends to use the tax exempt purchase procedure authorized by Section 144.062 RSMo.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

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

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

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

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

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

§ 3.8.2 Unless otherwise provided in the Contract Documents,

.1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;

.2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and

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.3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

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

§ 3.9 Superintendent

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

§ 3.9.1.1 This superintendent person shall be a non-working superintendent who will be responsible for the satisfactory progression of the Work and to ensure that all work is being completed in accordance with the Plans and Specifications. The superintendent shall be onsite full-time when Work is being performed. The superintendent shall be satisfactory to the Owner and shall not be changed except with the consent of the Owner. The superintendent shall also relay any conflicts or discrepancies that arise in the plans to the Owner's representative for resolution or interpretation.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

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

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, within 14 days after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

§ 3.10.2 The Contractor, within 21 days after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

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

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

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§ 3.12 Shop Drawings, Product Data and Samples

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

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

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

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

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

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

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect. The Contractor must correct at its cost, and without any adjustment to Contract Time, any Work the correction of which is required due to the Contractor's failure to obtain approval of a submittal required to have been obtained prior to proceeding with the Work, including but not limited to, correction of any conflicts in the Work resulting from such failure.

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

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

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

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§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

§ 3.12.11 The Architect's review of Contractor's submittals will be limited to examination of an initial submittal and two (2) resubmittals. The Owner is entitled to obtain reimbursement from the Contractor for amounts paid to the Architect for evaluation of additional resubmittals.

§ 3.13 Use of Site

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

§ 3.14 Cutting and Patching

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

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

§ 3.15 Cleaning Up

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

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

§ 3.15.3 The Contractor shall clean up all rubbish and debris from site and building on a daily basis. This includes off-site disposal of all rubbish and debris along with excess spoils, unsuitable materials such as concrete, sand and masonry materials. Trucks or dumpsters to haul off material shall be provided by the Contractor.

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§ 3.15.4 The Contractor shall broom clean all floors at least once a week, maintain a clean, orderly, and hazard-free environment, and maintain waste removal, organized material storage and clear access routes.

§ 3.16 Access to Work

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

§ 3.17 Royalties, Patents and Copyrights

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

§ 3.18 Indemnification

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

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

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

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

§ 4.2 Administration of the Contract

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

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or

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procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.2.1 The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect for site visits made necessary by the fault of the Contractor or by defects and deficiencies in the Work.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

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

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

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

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

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

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§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

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

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

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

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

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

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

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

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

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

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

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

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

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§ 5.3 Subcontractual Relations

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

§ 5.4 Contingent Assignment of Subcontracts

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

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

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

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

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

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

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

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

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction

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schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

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

§ 6.2 Mutual Responsibility

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

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

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

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

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

§ 6.3 Owner's Right to Clean Up

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

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

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

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

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

§ 7.1.4 Refer to Specification Section 01 20 01 Change Order Calculations.

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§ 7.2 Change Orders

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

.1 The change in the Work;

.2 The amount of the adjustment, if any, in the Contract Sum; and

.3 The extent of the adjustment, if any, in the Contract Time.

§ 7.2.2 The Contractor must submit change proposals covering a contemplated Change Order within ten (10) work days after the request of the Owner, Architect or Owner's Representative or within ten (10) work days of when the Contractor has actual knowledge of the facts giving rise to the Contractor's claim for a change in the Contract Sum or Contract Time. No increase in the Contract Sum or extension of the Contract Time will be allowed the Contractor for the cost or time involved in making change proposals. Change proposals will define or confirm in detail the Work that is proposed to be added, deleted, or changed and must include any adjustment which the Contractor believes to be necessary in the Contract Sum or the Contract Time. Any proposed adjustment must include detailed documentation, including but not limited to: cost, properly itemized and supported by sufficient substantiating data to permit evaluation including cost of labor, materials, supplies and equipment, rental cost of machinery and equipment, and additional bond cost. Change proposals will be binding upon the Contractor and may be accepted or rejected by the Owner in its discretion. The Owner may, at its option, instruct the Contractor to proceed with the Work involved in the Change Proposal in accordance with this Section 7.2.2 without accepting the Change Proposal in its entirety. See Exhibit E, entitled Change Order Calculations which shall govern and apply to Change Orders. A Change Order is not effective until the Owner and Architect issue and sign the Change Order.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly. The Owner's Representative shall be kept informed and will consult with the Architect throughout the process described in Section 7.3.

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

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

.1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;

.2 Unit prices stated in the Contract Documents or subsequently agreed upon;

.3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or

.4 As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

.1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;

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

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

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

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

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

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

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

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

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

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

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

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

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

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

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

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§ 8.2 Progress and Completion

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

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

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

§ 8.2.4 If at any time during the course of the Work, the Owner reasonably determines that the Contractor has fallen behind the critical path of the schedule, the Owner may upon written notice to the Contractor, require the Contractor to recover schedule by any means appropriate (including but not limited to the provision of extra shifts and/or overtime and/or adjustments to the schedule). Within five days of the Contractor's receipt of such written notice, the Contractor shall provide the Owner with a written recovery plan and shall commence recovery efforts. So long as the Contractor has fallen behind schedule for reasons attributable to the Contractor (and not to force majeure events), all costs associated with the recovery schedule shall be borne by the Contractor. If, however, the Contractor is not at fault for the delay in the work (due to force majeure events or other causes that would otherwise entitle the Contractor to an extension of Contract Time) then the Contractor shall be paid for the costs of recovering schedule pursuant to the provisions of the Contract Documents applicable to changes in the Work.

§ 8.2.5 The Contractor must conform to the most recently approved Construction Schedule. The Contractor must complete the indicated work or achieve the required percentage of completion, as applicable, with any interim completion dates established in the most recently approved Construction Schedule.

§ 8.2.6 The Contractor must maintain at the Site, available to the Owner, Owner's Representative and Architect for their reference during the progress of the Work, a copy of the approved Construction Schedule and any approved revisions thereto. The Contractor must keep current records of and mark on a copy of the approved Construction Schedule the actual commencement date, progress, and completion date of each scheduled activity on the Construction Schedule.

§ 8.2.7 The Contractor represents that its bid includes all costs, overhead and profit which may be incurred throughout the Contract Time and the period between Substantial and Final Completion. Accordingly, the Contractor may not make any claim for delay damages based in whole or in part on the premise that the Contractor would have completed the Work prior to the expiration of the Contract Time but for any claimed delay.

§ 8.2.8 The Owner reserves the right to issue written directive to accelerate the Work that may be subject to an appropriate adjustment, if any, in the Contract Sum. Contractor must substantiate any costs associated with such Owner directive.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Critical Path Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine. The sole remedy for delays other than those which are caused solely and exclusively by acts or omissions of the Owner (except actions taken by the Owner acting as a regulatory authority to protect the public health or safety or to conform to law).will be non-compensable time extensions for completion of the Work.

§ 8.3.1.1 If the Owner is delayed at any time in the performance of its obligations under the Agreement, then the time for the performance of the Owner's obligations shall be equitably extended to permit the Owner to perform same.

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§ 8.3.1.2 Tariffs: It is expressly agreed that in establishing the Contract Sum, the contractor has given consideration to the risks associated with tariffs, including the possibility that tariffs may be newly enacted after execution of the Agreement, and/or that existing tariffs may change after execution of the Agreement. Contractor expressly accepts all risks associated with new or changing tariffs, and agrees that it will make no claim against the Owner related in any way to new or changing tariffs.

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

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

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

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

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect and Owner's Representative within 15 days after the date of the Owner-Contractor Agreement and prior to submitting the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect and Owner's Representative. This schedule, unless objected to by the Architect or Owner's Representative, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and Owner's Representative and supported by such data to substantiate its accuracy as the Architect and Owner's Representative may require, and unless objected to by the Architect or Owner's Representative, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

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

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

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

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

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for

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Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

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

§ 9.5 Decisions to Withhold Certification

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

- **.1** defective Work not remedied;
- **.2** third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- **.3** failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- **.4** reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- **.5** damage to the Owner or a Separate Contractor;
- **.6** reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- **.7** repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

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

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

§ 9.6 Progress Payments

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

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

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

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

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

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

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

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 9.7 Failure of Payment

The Contractor has no right to stop Work as a consequence of non-payment. In the event of any disagreement between the Contractor and Owner involving the Contractor's entitlement to payment, the Contractor's only remedy is to file a Claim in accordance with Article 15. The Contractor must diligently proceed with the Work pending resolution of the Claim. If, however, an Application for Payment has been certified by the Architect, and the Owner fails to make payment within sixty (60) days of Architect's certification, the Contractor may upon ten (10) days'

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written notice to the Owner, stop work if payment is not made by the Owner within ten (10) days following the notice.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use , and the remaining outstanding work is considered minor. The Project will not be considered complete before, at a minimum, the AHJ's have given written approval for the Owner to occupy the premises.

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

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

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

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate..

§ 9.8.6 Unless otherwise provided in the Certificate for Substantial Completion, the Contractor must complete or correct all items included in the final Punch List within thirty (30) days after the Date of Substantial Completion.

§ 9.9 Partial Occupancy or Use

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

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

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

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§ 9.10 Final Completion and Final Payment

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

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

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

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

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

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

§ 10.2 Safety of Persons and Property

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

.1 employees on the Work and other persons who may be affected thereby;

.2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and

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

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

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

§ 10.2.3.1 During the progress of the Work, the Contractor shall protect all existing and new work from injury or defacement and particular care shall be taken of all finished parts. Any damage occurring to the work from any cause, including any damage caused by others and utilities, shall be properly repaired and/or replaced at the Contractor's expense to the satisfaction of the Owner or Owner's representative.
§ 10.2.3.2 The Contractor is also responsible for any repair and/or maintenance required throughout the project limits from Notice to Proceed until final acceptance of the Work by the Owner. These maintenance items or repairs include, but are not limited to: pothole repair, resurfacing temporary roads, maintenance of utility cuts, street sweeping, and mowing.

§ 10.2.3.3 The Contractor is responsible for protecting adjacent properties and utilities as required during the execution of this work. Provide shoring or underpinning as required for safe excavations to meet OSHA requirements and to protect adjacent streets, sidewalks, utilities and existing structures. If this requires engineered shoring systems, the Contractor will provide as needed at no additional cost to the Owner.

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

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

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

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

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

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§ 10.3 Hazardous Materials and Substances

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

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

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

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

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

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

§ 10.4 Emergencies

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

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. Refer to Exhibit A, Insurance and Bonds. The Contractor shall purchase and maintain the required

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insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Owner's Representative, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents. The Contractor shall maintain required insurance until the expiration of the period of correction of Work set forth in Section 12.2.2 of the General Conditions.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. Refer to Exhibit A, Insurance and Bonds. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

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

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

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

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

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§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

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

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition.. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

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

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

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

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

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

§ 12.3 Acceptance of Nonconforming Work

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

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the

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other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

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

§ 13.3 Rights and Remedies

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

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

§ 13.4 Tests and Inspections

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

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

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

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

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

§ 13.5 Not Used.

§ 13.6 Truck, Traffic and Other Restrictions

§ 13.6.1 Contractor shall provide barricades, signage, flagging and flagman for traffic control and public safety during the execution of the Work, including deliveries and construction vehicles entering and leaving the site. Contractor shall coordinate road closures, and provide traffic control plans and measures required by authorities

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having jurisdiction. Contractor to coordinate road closures with the Owner, Architect, Owner's Representative, and authorities having jurisdiction.

§ 13.6.2 There shall be absolutely no firearms carried by any individual on any Owner's work site.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

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

- **.1** Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- **.2** An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
- **.3** Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- **.4** The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

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

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

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

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- **.1** repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- **.2** fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- **.3** repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- **.4** otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- **.1** Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- **.2** Accept assignment of subcontracts pursuant to Section 5.4; and

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

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

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

§ 14.3 Suspension by the Owner for Convenience

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

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

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

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

§ 14.4 Termination by the Owner for Convenience

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

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

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

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

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

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by

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applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect and the Owner's Representative, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 10 calendar days after occurrence of the event giving rise to such Claim or within 10 calendar days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.1.1 Any claims for delays to critical path activities shall be submitted to the Owner, Architect, and Owner's Representative within 72 hours of actual knowledge of the occurrence, identifying the event and the impacted critical path activity. The Owner, Architect, and Owner's Representative will review to determine if the claim will be considered a valid delay. Each day claimed shall be tracked on a log for review at the bi-weekly Owner Meeting.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker

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lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

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

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

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

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

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

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

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

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

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

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to

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file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

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

§ 15.4 Arbitration

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

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

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

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

§ 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

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

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

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SECTION 00 52 03
EXHIBIT A, INSURANCE AND BONDS

PART 1 CONTRACTOR INSURANCE REQUIREMENTS

These provisions apply to all contractors who will be on the jobsite, whether a general contractor or subcontractor.

Contractor shall, at its expense, procure and maintain at a minimum for the duration of the Project and through the correction period stated in the agreement, except as otherwise set forth herein, the types and amounts of the insurance described below or as otherwise required by law on all of its operations, in companies registered to do business in the State of Missouri and having an A.M. Best Rating of A, V or higher:

A. WORKER'S COMPENSATION AND EMPLOYER'S LIABILITY

Contractor shall carry Workers' Compensation Insurance as required by any applicable law or regulation. Employers Liability Insurance shall be in amounts no less than $1,000,000 each accident for bodily injury, $1,000,000 for bodily injury by disease and $1,000,000 each employee for bodily injury by disease. If there is an exposure of injury to Contractor's employees under the U.S. Longshoremen's and Harbor Works Compensation act, the Jones Act or under laws, regulations or statutes applicable to maritime employees, coverage shall be included for such injuries or claims. If the contractor's Employers Liability limits are below those stated above an umbrella liability policy may be used to the requested limit.

All personnel on Owner's jobsite must be covered under a Workers Compensation policy within the statutory limits as provided under the laws of the state in which the work is performed. If subcontractor is a sole proprietor and has no other employees, subcontractor must still purchase a Workers' Compensation Policy. When subcontractor purchases Workers' Compensation Insurance, the certificate must indicate whether coverage has been waived for Officers, Partners, Shareholders, LLC Members and/or Sole Proprietors.

B. COMMERCIAL GENERAL LIABILITY INSURANCE

Contractor shall carry Commercial General Liability Insurance written on ISO occurrence form CG 00 01 07 98 or later edition (or a substitute form providing equivalent coverage) and shall cover all operations by or on behalf of the Contractor, providing insurance for bodily injury liability and property damage liability for the limits indicated below and for the following coverage:

(1) Premises and Operations
(2) Products and Completed Operations
(3) Contractual Liability insuring the obligations assumed by the Contractor under this contract.
(4) Personal Injury Liability and Advertising Injury Liability

Except with respect to bodily injury and property damage included within the products and completed operations hazards, the general aggregate limit shall apply separately to the Contractor's project under this Contract. Completed Operations coverage must be maintained for the correction period provided in the agreement.

Limit of Liability

The Commercial General Liability policy limits shall not be less than:

$1,000,000 Each Occurrence (Combined Single Limit for Bodily Injury and Property Damage)
$2,000,000 Aggregate for Products/Completed Operations
$1,000,000 Personal Injury/Advertising Injury
$2,000,000 General Aggregate (provide endorsement to apply the General Aggregate per project, if available. If not, see Umbrella Liability section)

Additional Insured

The Owner, all of its officers, directors and employees ("The Meramec Ambulance District"), and the Owner's Representative shall be named as Additional Insured under the Commercial General Liability Insurance using ISO Additional Insured Endorsements CG 20 10 or substitute providing equivalent coverage. If additional insured status is required for a correction period then CG 20 37 or equivalent should also be used . These endorsements must be stated on the insurance certificate provided to the Owner and a copy of the endorsements confirming coverage should accompany the insurance certificate.

Primary Coverage

The Contractor's Commercial General Liability Policy shall apply as primary insurance and any other insurance carried by the Architect or the Owner shall be excess only and will not contribute with Contractor's insurance. This must be stated on the insurance certificate and a copy of the endorsement confirming coverage should accompany the insurance certificate.

C. BUSINESS AUTOMOBILE LIABILITY INSURANCE

The policy should be written on ISO form CA 0001, CA 0005, CA 0002, CA 0020 or a substitute form providing equivalent coverage and shall provide coverage for all owned, hired and non-owned vehicles. The limit of liability should be at least $1,000,000 Combined Single Limit for Bodily Injury and Property Damage each accident and should also cover Automobile Contractual Liability. The policy should name the Owner and all of its officers, directors and employees and the Owner's Representative as Additional Insureds. The policy shall be endorsed to be primary coverage and any other insurance carried by the Owner shall be excess only and will not contribute with Contractor's insurance. To confirm coverage, a copy of the Additional Insured Endorsement and the Primary Insurance Endorsement should accompany the insurance certificate.

D. UMBRELLA EXCESS LIABILITY

The contractor should provide an excess liability policy that will provide a minimum of $4,000,000 per occurrence/$4,000,000 aggregate over the above listed coverages. This policy should "follow-form" of the underlying policies and comply with all insurance requirements of those policies.

E. PROFESSIONAL LIABILITY

Contractor shall maintain Project Specific Professional Liability insurance, including contractual liability insurance against the liability assumed by Contractor in contractually agreeing to perform design services, and including coverage for any professional liability caused by any of the Contractor's consultants. Contractor shall maintain at least the limits of liability in a company satisfactory to the Owner as follows: $2,000,000 Each Claim / Aggregate. The Professional Liability Insurance shall contain prior acts coverage sufficient to cover all contract services rendered by the Contractor. Said insurance shall be continued in effect with an extended period of five years following final payment to Contractor. Such insurance may be maintained on a claims made basis. Contractor shall provide Owner with a certificate of insurance evidencing such coverage, and such other proof of such insurance as the Owner may reasonably request.

Contractor must include Professional Liability and Errors and Omissions insurance for the delegated design scopes of work that are required by specifications to be designed by a professional engineer. Drawings and calculations shall be signed and sealed by a professional engineer registered in the State of Missouri.

F. BUILDERS RISK INSURANCE

Contractor shall, at its own expense, procure and maintain Builders Risk Insurance in a form acceptable to the Owner for the full replacement value of the Work, including labor, materials, and equipment to be incorporated therein, from the date of commencement through final completion and acceptance by the Owner, including subsequent contract modifications, change orders, and cost of materials supplied or installed by others. Builders Risk Insurance shall cover all permanent and temporary structures, materials, supplies, and equipment intended for incorporation into the Project, whether on-site, in transit, or stored off-site, provided such property is designated for the Project.

Coverage shall be written on an "all-risk" or "special form" basis, including but not limited to loss or damage caused by fire, theft, vandalism, explosion, windstorm, hail, lightning, collapse, and water damage, except as otherwise excluded by the policy.

The Builders Risk policy shall include a waiver of subrogation in favor of the Owner and its officers, directors, and employees and the Owner's Representative.

Any deductibles under the Builders Risk policy shall be the responsibility of the Contractor unless otherwise agreed in writing by the Owner.

G. CONTRACTOR'S ENVIRONMENTAL (POLLUTION LIABILITY)

For Contracts where appropriate for the nature of the service provided, the Contractor shall maintain in force for the full period of the Contract, pollution liability insurance coverage in the minimum amount set forth below for losses caused by sudden and accidental pollution conditions that arise from the operations of the Contractor. Such insurance shall apply to bodily injury and property damage, including loss of use of the damaged property or property that has not been physically injured, and shall cover cleanup, transportation, disposal, remediation and defense costs, including all expenses incurred in the investigation, defense, payment or settlement of claims.

Limits:

$ 2,000,000 Per Occurrence
$ 2,000,000 Aggregate

The insurance coverage shall be retroactive to the earlier of the date of this Contract or the commencement of the Contractor's work on the Project, and Contractor shall cause the same to remain in effect for a period of at least five (5) years after final acceptance of the Project by the Owner or such other period as may be set forth in the Contract or in the Project Specifications.

The policy should name the Owner and all of its officers, directors and employees, Owner's Representative, and the Architect, as Additional Insureds. The policy shall be endorsed to be primary coverage and any other insurance carried by the Owner shall be excess only and will not contribute with Contractor's insurance. To confirm coverage, a copy of the Additional Insured Endorsement and the Primary Insurance Endorsement should accompany the insurance certificate.

H. WAIVER OF SUBROGATION

The Commercial General Liability, Automobile Liability and Umbrella Excess Liability policies shall each contain a waiver of subrogation in favor of the Owner and its officers, directors, and employees and the Owner's Representative.

I. CERTIFICATE OF INSURANCE

Prior to commencing work on behalf of Owner, Contractor and each Subcontractor shall obtain and pay for the insurance coverages identified herein, until completion and final acceptance of work for a period of ten years from the date of completion of the work. As evidence of the insurance, limits and endorsements required, a standard ACORD or equivalent Certificate of Insurance executed by a duly authorized representative of each insurer shall be furnished by the Contractor to the Owner, the Owner's Representative and the Architect before any Work under the Contract is commenced by the Contractor. Owner shall have the right, but not the obligations, to prohibit Contractor or any Subcontractor from entering the Project site until such certificates are received and approved by the Owner. With respect to insurance to be maintained after final payment, an additional certificate(s) evidencing such coverage shall be promptly provided to Owner as a precondition to final payment. The Certificate of Insurance shall provide that there will be no cancellation or deduction of coverage without 30 days prior written notice to the Owners. Failure to maintain the insurance required herein may result in termination of the Contract at Owner's option. In the event the Contractor does not comply with the requirements of this section, the Owner shall have the right, but not the obligation, provide insurance coverage to protect the Owner and Architect, and charge the Contractor for the cost of that Insurance. The required insurance shall be subject to the approval of the Architect, but any acceptance of insurance certificates by the Architect or Owner shall in no way limit or relieve the Contractor of their duties and responsibilities in this Agreement.

J. COPIES OF POLICIES

Contractor shall furnish a certified copy of any and all insurance policies required under this Contract within ten (10) days of Owner's written request for said policies.

K. SUBCONTRACTORS

Contractor shall cause each Subcontractor to purchase and maintain insurance of the types and amounts specified herein. Limits of such coverage may be reduced only upon written agreement of Owner. Contractor shall provide to Owner copies of certificates evidencing coverage for each Subcontractor. Subcontractors' commercial general liability and business automobile liability insurance shall name Owner, Owner's Representative and Architect as Additional Insureds and have the Waiver of Subrogation endorsement added.

L. OTHER INSURANCE

Owner may require insurance coverage in excess of the types and amounts required above. Contractor shall attempt in good faith to obtain quotes for such additional coverage and provide them Owner for review. Contractor shall purchase any such additional insurance as may be requested by the Owner in writing. Owner shall pay any additional premium for such additional coverage.

PART 2 CONTRACTOR BOND REQUIREMENTS

A. BID SECURITY

Each bid must be accompanied by a bid security in the form of a cashier's check, certified check, Bid Bond, or negotiable U.S. Government bond executed by the bidder and an approved surety company payable to Meramec Ambulance District, in the amount not less than five percent (5%) of the sum total of the base bid. Bidder shall scan a copy of the bid security to submit via email and mail the bid security to the Owner via certified mail. The bid security shall be held for a period of ninety (90) days or until a contract is awarded, whichever is longer. The Bid Security will become the Owner's property in the event that the successful bidder fails, within five (5) business days after receipt of the Contract for the amount of the bid, to execute the Contract and deliver the payment and performance bonds within ten (10) business days after the contract award.

B. PERFORMANCE BOND AND PAYMENT BOND

The Contractor shall furnish a Performance Bond and a Labor and Materials Payment Bond AIA Document A312, or similar, with surety approved by the Owner and on forms approved by the Owner within ten (10) business days after the contract award. Each bond shall be in the full amount of the parties' contract and shall be conditioned upon the full and faithful performance of all major terms and conditions of the contract and the payment of all labor and material suppliers. If at any time after the execution of a contract and the surety bonds the Owner shall deem any bond surety to be unsatisfactory, or if for any reason, a bond ceases to be adequate to cover the performance of the Work or the payment of labor and materials, the Contractor shall, at its expense and within five (5) days after the receipt of notice from the Owner to do so, furnish an additional bond or bonds, in such form and amount and with such surety or sureties as shall be satisfactory to the Owner. In such event no further payment to the Contractor shall be deemed to be due under this contract until such new or additional security for the faithful performance of the Work and the payment of labor and material suppliers shall be furnished in a manner and form satisfactory to the Owner. The corporate surety on any performance or payment bond must be licensed by the State of Missouri

and must be listed in United States Treasury Circular 570, and the bonds shall be accompanied by current powers of attorney, on a form acceptable to the Owner.

END OF SECTION

SECTION 01 10 00
SUMMARY

PART 1 GENERAL

1.01 PROJECT

A. Project Name: 25083 Meramec Ambulance District - Station 4

B. Owner's Name: Meramec Ambulance District.

C. Owner's Representative: Navigate Building Solutions.

D. Architect's Name: Archimages, Inc..

E. The project consists of construction of a new ambulance base station.
   1. Refer to Section 00 01 01 Invitation to Bid for further description of the scope of each project.

F. Proposed project site addresses:
   1. 385 Old Manchester Road, PacificMissouri63069.

1.02 WORK BY OWNER

A. Owner will supply the following for installation by Contractor:
   1. Safe Haven Baby Box, https://www.shbb.org/. See Section 11 73 21 Newborn Safety Device.
   2. Certain loose items such as furniture, appliances, fitness equipment, TVs.

1.03 OWNER OCCUPANCY

A. Owner intends to occupy the Project upon Substantial Completion.

B. Schedule the Work to accommodate Owner occupancy.

1.04 WORK SEQUENCE

A. Entire Project Scope of Work shall be implemented within (1) one individual Phase, as delineated within Drawings and Specifications.

B. Coordinate Construction Schedule including all Project Site operations with Owner’s Representative and Architect, prior to commencement of said Work.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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SECTION 01 20 00
PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Procedures for preparation and submittal of applications for progress payments.

B. Documentation of changes in Contract Sum and Contract Time.

C. Change procedures.

D. Correlation of Contractor submittals based on changes.

E. Procedures for preparation and submittal of application for final payment.

1.02 RELATED REQUIREMENTS

A. Section 00 50 00 - Contracting Forms and Supplements: Forms to be used.

B. Section 00 52 00 - Agreement Form: Contract Sum, retainages, payment period, monetary values of unit prices.

C. Section 00 52 01 - General Conditions: Additional requirements for progress payments, final payment, changes in the Work.

D. Section 00 73 00 - Supplementary Conditions: Percentage allowances for Contractor's overhead and profit.

E. Section 01 20 01 Change Order Calculations: Procedures for calculating Change Order cost.

F. Section 01 22 00 - Unit Prices: Monetary values of unit prices; Payment and modification procedures relating to unit prices.

1.03 SCHEDULE OF VALUES

A. Use Schedule of Values Form: AIA G703, edition stipulated in the Agreement.

B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Architect for approval.

C. Forms filled out by hand will not be accepted.

D. Submit Schedule of Values in PDF format within 15 days after date of Owner-Contractor Agreement.

E. Revise schedule to list approved Change Orders, with each Application For Payment.

1.04 APPLICATIONS FOR PROGRESS PAYMENTS

A. Payment Period: Submit at intervals stipulated in the Agreement.

B. Use Form AIA G702 and Form AIA G703, edition stipulated in the Agreement.

C. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.

D. Forms filled out by hand will not be accepted.

E. Execute certification by signature of authorized officer.

F. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.

G. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of work.

H. Submit each Application for Payment in PDF format.

I. Include the following with the application:
   1. Transmittal letter as specified for submittals in Section 01 30 00.
   2. Construction progress schedule, revised and current as specified in Section 01 30 00.
   3. Partial release of liens from major subcontractors and vendors.

4. Lien waivers.
5. Affidavits attesting to off-site stored products.
    a. See AIA A101-2017 Section 5.1.6.1 for stored material requirements.

J. When Architect requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

1.05 MODIFICATION PROCEDURES

A. Refer to Section 01 20 01 Change Order Calculations for procedures related to Change Order cost.

B. Submit name of the individual authorized to receive change documents and who will be responsible for informing others in Contractor's employ or subcontractors of changes to Contract Documents.

C. For minor changes not involving an adjustment to the Contract Sum or Contract Time, Architect will issue instructions directly to Contractor.

D. For other required changes, Architect will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
2. Promptly execute the change.

E. For changes for which advance pricing is desired, Architect will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 10 days.

F. Contractor may propose a change by submitting a request for change to Architect, describing the proposed change and its full effect on the work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation.

G. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
1. For change requested by Architect for work falling under a fixed price contract, the amount will be based on Contractor's price quotation.
2. For change requested by Contractor, the amount will be based on the Contractor's request for a Change Order as approved by Architect.
3. For pre-determined unit prices and quantities, the amount will based on the fixed unit prices.
4. For change ordered by Architect without a quotation from Contractor, the amount will be determined by Architect based on the Contractor's substantiation of costs as specified for Time and Material work.

H. Substantiation of Costs: Provide full information required for evaluation.
1. Provide the following data:
    a. Quantities of products, labor, and equipment.
    b. Taxes, insurance, and bonds.
    c. Overhead and profit.
    d. Justification for any change in Contract Time.
    e. Credit for deletions from Contract, similarly documented.
2. Support each claim for additional costs with additional information:
    a. Origin and date of claim.
    b. Dates and times work was performed, and by whom.
    c. Time records and wage rates paid.
    d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.

3. For Time and Material work, submit itemized account and supporting data after completion of change, including extra work tickets signed by the Contractor's superintendent within time limits indicated in the Conditions of the Contract.

I. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

J. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.

K. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.

L. Promptly enter changes in Project Record Documents.

1.06 APPLICATION FOR FINAL PAYMENT

A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.

B. Application for Final Payment will not be considered until the following have been accomplished:
   1. All closeout procedures specified in Section 01 70 00 and Document A201, General Conditions, Section 5.2.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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SECTION 01 20 01
CHANGE ORDER CALCULATIONS

The maximum that will be allowed for overhead and profit on changes in work shall be as follows, expressed as a percentage of the basic cost of the change. The allowable percentages for profit or overhead may be less, depending on the nature, extent or complexity of the change, where the percentage is not commensurate with the responsibility and administration involved (such as the Contractor merely processing substantial Change Order to a Subcontractor) but in no event shall they exceed the following:

To the Contractor and/or its Subcontractor for work performed with their own forces 14%
To the Contractor for work performed by other than its own forces 6%
To the Subcontractor/Supplier for work performed with their own forces 14%
To the Subcontractor/Supplier for work performed by other than its own forces 6%

Not more than above specified percentages for overhead, bond, insurance, profit, and commission will be allowed to be added to the basic cost, regardless of the number of tiers of Contractors, Subcontractors or Sub-subcontractors.

The burden on labor may be indicated as a dollar/cents addition to the hourly rate or may be expressed as a percentage of the extended hourly rate costs. If required by the Owner, the Contractor shall provide a detailed breakdown to justify the labor burden. The Owner reserves the right to reject any labor burden which is inconsistent with other similar contractors or where the cost of fringe benefits are in excess of established labor agreements.

Material, equipment, and supply costs shall be quoted at the actual cost to the Contractor, or Subcontractor. Upon request, the Contractor (or Subcontractor) shall submit evidence to substantiate the costs. Said costs shall be quoted at trade discount prices, with quantity discounts also applied where the quantities warrant. In any proposal with material, equipment and supply credit, the credit shall be based on the actual Contract cost of the material (including trade and quantity discounts) less any charges actually incurred for handling or returning a material which has been delivered.

The percentages allowed for overhead and profit herein shall be deemed to include, and no further addition allowed the Contractor, Subcontractor or Sub-subcontractors for: (1) field and office supervision and administration, including the field superintendent and non-working foremen; (2) general insurance; (3) use or replacement of tools; (4) shop burden; (5) engineering costs; (6) performance (guaranty) and labor/material payment bonds; (7) cost of safety measure (including those imposed by OSHA); (8) permits, unless a new permit type is required; (9) warranty work.

Cost changes shall be computed by determining the basic costs enumerated below (as further specified under this Subparagraph), to which the overhead may be added, then the profit figure may be added, and finally adding the sales tax on materials if allowable.

For changes in the Work, the cost shall be determined as provided under this section. The Contractor shall submit an itemized list of quantities with the applicable unit costs and extended price for each, in such form and detail as required by the Owner. As a minimum, the detailed breakdown shall include and indicate the items enumerated below. Items (a) and (b) constitute the cost of labor, and items (a), (b), (c) and (d) constitute the basic costs referred to under this section.

a) Labor costs, itemized by each trade involved, showing the hourly rates for each, and the hours required for the change. Labor rates shall be the same for extra and credit computations and shall be the actual rate paid the workmen in accordance with established management labor agreements.

b) Burden on labor, which shall be only the actual costs of mandatory fringe benefits required by established agreements, taxes on labor, worker's or workmen's compensation, insurance on labor as affected by payroll, unemployment taxes and insurance, including FICA and FUTA. No other costs will be allowed as burden on labor.

c) Quantities of materials, equipment, and supplies, at their actual costs, with unit costs indicated.

d) The cost of subcontracted work computed in the same way as provided for under this section.

e) Overhead, profit and commission as set forth herein.

f) Applicable sales tax on materials, added after the above computations are complete.

Subcontractors (or Sub-subcontractors) shall compute their costs in the same way and are subject to the same conditions of what may be included in the cost and the same maximum percentages for overhead and profit. To the Subcontractor's price, the Contractor may add up to a maximum of six percent (6%). For changes involving work of the Contractor with its own forces and work by a Subcontractor (or Sub-subcontractor), the commission shall be applied directly to the Subcontractor's price, with the overhead and profit figure applied only to the Work the Contractor performs with its own forces.

For changes involving both extra and credit amounts, the overhead and profit, or commission, shall be applied only to net difference where the extra exceeds the credit.

For changes resulting in a credit in the basic costs, a reasonable allowance for overhead, profit or commission may be required to be credited to the Owner, as approved by the Owner. In general, no credit for overhead, profit or commission will be required where the net change credit is minor or where the Change in Work indicates it is reasonable that no credit be allowed to the Owner due to the effort, cost or responsibility of the Contractor. In the event of substantial subcontract credits or for Work the Contractor does not provide or perform, a reasonable overhead, profit or commission credit shall be allowed to the Owner, as determined by the Owner.

If anytime, Contractor is directed to proceed in writing by the Owner or Owner’s Representative on a time and material basis for a change. The Contractor must notify Owner’s Representative when work is beginning, when it is complete and daily tickets must be submitted as backup documentation. Daily tickets to be signed daily and verified by the Contractor’s onsite superintendent and submitted daily to the Owner’s Representative. Any change order request submitted without these daily signed tickets will be rejected and will not be compensated.

No time extensions will be granted related to claims of adverse weather. No claims for extra costs will be granted related to adverse weather and/or taking action to deal with adverse weather and/or the effects of adverse weather.

Additional scope that is authorized to be completed on a T&M basis on behalf of the Owner, shall be documented as follows:

a) Contractor shall issue daily tickets identifying hours worked, classification of worker, materials used, internally or externally rented equipment, and subcontractors utilized.

b) The additional scope should be delineated from the base bid scope.

c) Hours worked shall be verified by the General Contractor’s Superintendent and/or Authorized Owner’s Representative and indicated by signature on daily work tickets.

d) There should be a separate ticket for each day that additional scope of work takes place.

e) Unit costs, material costs and rental rates will be evaluated accordingly to typical market value.

f) The contractor is responsible for expending costs with the Owner’s best interest in mind.

SECTION 01 21 00
ALLOWANCES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Unforseen Subsurface Conditions Allowance.

1.02 RELATED REQUIREMENTS

A. Section 01 20 00 - Price and Payment Procedures: Additional payment and modification procedures.

B. Section 01 20 01 - Change Order Calculations.

C. Section 01 22 00 - Unit Prices.

1.03 ALLOWANCES SCHEDULE

A. UNFORESEEN SUBSURFACE CONDITIONS ALLOWANCE:

1. Include in the base bid price an allowance of $100,000 for Unknown Subsurface Conditions. Allowance shall include all overhead, profit and fees as is allowed for Change Orders in specification section 01 20 10, Change Order Calculations. Unit prices provided on the Bid Form shall be used where applicable to work paid from the Allowance. Any unused portion of this allowance shall be reconciled via a deduct Change Order which shall include the associated overhead, profit and fees. This allowance may only be used at the sole discretion of the Owner. This allowance may not be used to address the effects of weather conditions.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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SECTION 01 22 00
UNIT PRICES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. List of unit prices, for use in preparing Bids.

B. Measurement and payment criteria applicable to Work performed under a unit price payment method.

C. Defect assessment and non-payment for rejected work.

1.02 RELATED REQUIREMENTS

A. Document 00 31 00 - Available Project Information.

B. Document 00 41 01 Supplemental Bid Information: List of Unit Prices as supplement to Bid Form

C. Section 01 20 00 - Price and Payment Procedures: Additional payment and modification procedures.

D. Section 01 20 10 Change Order Calculations.

E. Section 01 21 00 Allowances.

1.03 COSTS INCLUDED

A. Unit Prices included on the Bid Form shall include full compensation for all required labor, products, tools, equipment, plant, transportation, services and incidentals; erection, application or installation of an item of the Work; overhead and profit.

B. Unit Prices provided on the Bid Form and incorporated into the contract shall apply to the condition described in the unit price, regardless of the location of the work, which subcontractor performs the work, or when the work was performed.

C. Unit Prices shall be the same for both additive and deductive Work.

1.04 UNIT QUANTITIES SPECIFIED

A. Quantities indicated in the Bid Form are for bidding and contract purposes only. Quantities and measurements of actual Work will determine the payment amount.

1.05 MEASUREMENT OF QUANTITIES

A. Take all measurements and compute quantities. Measurements and quantities will be verified by Architect.

B. Assist by providing necessary equipment, workers, and survey personnel as required.

C. Measurement by Weight: Concrete reinforcing steel, rolled or formed steel or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.

D. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.

E. Measurement by Area: Measured by square dimension using mean length and width or radius.

F. Linear Measurement: Measured by linear dimension, at the item centerline or mean chord.

G. Perform surveys required to determine quantities, including control surveys to establish measurement reference lines. Notify Architect prior to starting work.

H. Contractor's Engineer Responsibilities: Sign surveyor's field notes or keep duplicate field notes , calculate and certify quantities for payment purposes.

1.06 PAYMENT

A. Payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities of Work that is incorporated in or made necessary by the Work and accepted by the Architect, multiplied by the unit price.

B. Payment will not be made for any of the following:
   1. Products wasted or disposed of in a manner that is not acceptable.
   2. Products determined as unacceptable before or after placement.
   3. Products not completely unloaded from the transporting vehicle.
   4. Products placed beyond the lines and levels of the required Work.
   5. Products remaining on hand after completion of the Work.
   6. Loading, hauling, and disposing of rejected Products.

1.07 SCHEDULE OF UNIT PRICES

A. Refer to unit prices list in Section 00 41 01 Supplemental Bid Information.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 23 00
ALTERNATES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Description of Alternates.

B. Procedures for pricing Alternates.

C. Documentation of changes to Contract Sum and Contract Time.

1.02 RELATED REQUIREMENTS

A. Document 00 21 13 - Instructions to Bidders: Instructions for preparation of pricing for Alternates.

B. Document 00 41 00 - Bid Form: List of Alternates

C. Document 00 52 00 - Agreement Form: Incorporating monetary value of accepted Alternates.

1.03 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated within Bid Form for certain Work, as defined in the bidding requirements, that may be added to or deducted from the Base Bid amount, should Owner decide to accept a corresponding change, either in amount of construction to be completed, or in products, materials, equipment, systems, or installation methods described within the Contract Documents.

1. Alternates described in this Section shall form part of the Work, only if enumerated in the Agreement.
2. The cost or credit of each Alternate is the net addition to or deduction from the Contract Sum, as required to incorporate said Alternate into Work. No other adjustments shall be made to the Contract Sum.

1.04 PROCEDURES

A. Coordination: Revise, adjust, coordinate any and all affected subcontractor, supplier and trade Scopes of Work, required to completely integrate accepted Alternates into the Project.

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

B. Notification: Immediately following Award of the Contract, notify each party involved, in writing, of the status of each Alternate. Indicate if Alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated Revisions to Alternates.

C. Execute accepted Alternates under same conditions as all other Work of Contract.

D. Unless otherwise directed, complete all Work described within Alternates, with no increase in Contract Time.

E. This section includes non-technical descriptions of Alternates. Reference specific sections of Specifications and Drawings for technical descriptions of Alternates.

F. Owner reserves right to award none, any one or more in any order, or all Alternates in combination with Work covered by Base Bid.

G. Owner reserves right to determine low bid as Base Bid alone, or sum of Base Bid and any combination of Alternates.

H. Each Alternate shall include all Work required for a complete and finished Scope of Work.

I. Alternates are additive or deductive to the Base Bid. Provide costs in appropriate spaces delineated within Bid Form.

J. Submit Bids for Base Bid and all Alternates listed within Bid Form. Failure to quote an amount, or insertion of the words "no bid," "none" or words with a similar meaning, shall be considered as not completing the proposal and may constitute disqualification of entire Bid, upon Owner's

discretion. When there is no change in Base Bid, due to using an Alternate, insert the words "No Change". The words "No Change" shall be interpreted to mean that said Work described within the Alternate, shall be completed at no adjustment or change in cost to Base Bid.

K. Base Bid and Alternates are exclusive within their Scope of Work. There is no overlap between or among Base Bid and Alternates. The cost of any item of Work shall be included only once, within Base Bid or Alternates.

L. Schedule: A schedule of Alternates is included at the end of this Section. Specification Sections referenced within schedule contain requirements for materials necessary to achieve said Work delineated within each Alternate.

1.05 ACCEPTANCE OF ALTERNATES

A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted Alternates will be identified in the Owner-Contractor Agreement.

B. Coordinate related work and modify surrounding work to integrate the Work of each Alternate.

C. Contractor is required to hold their alternate pricing included in the Bid Form for six (6) months after the bid date, unless noted otherwise in the alternate description. Contractor shall notify the Owner, Architect, and Owner's Representative when decisions need to be made regarding the acceptance of bid alternates in order to maintain deliveries, installation, and the Master Project Schedule.

1.06 DEFINITIONS

A. Alternate: An amount proposed by Bidders and stated within Bid Form for certain Work, as defined in the Bidding Requirements, that may be added to or deducted from the Base Bid amount, should Owner decide to accept a corresponding change, either in amount of construction to be completed, or in products, materials, equipment, systems, or installation methods described within the Contract Documents.
   1. Alternates described in this Section shall form part of the Work, only if enumerated within said Agreement.
   2. The cost or credit of each Alternate is the net addition to or deduction from the Contract Sum, as required to incorporate said Alternate into Work. No other adjustments shall be made to the Contract Sum.

1.07 SCHEDULE OF ALTERNATES:

A. Alternate No. 1 Asphalt Paving.
   1. Base Bid: Provide concrete paving, curbing and flume as indicated on Sheet C5.0 and as specified.
   2. Alternate Bid: Provide asphalt paving as specified in lieu of the concrete paving that is included in the base bid.

B. Alternate No. 2 Soffits.
   1. Base Bid: Provide suspended acoustical ceiling without soffits in Day Room 252 and over the kitchen island in Kitchen 264.
   2. Alternate Bid: Add gypsum board soffits and indicated finishes in Day Room 252 and over the kitchen island in Kitchen 264 as indicated for the alternate bid on the drawings.

C. Alternate No. 3 Apparatus Bay Floor Finish.
   1. Base Bid: Provide liquid densifier and hardener as specified in Section 03 35 11 Concrete Floor Finishes in Rooms 119.
   2. Alternate Bid: Delete the liquid densifier and hardener from Rooms 119. In lieu of the densifier and hardener, provide epoxy resin flooring as specified in Section 09 67 00 Fluid-Applied Flooring.

D. Alternate No. 4 Siding.
   1. Base Bid: Provide Hardie Fiber Cement Siding, Trim and Soffits as indicated on the drawings and per Section 07 46 42 Fiber Cement Siding.

2. Alternate Bid: Provide LP Engineered Wood Siding per Section 07 46 43.13 Engineered Wood Siding in lieu of Fiber Cement Siding.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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SECTION 01 25 00
SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Procedural requirements for proposed substitutions.

1.02 DEFINITIONS

A. Substitutions: Changes from Contract Documents requirements proposed by Contractor to materials, products, assemblies, and equipment.
   1. Substitutions for Cause: Proposed due to changed Project circumstances beyond Contractor's control.
   2. Substitutions for Convenience: Proposed due to possibility of offering substantial advantage to the Project.

1.03 REFERENCE STANDARDS

A. CSI/CSC Form 1.5C - Substitution Request (During the Bidding/Negotiating Stage); Current Edition.

B. CSI/CSC Form 13.1A - Substitution Request (After the Bidding/Negotiating Phase); Current Edition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

A. A Substitution Request for products, assemblies, materials, and equipment constitutes a representation that the submitter:
   1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product, equipment, assembly, or system.
   2. Agrees to provide the same warranty for the substitution as for the specified product.
   3. Agrees to coordinate installation and make changes to other work that may be required for the work to be complete, with no additional cost to Owner.
   4. Waives claims for additional costs or time extension that may subsequently become apparent.
   5. Agrees to reimburse Owner and Architect for review or redesign services associated with re-approval by authorities.

B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Burden of proof is on proposer.

C. Content: Include information necessary for tracking the status of each Substitution Request, and information necessary to provide an actionable response.
   1. No specific form is required. Contractor's Substitution Request documentation must include the following:
      a. Project Information:
         1) Official project name and number, and any additional required identifiers established in Contract Documents.
      b. Substitution Request Information:
         1) Issue date.
         2) Reference to particular Contract Document(s) specification section number, title, and article/paragraph(s).
         3) Description of Substitution.
         4) Reason why the specified item cannot be provided.
         5) Differences between proposed substitution and specified item.
         6) Description of how proposed substitution affects other parts of work.

c. Attached Comparative Data: Provide point-by-point, side-by-side comparison addressing essential attributes specified, as appropriate and relevant for the item:
    1) Physical characteristics.
    2) In-service performance.
    3) Expected durability.
    4) Visual effect.
    5) Warranties.
    6) Other salient features and requirements.
d. Impact of Substitution:
    1) Savings to Owner for accepting substitution.
    2) Change to Contract Time due to accepting substitution.
    3) Any other impacts.

D. Limit each request to a single proposed substitution item.
    1. Submit an electronic document, combining the request form with supporting data into single document.

3.02 SUBSTITUTION PROCEDURES DURING PROCUREMENT

A. Submittal Time Restrictions:

3.03 SUBSTITUTION PROCEDURES DURING CONSTRUCTION

A. Submit request for Substitution for Cause within 14 days of discovery of need for substitution, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.

B. Submit request for Substitution for Convenience within 14 days of discovery of its potential advantage to the project, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.
    1. In addition to meeting general documentation requirements, document how the requested substitution benefits the Owner through cost savings, time savings, greater energy conservation, or in other specific ways.
    2. Document means of coordinating of substitution item with other portions of the work, including work by affected subcontractors.
    3. Bear the costs engendered by proposed substitution of:
        a. Owner's compensation to the Architect for any required redesign, time spent processing and evaluating the request.

C. Substitutions will not be considered under one or more of the following circumstances:
    1. When they are indicated or implied on shop drawing or product data submittals, without having received prior approval.
    2. Without a separate written request.

3.04 RESOLUTION

A. Architect may request additional information and documentation prior to rendering a decision. Provide this data in an expeditious manner.

B. Architect will notify Contractor in writing of decision to accept or reject request.

3.05 ACCEPTANCE

A. Accepted substitutions change the work of the Project. They will be documented and incorporated into work of the project by Change Order, Construction Change Directive, Architectural Supplementary Instructions, or similar instruments provided for in the Conditions of the Contract.

END OF SECTION

SECTION 01 30 00
ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General administrative requirements.

B. Electronic document submittal service.

C. Preconstruction meeting.

D. Progress meetings.

E. Submittal schedule.

F. Construction progress schedule.

G. Contractor's daily reports.

H. Progress photographs.

I. Submittals for review, information, and project closeout.

J. Number of copies of submittals.

K. Requests for Interpretation (RFI) procedures.

L. Submittal procedures.

1.02 GENERAL ADMINISTRATIVE REQUIREMENTS

A. Comply with requirements of Section 01 70 00 - Execution and Closeout Requirements for coordination of execution of administrative tasks with timing of construction activities.

B. Make the following types of submittals to Architect:
   1. Buyout Log.
   2. Procurement Log.
   3. Requests for Interpretation (RFI).
   4. Requests for substitution.
   5. Shop drawings, product data, and samples.
   6. Test and inspection reports.
   7. Design data.
   8. Manufacturer's instructions and field reports.
   9. Applications for payment and change order requests.
   10. Progress schedules.
   11. Coordination drawings.
   12. Correction Punch List and Final Correction Punch List for Substantial Completion.
   13. Closeout submittals.

1.03 PROJECT COORDINATION

A. Owner's Representative: Navigate Building Solutions.
   1. Coordinate all Work with Owner's Representative

B. Cooperate with the Owner, Architect, and Owner's Representative in allocation of mobilization areas of site; for field offices and sheds, for delivery access, traffic, and parking facilities.

C. During construction, coordinate use of site and facilities through the Owner, Architect, and Owner's Representative.

D. Comply with Owner, Architect, and Owner's Representative procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.

E. Immediately upon award, the Contractor shall submit any proposed revisions to the Site Logistics Plan for review. The Owner, Architect, and Owner's Representative will meet with the Contractor to review and discuss site logistics and finalize an agreed upon plan of action for

construction parking, office and storage containers, temporary toilets, temporary site fence, street and sidewalk closures, etc.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 ELECTRONIC DOCUMENT SUBMITTAL SERVICE

A. All documents transmitted for purposes of administration of the contract are to be in electronic (PDF) format, as appropriate to the document, and transmitted via an Internet-based submittal service that receives, logs and stores documents, provides electronic stamping and signatures, and notifies addressees via email.
   1. Besides submittals for review, information, and closeout, this procedure applies to Requests for Interpretation (RFIs), progress documentation, contract modification documents (e.g. supplementary instructions, change proposals, change orders), applications for payment, field reports and meeting minutes, Contractor's correction punchlist, and any other document any participant wishes to make part of the project record.
   2. Contractor shall be the administrator and maintain all records in the program, and shall grant access to the Owner, Architect, and Owner's Representative.
   3. It is Contractor's responsibility to submit documents in allowable format.
   4. Subcontractors, suppliers, and Architect's consultants are to be permitted to use the service at no extra charge.
   5. Users of the service need an email address, internet access, and PDF review software that includes ability to mark up and apply electronic stamps (such as Adobe Acrobat, www.adobe.com, or Bluebeam PDF Revu, www.bluebeam.com), unless such software capability is provided by the service provider.
   6. Paper document transmittals will not be reviewed; emailed electronic documents will not be reviewed.
   7. All other specified submittal and document transmission procedures apply, except that electronic document requirements do not apply to samples or color selection charts.

B. Cost: The cost of the service is to be paid by Contractor; include the cost of the service in the Contract Sum.

C. Training: One, one-hour, web-based training session will be arranged for all participants, with representatives of Owner, Architect, Owner's Representative, and Contractor participating; further training is the responsibility of the user of the service.

D. At the completion of the project, the Contractor shall download and transmit to the Owner, Architect, and Owner's Representative all final submittals, RFI's, and meeting minutes from the software program.

3.02 SITE SPECIFIC SAFETY PLAN

A. Create and maintain a Site Specific Safety Plan which shall be kept in the jobsite office at all times. The Site Specific Safety Plan shall be submitted to the Owner and Owner's Representative prior to the start of work.

3.03 PRECONSTRUCTION MEETING

A. Owner's Representative will schedule a meeting after Notice of Award.

B. Attendance Required:
   1. Owner.
   2. Architect.
   3. Contractor.

C. Agenda:
   1. Execution of Owner-Contractor Agreement.
   2. Submission of executed bonds and insurance certificates.
   3. Distribution of Contract Documents.

4. Submission of list of subcontractors, list of products, schedule of values, and progress schedule.
5. Submission of initial Submittal schedule.
6. Designation of personnel representing the parties to Contract and Architect.
7. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
8. Scheduling.
9. Scheduling activities of a Geotechnical Engineer.

D. Record minutes and distribute copies within two days after meeting to participants, with copies to Architect, Owner, participants, and those affected by decisions made.

3.04 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the work at maximum two-week intervals.

B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.

C. The work of the Contractor must be performed in accordance with decisions and schedules formulated at the Progress Meetings so as not to delay the work.

D. Attendance Required:
1. Contractor's Project Manager and Superintendent.
2. Owner.
3. Owner's Representative.
4. Architect.
5. Contractor's superintendent.
6. Major subcontractors.

E. Agenda:
1. Review minutes of previous meetings.
2. Review of work progress.
3. Field observations, problems, and decisions.
4. Identification of problems that impede, or will impede, planned progress.
5. Review of submittals schedule and status of submittals.
6. Review of RFIs log and status of responses.
7. Review of off-site fabrication and delivery schedules.
8. Maintenance of progress schedule.
9. Corrective measures to regain projected schedules.
10. Planned progress during succeeding work period.
11. Coordination of projected progress.
12. Maintenance of quality and work standards.
13. Effect of proposed changes on progress schedule and coordination.
14. Other business relating to work.

F. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.05 PRE-INSTALLATION MEETINGS

A. Schedule and administer pre-installation meetings for all major scopes of work with subcontractor, manufacturer, and affected subcontractors prior to commencement of those activities. Invite the Owner, Architect, and Owner's Representative to all pre-installation meetings. The Contractor shall record and distribute meeting minutes two days after meeting to participants, Owner, Architect, and Owner's Representative.

3.06 WEEKLY SUBCONTRACTOR MEETINGS

A. Schedule and administer weekly meetings throughout progress of the work with Contractor's Subcontractors.

B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings. The Owner, Architect, and Owner's Representative shall be invited to these meetings.

C. Attendance Required:
   1. Contractor's Superintendent
   2. Subcontractor's actively performing work onsite.
   3. Subcontractor's scheduled to perform work within the next 3 weeks.

D. Contractor shall record and distribute meeting minutes two days after meeting to participants, Owner's Representative, and Architect.

3.07 CONSTRUCTION PROGRESS SCHEDULE

A. Within 14 days after date of the Agreement, submit preliminary schedule.

B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.

C. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
   1. Include written certification that major Subcontractors have reviewed and accepted proposed schedule.

D. Within 10 days after joint review, submit complete schedule.

E. Submit updated schedule with each Application for Payment.

F. Contractor is required to provide and submit a detailed 3-Week Lookahead Schedule on a weekly basis. Contractor's detailed 3-Week Lookahead Schedule shall adhere to the Master Project Schedule and the accepted contractual project duration.

3.08 DAILY CONSTRUCTION REPORTS

A. Include only factual information. Do not include personal remarks or opinions regarding operations and/or personnel.

B. Prepare a daily construction report recording the following information concerning events at Project site and project progress:
   1. Date.
   2. High and low temperatures, and general weather conditions.
   3. List of subcontractors at Project site.
   4. Approximate count of personnel at Project site.
   5. Safety, environmental, or industrial relations incidents.
   6. Meetings and significant decisions.
   7. Unusual events (submit a separate special report).
   8. Stoppages, delays, shortages, and losses. Include comparison between scheduled work activities (in Contractor's most recently updated and published schedule) and actual activities. Explain differences, if any. Note days or periods when no work was in progress and explain the reasons why.
   9. Testing and/or inspections performed.
   10. Signature of Contractor's authorized representative.
   11. Contractor shall distribute completed Daily Construction Reports to the Architect and Owner's Representative within 24 hours of work performance utilizing an electronic application.

3.09 PROGRESS PHOTOGRAPHS

A. Submit new photographs weekly, within 2 days after being taken.

B. Photography Type: Digital; electronic files.

C. Provide photographs of site and construction throughout progress of work produced by an experienced photographer, acceptable to Architect.

D. Provide 360 degree photos of rooms prior to insulation and cover up.

E. In addition to periodic, recurring views, take photographs of each of the following events:
   1. Completion of demolition.
   2. Completion of site clearing.
   3. Excavations in progress.
   4. Foundations in progress and upon completion.
   5. Below slab rough-in
   6. In-slab rough-in
   7. Structural framing in progress and upon completion.
   8. In-wall rough-in.
   9. Enclosure of ceiling rought-in.
   10. Enclosure of building, upon completion.
   11. Final completion, minimum of 16 photos.

F. Views:
   1. Provide non-aerial photographs from four cardinal views at each specified time, until date of Substantial Completion.
   2. Consult with Architect for instructions on views required.
   3. Provide factual presentation.
   4. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.

G. Digital Photographs: 14 bit color, minimum resolution of 1600 by 2400, in JPG format; provide files unaltered by photo editing software.
   1. Delivery Medium: Via email or on USB flash drive
   2. File Naming: Include project identification, date and time of view, and view identification.
   3. PDF File: Assemble all photos into printable pages in PDF format, with 2 to 3 photos per page, each photo labeled with file name; one PDF file per submittal.

3.10 REQUESTS FOR INTERPRETATION (RFI)

A. Definition: A request seeking one of the following:
   1. An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of work is described differently at more than one place in Contract Documents.
   2. A resolution to an issue which has arisen due to field conditions and affects design intent.

B. It is the Contractor's responsibility to proactively review the Contract Documents and submit RFIs to prevent delays to the Project Schedule.

C. Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.

D. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
   1. Prepare a separate RFI for each specific item.
      a. Review, coordinate, and comment on requests originating with subcontractors and/or materials suppliers.
   2. Do not forward requests which solely require internal coordination between subcontractors.
   3. Combine RFI and its attachments into a single electronic file in PDF format.

E. Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.
   1. Include in each request Contractor's signature attesting to good faith effort to determine from Contract Documents information requiring interpretation.
   2. Unacceptable Uses for RFIs: Do not use RFIs to request the following::

a. Approval of submittals (use procedures specified elsewhere in this section).
b. Approval of substitutions (see Section - 01 60 00 - Product Requirements)
c. Changes that entail change in Contract Time and Contract Sum (comply with provisions of the Conditions of the Contract).

3. Improper RFIs: Requests not prepared in compliance with requirements of this section, and/or missing key information required to render an actionable response. They will be returned without a response, with an explanatory notation.
4. Frivolous RFIs: Requests regarding information that is clearly indicated on, or reasonably inferable from, Contract Documents, with no additional input required to clarify the question. They will be returned without a response, with an explanatory notation.
   a. The Owner reserves the right to assess the Contractor for the costs (on time-and-materials basis) incurred by the Architect, and any of its consultants, due to processing of such RFIs.

F. Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.
1. Official Project name and number, and any additional required identifiers established in Contract Documents.
2. Discrete and consecutive RFI number, and descriptive subject/title.
3. Issue date, and requested reply date.
4. Reference to particular Contract Document(s) requiring additional information/interpretation. Identify pertinent drawing and detail number and/or specification section number, title, and paragraph(s).
5. Annotations: Field dimensions and/or description of conditions which have engendered the request.
6. Contractor's suggested resolution: A written and/or a graphic solution, to scale, is required in cases where clarification of coordination issues is involved, for example; routing, clearances, and/or specific locations of work shown diagrammatically in Contract Documents. If applicable, state the likely impact of the suggested resolution on Contract Time or the Contract Sum.

G. Attachments: Include sketches, coordination drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.

H. RFI Log: Prepare and maintain a tabular log of RFIs for the duration of the project.
1. Indicate current status of every RFI. Update log promptly and on a regular basis.
2. Note dates of when each request is made, and when a response is received.
3. Highlight items requiring priority or expedited response.
4. Highlight items for which a timely response has not been received to date.

I. Review Time: Architect will respond and return RFIs to Contractor within seven calendar days of receipt. For the purpose of establishing the start of the mandated response period, RFIs received after 12:00 noon will be considered as having been received on the following regular working day.
1. Response period may be shortened or lengthened for specific items, subject to mutual agreement, and recorded in a timely manner in progress meeting minutes.

J. Responses: Content of answered RFIs will not constitute in any manner a directive or authorization to perform extra work or delay the project. If in Contractor's belief it is likely to lead to a change to Contract Sum or Contract Time, promptly issue a notice to this effect, and follow up with an appropriate Change Order request to Owner.
1. Response may include a request for additional information, in which case the original RFI will be deemed as having been answered, and an amended one is to be issued forthwith. Identify the amended RFI with an R suffix to the original number.
2. Do not extend applicability of a response to specific item to encompass other similar conditions, unless specifically so noted in the response.
3. Upon receipt of a response, promptly review and distribute it to all affected parties, and update the RFI Log.

4. Notify Architect within seven calendar days if an additional or corrected response is required by submitting an amended version of the original RFI, identified as specified above.

3.11 SUBMITTAL SCHEDULE

A. Submit to Architect for review a schedule for submittals in tabular format.
   1. Submit at the same time as the preliminary schedule.
   2. Coordinate with Contractor's construction schedule and schedule of values.
   3. Format schedule to allow tracking of status of submittals throughout duration of construction.
   4. Arrange information to include scheduled date for initial submittal, specification number and title, submittal category (for review or for information), description of item of work covered, and role and name of subcontractor.
   5. Account for time required for preparation, review, manufacturing, fabrication and delivery when establishing submittal delivery and review deadline dates.
      a. For assemblies, equipment, systems comprised of multiple components and/or requiring detailed coordination with other work, allow for additional time to make corrections or revisions to initial submittals, and time for their review.

B. Submit to Architect a Procurement Log identifying long lead materials and equipment. Procurement Log must include date of order, date of confirmation or order, expected delivery date, actual delivery date, and comments noting changes to dates and reasons for change. The Procurement Log will be reviewed at the bi-weekly Progress Meetings.

C. Submit to Architect a Closeout Log for review. Once approved, this log will be used to track required closeout items prior to final payment.

3.12 SUBMITTALS FOR REVIEW

A. When the following are specified in individual sections, submit them for review:
   1. Product data.
   2. Shop drawings.
   3. Samples for selection.
   4. Samples for verification.

B. Submit to Architect for review for the limited purpose of checking for compliance with information given and the design concept expressed in Contract Documents.

C. Samples will be reviewed for aesthetic, color, or finish selection.

D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 78 00 - Closeout Submittals.

3.13 SUBMITTALS FOR INFORMATION

A. When the following are specified in individual sections, submit them for information:
   1. Design data.
   2. Certificates.
   3. Test reports.
   4. Inspection reports.
   5. Manufacturer's instructions.
   6. Manufacturer's field reports.
   7. Manufacturer's warranties.
   8. Other types indicated.

B. Submit for Architect's knowledge as contract administrator or for Owner.

3.14 SUBMITTALS FOR PROJECT CLOSEOUT

A. Submit Correction Punch List for Substantial Completion.

B. Submit Final Correction Punch List for Substantial Completion.

C. When the following are specified in individual sections, submit them at project closeout in compliance with requirements of Section 01 78 00 - Closeout Submittals:
   1. Project record documents.
   2. Operation and maintenance data.
   3. Warranties.
   4. Bonds.
   5. Other types as indicated.

D. Submit for Owner's benefit during and after project completion.

E. Refer to AIA A201-2017 Section 9.10.2 for additional closeout requirements.

3.15 NUMBER OF COPIES OF SUBMITTALS

A. Electronic Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.

B. Extra Copies at Project Closeout: See Section 01 78 00.

C. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.
   1. After review, produce duplicates.
   2. Retained samples will not be returned to Contractor unless specifically so stated.

3.16 SUBMITTAL PROCEDURES

A. General Requirements:
   1. Sequentially identify each item. For revised submittals use original number and a sequential numerical suffix.
   2. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
   3. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and Contract Documents.
      a. Submittals from sources other than the Contractor, or without Contractor's stamp will not be acknowledged, reviewed, or returned.
   4. Schedule submittals to expedite the Project, and coordinate submission of related items.
      a. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.
   5. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.
   6. Provide space for Contractor and Architect review stamps.
   7. When revised for resubmission, identify all changes made since previous submission.
   8. Distribute reviewed submittals. Instruct parties to promptly report inability to comply with requirements.
   9. Incomplete submittals will not be reviewed, unless they are partial submittals for distinct portion(s) of the work, and have received prior approval for their use.

B. Product Data Procedures:
   1. Submit only information required by individual specification sections.
   2. Collect required information into a single submittal.
   3. Do not submit (Material) Safety Data Sheets for materials or products.

C. Shop Drawing Procedures:
   1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting Contract Documents and coordinating related work.
   2. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.

D. Samples Procedures:

1. Transmit related items together as single package.
2. Identify each item to allow review for applicability in relation to shop drawings showing installation locations.

3.17 SUBMITTAL REVIEW

A. Submittals for Review: Architect will review each submittal, and approve, or take other appropriate action.

B. Submittals for Information: Architect will acknowledge receipt and review. See below for actions to be taken.

C. Architect's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
   1. Notations may be made directly on submitted items and/or listed on appended Submittal Review cover sheet.

D. Architect's and consultants' actions on items submitted for review:
   1. Authorizing purchasing, fabrication, delivery, and installation:
      a. "Reviewed", or language with same legal meaning.
         1) Submittal has been reviewed and found to be in general conformance with the design intent and specifications. Resubmittal is not required.
         2) Note that the design team does not “approve” submittals.
         3) The use of this term by construction management software, orally, or in corrections or comments made on submittals during this review do not relieve Contractor, subcontractor, or supplier from compliance with requirements of the drawings and specifications.
      b. "Reviewed as Noted", or language with same legal meaning.
         1) Submittal has been reviewed for general conformance with the design intent and specifications and found to require minor corrections. The required corrections are indicated on the returned submittal. Make the noted corrections. Resubmittal is not required.
         2) Note that the design team does not “approve” submittals
         3) The use of this term by construction management software, orally, or in corrections or comments made on submittals during this review do not relieve Contractor from compliance with requirements of the drawings and specifications.
   2. Not Authorizing fabrication, delivery, and installation:
      a. "Revise and Resubmit".
         1) Resubmit revised item, with review notations acknowledged and incorporated.
         2) Submittal is not found to follow the design intent, details, or specifications. Make the revisions indicated and resubmit to Architect for further review.
      b. "Rejected".
         1) This indicates that the submittal is unacceptable, either because the submittal document does not comply with requirements, or the products or details of the submittal are unacceptable. A new submittal is required.
         2) Submit item complying with requirements of Contract Documents.

E. Architect's and consultants' actions on items submitted for information:
   1. Items for which no action was taken:
      a. "Received" - to notify the Contractor that the submittal has been received for record only.
   2. Items for which action was taken:
      a. "Reviewed" - no further action is required from Contractor.

END OF SECTION

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SECTION 01 32 16
CONSTRUCTION PROGRESS SCHEDULE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Construction progress schedule, bar chart type.

1.02 SUBMITTALS

A. Within 14 days after date of the Agreement, submit preliminary schedule defining planned operations for the first 60 days of work, with a general outline for remainder of work.

B. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.

C. Within 10 days after joint review, submit complete schedule.

D. Submit updated schedule with each Application for Payment.

E. Submit a detailed 3-Week Lookahead Schedule on a weekly basis. Contractor's detailed 3-Week Lookahead Schedule shall adhere to the Master Project Schedule and the accepted contractual project duration.

F. Submit in PDF format.

1.03 SCHEDULE FORMAT

A. Listings: In chronological order according to the start date for each activity. Identify each activity with the applicable specification section number.

B. Scale and Spacing: To allow for notations and revisions.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTENT

A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.

B. Identify each item by specification section number.

C. Coordinate content with schedule of values specified in Section 01 20 00 - Price and Payment Procedures.

D. Provide legend for symbols and abbreviations used.

3.02 BAR CHARTS

A. Include a separate bar for each major portion of Work or operation.

B. Identify the first work day of each week.

3.03 REVIEW AND EVALUATION OF SCHEDULE

A. Participate in joint review and evaluation of schedule with Architect and Owner's Representative at each submittal.

B. Evaluate project status to determine work behind schedule and work ahead of schedule.

C. After review, revise as necessary as result of review, and resubmit within 10 days.

3.04 UPDATING SCHEDULE

A. Provide updated Construction Progress Schedules each month with the application for payment.

B. Maintain schedules to record actual start and finish dates of completed activities.

C. Indicate progress of each activity to date of revision, with projected completion date of each activity.

D. Annotate diagrams to graphically depict current status of Work.

E. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.

F. Indicate changes required to maintain Date of Substantial Completion.

G. Submit reports required to support recommended changes.

3.05 RECOVERY SCHEDULE

A. Should the Contractor fall behind schedule by more than five (5) days due to the fault of the Contractor, the Contractor shall provide a recovery schedule to the Owner, Architect, and Owner's Representative within five (5) days of request by the Owner's Representative.

3.06 DISTRIBUTION OF SCHEDULE

A. Distribute copies of updated schedules to Contractor's project site file, to subcontractors, suppliers, Architect, Owner, Owner's Representative, and other concerned parties.

B. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

END OF SECTION

SECTION 01 40 00
QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Submittals.

B. Quality assurance.

C. References and standards.

D. Testing and inspection agencies and services.

E. Contractor's construction-related professional design services.

F. Contractor's design-related professional design services.

G. Control of installation.

H. Mock-ups.

I. Tolerances.

J. Defect Assessment.

1.02 REFERENCE STANDARDS

A. ASTM C1021 - Standard Practice for Laboratories Engaged in Testing of Building Sealants; 2008 (Reapproved 2023).

B. ASTM C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation; 2026.

C. ASTM C1093 - Standard Practice for Accreditation of Testing Agencies for Masonry; 2025.

D. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction; 2023.

E. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2025b.

F. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing; 2026.

G. IAS AC89 - Accreditation Criteria for Testing Laboratories; 2025.

1.03 DEFINITIONS

A. Contractor's Quality Control Plan: Contractor's management plan for executing the Contract for Construction.

B. Contractor's Professional Design Services: Design of some aspect or portion of the project by party other than the design professional of record. Provide these services as part of the Contract for Construction.
   1. Design Services Types Required:
      a. Construction-Related: Services Contractor needs to provide in order to carry out the Contractor’s sole responsibilities for construction means, methods, techniques, sequences, and procedures.
      b. Design-Related: Design services explicitly required to be performed by another design professional due to highly-technical and/or specialized nature of a portion of the project. Services primarily involve engineering analysis, calculations, and design, and are not intended to alter the aesthetic aspects of the design.

C. Design Data: Design-related, signed and sealed drawings, calculations, specifications, certifications, shop drawings and other submittals provided by Contractor, and prepared directly by, or under direct supervision of, appropriately licensed design professional.

1.04 CONTRACTOR'S CONSTRUCTION-RELATED PROFESSIONAL DESIGN SERVICES

A. Coordination: Contractor's professional design services are subject to requirements of project's Conditions for Construction Contract.

B. Provide such engineering design services as may be necessary to plan and safely conduct certain construction operations.

1.05 CONTRACTOR'S DESIGN-RELATED PROFESSIONAL DESIGN SERVICES

A. Coordination: Contractor's professional design services are subject to requirements of project's Conditions for Construction Contract.

B. Base design on performance and/or design criteria indicated in individual specification sections.

1.06 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Design Data: Submit for Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.

C. Test Reports: After each test/inspection, promptly submit PDF copies of report to Architect and to Contractor.

D. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
   1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

E. Erection Drawings: Submit drawings for Architect's benefit as contract administrator or for Owner.
   1. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.

1.07 QUALITY ASSURANCE

A. Testing Agency Qualifications:
   1. Qualification Statement: Provide documentation showing testing laboratory is accredited under IAS AC89.

B. Designer Qualifications: Where professional engineering design services and design data submittals are specifically required of Contractor by Contract Documents, provide services of a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

C. Contractor's Quality Control (CQC) Plan:
   1. Prior to start of work, submit a comprehensive plan describing how contract deliverables will be produced.

1.08 REFERENCES AND STANDARDS

A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Comply with reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.

C. Obtain copies of standards where required by product specification sections.

D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.

E. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.

F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from Contract Documents by mention or inference otherwise in any reference document.

1.09 TESTING AND INSPECTION AGENCIES AND SERVICES

A. Contractor shall employ and pay for services of an independent testing agency to perform other specified testing which is not provided by the Owner's testing agency.

B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

C. The Owner shall employ and pay for Special Inspections listed on the structural plans, including soil testing and concrete testing. Contractor will assist, coordinate, and schedule with the Owner's inspection agent to perform onsite testing work as required by the documents. If the agency must re-test or re-inspect for failed tests or inspections, or if the Contractor fails to notify the testing agency of a canceled test or inspection, then the Contractor shall compensate the Owner for such tests or inspections.

D. The Owner may opt to utilize a third party building enclosure agency and/or a third party commissioning agency. Contractor shall assist with such testing and commissioning.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.

B. Comply with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.

D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Have work performed by persons qualified to produce required and specified quality.

F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

H. All ductwork ends to be sealed prior to arriving onsite, and seals at end of ductwork to be maintained throughout construction.

3.02 MOCK-UPS

A. Before installing portions of the Work where mock-ups are required, for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work. The purpose of mock-up is to demonstrate the proposed range of aesthetic effects and workmanship.
   1. General layout of mock-up is indicated on the drawings.

B. Accepted mock-ups establish the standard of quality the Architect will use to judge the Work.

C. Free-Stainding Integrated Exterior Mock-ups: Construct integrated exterior mock-up as indicated on drawings. Coordinate installation of exterior envelope materials and products as required in individual Specification Sections. Provide adequate supporting structure for mock-up materials as necessary.

D. Notify Architect fifteen (15) working days in advance of dates and times when mock-ups will be constructed.

E. Provide supervisory personnel who will oversee mock-up construction. Provide workers that will be employed during the construction at Project.

F. Tests shall be performed under provisions identified in this section and identified in the respective product specification sections.

G. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.

H. Obtain Architect's approval of mock-ups before starting work, fabrication, or construction.
   1. Architect will issue written comments within seven (7) working days of initial review and each subsequent follow up review of each mock-up.
   2. Make corrections as necessary until Architect's approval is issued.

I. Architect will use accepted mock-ups as a comparison standard for the remaining Work.

J. Where mock-up has been accepted by Architect and is specified in product specification sections to be removed, protect mock-up throughout construction, remove mock-up and clear area when directed to do so by Architect.

K. Where possible salvage and recycle the demolished mock-up materials.

3.03 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

3.04 TESTING AND INSPECTION

A. Testing Agency Duties:
   1. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
   2. Perform specified sampling and testing of products in accordance with specified standards.
   3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
   4. Promptly notify Architect and Contractor of observed irregularities or non-compliance of Work or products.
   5. Perform additional tests and inspections required by Architect.
   6. Submit reports of all tests/inspections specified.

B. Limits on Testing/Inspection Agency Authority:
   1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
   2. Agency may not approve or accept any portion of the Work.
   3. Agency may not assume any duties of Contractor.
   4. Agency has no authority to stop the Work.

C. Contractor Responsibilities:
   1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
   2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
   3. Provide incidental labor and facilities:
      a. To provide access to Work to be tested/inspected.
      b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
      c. To facilitate tests/inspections.
      d. To provide storage and curing of test samples.
   4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
   5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

D. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Architect.

E. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

3.05 DEFECT ASSESSMENT

A. Replace Work or portions of the Work not complying with specified requirements.

B. If, in the opinion of Architect, it is not practical to remove and replace the work, Architect will direct an appropriate remedy or adjust payment.

END OF SECTION

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SECTION 01 42 16
DEFINITIONS

PART 1 GENERAL

1.01 SUMMARY

A. Other definitions are included in individual specification sections.

1.02 DEFINITIONS

A. Furnish: To supply, deliver, load, unload, distribute, hoist, and inspect for damage.

B. Install: To unpack, assemble, erect, apply, place, finish, cure, protect, clean, start up, and make ready for use.

C. Product: Material, machinery, components, equipment, fixtures, and systems forming the work result. Not materials or equipment used for preparation, fabrication, conveying, or erection and not incorporated into the work result. Products may be new, never before used, or re-used materials or equipment.

D. Project Manual: The book-sized volume that includes the procurement requirements (if any), the contracting requirements, and the specifications.

E. Provide: To furnish and install.

F. Supply: Same as Furnish.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Dewatering
B. Temporary utilities.
C. Temporary telecommunications services.
D. Temporary sanitary facilities.
E. Temporary Controls: Barriers, enclosures, and fencing.
F. Security requirements.
G. Vehicular access and parking.
H. Waste removal facilities and services.
I. Project identification sign.
J. Field offices.

1.02 DEWATERING

A. Provide temporary means and methods for dewatering all temporary facilities and controls.
B. Maintain temporary facilities in operable condition.

1.03 TEMPORARY UTILITIES

A. Provide and pay for all electrical power, lighting, water, heating and cooling, and ventilation required for construction purposes.
B. Contractor is responsible for backflow preventers and hydrant use.
C. New permanent facilities may not be used without written authorization from the Owner..
D. Use trigger-operated nozzles for water hoses, to avoid waste of water.
E. Contractor to take note of nearest water source. If a water source is not available onsite, Contractor shall provide an alternate means for construction water.
F. Contractor to provide ice, cups, and drinking water for workers.

1.04 TELECOMMUNICATIONS SERVICES

A. Provide, maintain, and pay for telecommunications services to field office at time of project mobilization.

1.05 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
B. New permanent facilities may not be used during construction operations.
C. Maintain daily in clean and sanitary condition.
D. At end of construction, return facilities to same or better condition as originally found.

1.06 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
B. Provide barricades and covered walkways required by governing authorities for public rights-of-way.
C. Provide protection for plants designated to remain. Replace damaged plants.
D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.07 FENCING

A. Construction: Commercial grade chain link fence.

B. Provide 8 foot high fence completely surrounding all sides of the construction site; equip with vehicular and pedestrian gates with locks.

C. Contractor shall supply, install, maintain, move, and remove fencing as required for the Work.

1.08 EXTERIOR ENCLOSURES

A. Provide temporary insulated weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating, dehumidifcation, and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

1.09 SECURITY

A. Provide security and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.

B. Provide static, wide-angle, time-lapse construction camera including mounting hardware, poles, power, and connectivity.
   1. 10-minute time-lapse intervals.
   2. Wide-angle capable of capturing the entire site.
   3. 16 megapixel or higher resolution.
   4. Provide connectivity to live and recorded images for Archiitect, Owner, Owner's Representative.

1.10 VEHICULAR ACCESS AND PARKING

A. Provide temporary rock at vehicular access and parking area, and any other rock access as may be required to complete the work.

B. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.

C. Coordinate access and haul routes with governing authorities and Owner, and Owner's Representative..

D. Provide and maintain access to fire hydrants, free of obstructions.

E. Provide clear delineation of contractor parking and material staging areas.

F. Provide means of removing mud from vehicle wheels before entering streets.
   1. Contractor to provide street cleaning to remove dirt, mud, and debris generated by the project as needed to maintain a clean surface at existing drives, parking lots, and public roads.

G. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.

H. Provide 2 parking spaces for Owner use.

I. Provide one parking space for Architect use.

J. Provide two parking spaces for Owner's Representative use.

1.11 WASTE REMOVAL

A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.

B. Provide containers with lids. Remove trash from site periodically.

C. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.

D. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.12 PROJECT IDENTIFICATION

A. Provide project identification sign of design and construction indicated on drawings.

B. Erect on site at location indicated.

C. Contractor shall install, maintain, and remove banners furnished by Owner, Architect, and Owner's Representative.

D. No other signs are allowed without Owner permission except those required by law.

1.13 FIELD OFFICES

A. Office: Weathertight, with lighting, electrical outlets, heating, cooling equipment, and equipped with sturdy furniture, drawing rack, and drawing display table.

B. Provide space for Project meetings, with table and chairs to accommodate 8 persons.

C. Locate offices a minimum distance of 30 feet from existing and new structures.

D. Provide flat surface and temporary rock as required for trailer placement.

E. Provide first aid and safety supplies within the field office.

1.14 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Completion inspection.

B. Remove underground installations to a minimum depth of 2 feet. Grade site as indicated.

C. Clean and repair damage caused by installation or use of temporary work.

D. Restore existing facilities used during construction to original condition.

E. Restore new permanent facilities used during construction to specified condition.

F. Restore land distrubed during construction to its original condition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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SECTION 01 57 13
TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Prevention of erosion due to construction activities.

B. Prevention of sedimentation of waterways, open drainage ways, and storm and sanitary sewers due to construction activities.

C. Restoration of areas eroded due to insufficient preventive measures.

D. Performance bond.

E. Compensation to owner for fines levied by authorities having jurisdiction due to non-compliance by Contractor.

1.02 RELATED REQUIREMENTS

A. Section 31 1000 - Site Clearing: Limits on clearing; disposition of vegetative clearing debris.

B. Section 31 2200 - Grading: Temporary and permanent grade changes for erosion control.

C. Section 32 9219 - Seeding: Permanent turf for erosion control.

D. Section 32 9223 - Sodding: Permanent turf for erosion control.

E. Section 32 9300 - Plants: Permanent plantings for erosion control.

F. Section 03 3000 - Cast-in-Place Concrete: Concrete for temporary and permanent erosion control structures indicated on drawings.

1.03 REFERENCE STANDARDS

A. ASTM D 4355 - Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture, and Heat in a Xenon Arc Type Apparatus; 2007.

B. ASTM D 4491 - Standard Test Methods for Water Permeability of Geotextiles by Permittivity; 1999a (Reapproved 2009).

C. ASTM D 4533 - Standard Test Method for Trapezoid Tearing Strength of Geotextiles; 2004 (Reapproved 2009).

D. ASTM D 4632 - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles; 2008.

E. ASTM D 4751 - Standard Test Method for Determining Apparent Opening Size of a Geotextile; 2004.

F. ASTM D 4873 - Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples; 2002 (Reapproved 2009).

G. EPA (NPDES) - National Pollutant Discharge Elimination System (NPDES), Construction General Permit; current edition.

H. FHWA FLP-94-005 - Best Management Practices for Erosion and Sediment Control; Federal Highway Administration; 1995.

I. USDA TR-55 - Urban Hydrology for Small Watersheds; USDA Natural Resources Conservation Service; 1986.

J. City of St. Peters Stormwater Management Plan

K. It is the Contractor's responsibility to obtain a copy of these standard Specifications and details, whether at the state, county, or local level.

1.04 PERFORMANCE REQUIREMENTS

A. Comply with all requirements of U.S. Environmental Protection Agency for erosion and sedimentation control, as specified for the National Pollutant Discharge Elimination System (NPDES), Phases I and II, under requirements for the 2003 Construction General Permit (CGP),

whether the project is required by law to comply or not.

B. Comply with all requirements of City of St. Peters Stormwater Management Plan

C. Do not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained; furnish all documentation required to obtain applicable permits.

D. All erosion control shall be installed as soon as possible and before precipitation occurs. The erosion control measures shall be continuously maintained by the Contractor until final acceptance of the project. Upon acceptance of the project, temporary erosion controls shall be removed unless otherwise instructed by the architect.

E. The architect will notify the Contractor in writing of any noncompliance with the provisions of these specifications. The Contractor shall, after receipt of such notice, immediately take corrective action. Such notice, when delivered to the Contractor or his authorized representative at the site of the work, shall be deemed sufficient for the purpose. If the Contractor fails or refuses to comply promptly, the architect may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of a claim for extension of time or for excess costs or damage by the Contractor unless it was later determined that the Contractor was in compliance. Absence of any such notification does not relieve the contractor of his responsibilities to comply with all these specifications.

F. Storm Water Runoff: Control increased storm water runoff due to disturbance of surface cover due to construction activities for this project.
   1. Prevent runoff into storm and sanitary sewer systems, including open drainage channels, in excess of actual capacity or amount allowed by authorities having jurisdiction, whichever is less.
   2. Anticipate runoff volume due to the most extreme short term and 24-hour rainfall events that might occur in 25 years.

G. Erosion On Site: Minimize wind, water, and vehicular erosion of soil on project site due to construction activities for this project.
   1. Control movement of sediment and soil from temporary stockpiles of soil.
   2. Prevent development of ruts due to equipment and vehicular traffic.
   3. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to the owner.

H. Erosion Off Site: Prevent erosion of soil and deposition of sediment on other properties caused by water leaving the project site due to construction activities for this project.
   1. Prevent windblown soil from leaving the project site.
   2. Prevent tracking of mud onto public roads outside site.
   3. Prevent mud and sediment from flowing onto sidewalks and pavements.
   4. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to the owner.

I. Sedimentation of Waterways On Site: Prevent sedimentation of waterways on the project site, including open drainage ways, storm sewers, and sanitary sewers.
   1. If sedimentation occurs, install or correct preventive measures immediately at no cost to owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
   2. If sediment basins are used as temporary preventive measures, pump dry and remove deposited sediment after each storm.

J. Sedimentation of Waterways Off Site: Prevent sedimentation of waterways off the project site, including open drainage ways, storm sewers, and sanitary sewers.
   1. If sedimentation occurs, install or correct preventive measures immediately at no cost to owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.

K. Open Water: Prevent standing water that could become stagnant.

L. Maintenance: Maintain temporary preventive measures until permanent measures have been established.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Erosion and Sedimentation Control Plan: The contractor shall reference the approved Storm Water Pollution Prevention Plan (SWPPP) for erosion control means and methods.

C. Inspection Reports: Submit reports of each inspection to architect and engineer; identify each preventive measure, indicate condition, and specify maintenance or repair required and accomplished.

D. Maintenance Instructions: Provide instructions covering inspection and maintenance for temporary measures that must remain after Substantial Completion.

PART 2 PRODUCTS

2.01 MATERIALS

A. General: Surface drainage from cuts, fills, topsoil or other material stockpiles, within the construction limits, whether or not completed, and from borrow and waste disposal areas, shall, if turbidity producing materials are present, be held in sedimentation ponds or shall be graded to control erosion. Temporary erosion and sediment control measures including but not limited to berms, drains, or sedimentation basins, are required to meet these standards and shall be provided and maintained until permanent drainage and erosion control facilities are completed and operating. The area of bare soil exposed by construction operations at any one time should be held to a minimum.

B. Grading Operations:
1. Grading operations shall be scheduled so excavated materials shall be immediately placed into compacted embankments.
2. Where steep slopes or abrupt changes in grade are required, a division channel or berm shall be constructed at the top of the slope to cause the surface water to flow along the diversion to controlled slope drains. The contractor shall reference the approved Storm Water Pollution Prevention Plan (SWPPP) for erosion control means and methods.

C. Mulch: Use one of the following:
1. Wood waste, chips, or bark.
2. Erosion control matting or netting.
3. Grass
4. Mulch shall be applied to slopes in excess of one foot vertical to ten feet horizontal unless otherwise shown.

D. Grass Seed For Temporary Cover: Select a species appropriate to climate, planting season, and intended purpose. If same area will later be planted with permanent vegetation, do not use species known to be excessively competitive or prone to volunteer in subsequent seasons.
1. Earth areas outside of building, walks and paving that are not to be immediately planted with permanent grass or landscaping shall be seeded with a temporary seed that will produce a fast growing cover resistant to erosion as required per St. Louis County's Model Best Management Practices (BMP) for Land Disturbance.
2. Temporary grassing and mulching shall conform to St. Louis County's Model Best Management Practices (BMP) for Land Disturbance.

E. Silt Fence Fabric: Polypropylene geotextile resistant to common soil chemicals, mildew, and insects; non-biodegradable; in longest lengths possible; Silt fence shall be per St. Louis County's Model Best Management Practices (BMP) for Land Disturbance.
1. Silt fences shall be constructed at the toe of embankment or perimeter of all disturbed earth areas and shall be located to interrupt silt transport conveyed by overland surface drainage runoff from the disturbed areas.
2. Sediment accumulated behind silt fences shall be removed, redistributed and compacted immediately prior to beginning temporary grassing.

F. Inlet Barriers:
   1. Block and gravel inlet protection, silt fence or inlet protection fabric drops where indicated, shall be installed around perimeter at each inlet where inlets are near to work performed as part of this project. Fiber and filter rolls may be used around inlets that are constructed within paved areas or at inlets in pavement, downstream of construction areas. Silt deposits shall be periodically removed during construction and immediately prior to final acceptance.

G. Dust Control:
   1. The Contractor shall maintain all excavations, embankments, stockpiles, haul roads, temporary and permanent access roads, plant sites, waste areas, borrow areas and all other work areas within or without the project boundaries free from dust and to minimize offsite transport of soil by wheels which would cause a hazard or nuisance or nuisance to others.
   2. Temporary or permanent graded access drives from adjacent paved public or private roads or rights-of-way shall be temporarily surfaced per St. Louis County's Model Best Management Practices (BMP) for Land Disturbance. Maintain throughout construction period. Sprinkle regularly to settle accumulated silt.
   3. Approved temporary methods of stabilization of all areas other than the construction entrance road shall consist of sprinkling, chemical treatment, light bituminous treatment, gravel surfacing or similar methods to control dust. Sprinkling to be approved and must be repeated at such intervals as to keep all parts of the disturbed area at least damp at all times. Contractor must have sufficient competent equipment on the job at all times if sprinkling is used.
   4. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

3.02 PREPARATION

A. Schedule all work so that soil surfaces are left exposed for the minimum amount of time.

3.03 SCOPE OF PREVENTIVE MEASURES

A. All erosion control shall be installed and continuously maintained by the Contractor until final acceptance of the project. Upon acceptance of the project, temporary erosion controls shall be removed unless otherwise instructed by the architect.

B. Construction Entrances: Traffic-bearing aggregate surface.
   1. Width: As required; 24 feet, minimum (2-way); 14 feet, minimum (1-way).
   2. Length: 50 feet, minimum.
   3. Provide at each construction entrance from public right-of-way.
   4. Where necessary to prevent tracking of mud onto right-of-way, provide wheel washing area out of direct traffic lane, with drain into sediment trap or basin.

C. Linear Sediment Barriers: Made of silt fences, fiber and filter rolls
   1. Provide linear sediment barriers:
      a. Along downhill perimeter edge of disturbed areas, including soil stockpiles.
      b. Along the top of the slope or top bank of drainage channels and swales that traverse disturbed areas.
      c. Along the toe of cut slopes and fill slopes.
      d. Perpendicular to flow across the bottom of existing and new drainage channels and swales that traverse disturbed areas or carry runoff from disturbed areas
      e. Across the entrances to culverts that receive runoff from disturbed areas.

D. Storm Drain Inlet Sediment Traps: As detailed on drawings.

E. Temporary Splash Pads: Stone aggregate over filter fabric; size to suit application; provide at downspout outlets and storm water outlets.

F. Soil Stockpiles: Protect using one of the following measures:
   1. Cover with polyethylene film, secured by placing soil on outer edges.
   2. Cover with mulch at least 4 inches thickness of pine needles, sawdust, bark, wood chips, or shredded leaves, or 6 inches of straw or hay.

G. Mulching: Use only for areas that may be subjected to erosion for less than 6 months.
   1. Wood Waste: Use only on slopes 3:1 or flatter; no anchoring required.

H. Temporary Seeding: Use where temporary vegetated cover is required.

3.04 INSTALLATION

A. Refer to "Model Best Management Practices (BMP) for Land Disturbance – Sediment and Erosion Control", St. Louis County (latest edition) for installation requirements.

3.05 MAINTENANCE

A. Inspect preventive measures weekly, within 24 hours of any storm event at the project site, and daily during prolonged rainfall.

B. Repair deficiencies immediately.

C. Silt Fences:
   1. Promptly replace fabric that deteriorates unless need for fence has passed.
   2. Remove silt deposits that exceed one-third of the height of the fence.
   3. Repair fences that are undercut by runoff or otherwise damaged, whether by runoff or other causes.

D. Clean out temporary sediment control structures weekly and relocate soil on site or remove from site as directed by architect.

3.06 CLEAN UP

A. Remove temporary measures after permanent measures have been installed, unless permitted to remain by architect.

B. Clean out temporary sediment control structures that are to remain as permanent measures.

C. Where removal of temporary measures would leave exposed soil, shape surface to an acceptable grade and finish to match adjacent ground surfaces.

END OF SECTION

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SECTION 01 60 00
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General product requirements.

B. Re-use of existing products.

C. Transportation, handling, storage and protection.

D. Product option requirements.

E. Substitution limitations.

F. Maintenance materials, including extra materials, spare parts, tools, and software.

1.02 SUBMITTALS

A. Proposed Products List: Submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
   1. Submit within 15 days after date of Agreement.
   2. For products specified only by reference standards, list applicable reference standards.

B. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

C. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

D. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
   1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

PART 2 PRODUCTS

2.01 EXISTING PRODUCTS

A. Unforeseen historic items encountered remain the property of the Owner; notify Owner promptly upon discovery; protect, remove, handle, and store as directed by Owner.

2.02 NEW PRODUCTS

A. Provide new products unless specifically required or permitted by Contract Documents.

B. Use of products having any of the following characteristics is not permitted:
   1. Made using or containing CFC's or HCFC's.
   2. Containing lead, cadmium, or asbestos.

2.03 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

2.04 MAINTENANCE MATERIALS

A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.

B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.01 SUBSTITUTION LIMITATIONS

A. See Section 01 25 00 - Substitution Procedures.

3.02 TRANSPORTATION AND HANDLING

A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.

B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.

C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.

D. Transport and handle products in accordance with manufacturer's instructions.

E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.

F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.

G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.

H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.03 STORAGE AND PROTECTION

A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.

B. Store and protect products in accordance with manufacturers' instructions.

C. Store with seals and labels intact and legible.

D. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.

E. For exterior storage of fabricated products, place on sloped supports above ground.

F. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.

G. Comply with manufacturer's warranty conditions, if any.

H. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

I. Prevent contact with material that may cause corrosion, discoloration, or staining.

J. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

K. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

SECTION 01 70 00
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Examination, preparation, and general installation procedures.

B. Requirements for alterations work, including selective demolition.

C. Cutting and patching.

D. Surveying for laying out the work.

E. Cleaning and protection.

F. Starting of systems and equipment.

G. Demonstration and instruction of Owner personnel.

H. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.

1.02 REFERENCE STANDARDS

A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2027.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Survey work: Submit name, address, and telephone number of Surveyor before starting survey work.
   1. On request, submit documentation verifying accuracy of survey work.
   2. Submit a copy of site drawing signed by the Land Surveyor, that the elevations and locations of the work are in compliance with Contract Documents.
   3. Submit surveys and survey logs for the project record.

C. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
   1. Structural integrity of any element of Project.
   2. Integrity of weather exposed or moisture resistant element.
   3. Efficiency, maintenance, or safety of any operational element.
   4. Visual qualities of sight exposed elements.

D. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.04 GROUND BREAKING CEREMONY

A. Provide a 12-inch high mound of loose dirt, 3-feet wide and 40-feet long, to be used for a ground breaking ceremony. Coordinate location with Owner's Representative. Remove dirt after the ceremony.

1.05 PROJECT CONDITIONS

A. Construction work shall only be allowed during hours permitted by local jurisdiction. If Contractor opts to work outside of those hours, the Contractor must contact the Owner and local jurisdiction to obtain permission.

B. Contractor is responsible for coordinating, staging, and relocating materials as required to complete the Work.

C. Use of explosives is not permitted.

D. Smoking will not be allowed inside the building once interior construction begins.

E. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.

F. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

G. Perform dewatering activities, as required, for the duration of the project.

H. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

I. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.

J. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
   1. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
   2. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

K. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
   1. Outdoors: Limit conduct of especially noisy exterior work to the hours of 8 am to 5 pm.

L. Pest and Rodent Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.

M. Rodent Control: Provide methods, means, and facilities to prevent rodents from accessing or invading premises.

N. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

O. Contractor to ensure all neighboring property services will not be disrupted during the course of construction. Should there be any impact to services, the Contractor shall coordinate outages and perform work "off-hours" including nights and weekends.

1.06 COORDINATION

A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

B. Contractor is responsible for locating public and private utilities.
   1. Notify affected utility companies and comply with their requirements.

C. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

D. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on drawings. Follow routing indicated for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

F. Coordinate completion and clean-up of work of separate sections.

G. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

A. New Materials: As specified in product sections; match existing products and work for patching and extending work.

B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.

C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.

B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.

E. Verify that utility services are available, of the correct characteristics, and in the correct locations.

F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 LAYING OUT THE WORK

A. Verify locations of survey control points prior to starting work.

B. Promptly notify Architect of any discrepancies discovered.

C. Contractor shall locate and protect survey control and reference points.

D. Control datum for survey is that indicated on drawings.

E. Protect survey control points prior to starting site work; preserve permanent reference points during construction.

F. Promptly report to Architect the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.

G. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect.

H. Utilize recognized engineering survey practices.

I. Establish a minimum of two permanent bench marks on site, referenced to established control points. Record locations, with horizontal and vertical data, on project record documents.

J. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:

1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.

2. Grid or axis for structures.
3. Building foundation, column locations, ground floor elevations.

K. Periodically verify layouts by same means.
1. Contractor shall provide all surveying and layout required to complete the Work.

L. Maintain a complete and accurate log of control and survey work as it progresses.

3.04 GENERAL INSTALLATION REQUIREMENTS

A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.

B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.

D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.

E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.05 CUTTING AND PATCHING

A. Whenever possible, execute the work by methods that avoid cutting or patching.

B. Perform whatever cutting and patching is necessary to:
1. Complete the work.
2. Fit products together to integrate with other work.
3. Provide openings for penetration of mechanical, electrical, and other services.
4. Match work that has been cut to adjacent work.
5. Repair areas adjacent to cuts to required condition.
6. Repair new work damaged by subsequent work.
7. Remove samples of installed work for testing when requested.
8. Remove and replace defective and non-complying work.

C. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.

D. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.

E. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

F. Restore work with new products in accordance with requirements of Contract Documents.

G. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

H. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 84 00, to full thickness of the penetrated element.

I. Patching:
1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
2. Match color, texture, and appearance.
3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.06 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.07 PROTECTION OF INSTALLED WORK

A. Protect installed work from damage by construction operations.

B. Provide special protection where specified in individual specification sections.

C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

G. Prohibit traffic from landscaped areas.

H. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.08 SYSTEM STARTUP

A. Coordinate schedule for start-up of various equipment and systems.

B. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.

C. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.

D. Verify that wiring and support components for equipment are complete and tested.

E. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.

F. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.09 DEMONSTRATION AND INSTRUCTION

A. See Section 01 79 00 - Demonstration and Training.

3.10 ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.11 FINAL CLEANING

A. The Contractor shall provide a heavy construction clean prior to punch list creation so all surfaces can be observed.
   1. Execute final cleaning prior to final project assessment.
   2. Use cleaning materials that are nonhazardous.
   3. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
   4. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
   5. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.

6. Clean filters of operating equipment.
7. Clean debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains, and drainage systems.
8. Clean HVAC coils and replace filters.
9. Clean site; sweep paved areas, rake clean landscaped surfaces.
10. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

B. Contractor to provide final cleaning of all building areas and site prior to Owner occupancy, including interior and exterior window cleaning.

3.12 CLOSEOUT PROCEDURES

A. Make submittals that are required by governing or other authorities.

B. Accompany Owner, Architect, and Owner's Representative on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's Notice of Substantial Completion.

C. Notify Architect when work is considered ready for Architect's Substantial Completion inspection.

D. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's Substantial Completion inspection.

E. Conduct Substantial Completion inspection and create Final Correction Punch List containing Architect's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Architect.

F. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.

G. Notify Architect when work is considered finally complete and ready for Architect's Substantial Completion final inspection.

H. Complete items of work determined by Architect listed in executed Certificate of Substantial Completion.

3.13 MAINTENANCE

END OF SECTION

SECTION 01 71 23
FIELD ENGINEERING & SURVEY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Field engineering services by Contractor.

B. Land surveying services by Contractor.

C. Boundary demarcations.

D. Construction surveying by Contractor.

E. Support and bracing.

1.02 DESCRIPTION OF SERVICES

A. Specific services listed in this section are in addition to, and do not supersede, general Execution and Closeout Requirements.

B. Sole responsibility for establishing all locations, dimensions and levels of items of work.

C. Sole responsibility for provision of all materials required to establish and maintain benchmarks and control points, including batter boards, grade stakes, structure elevation stakes, and other items.

D. Keeping a transit, theodolite, or TST (total station theodolite with electronic distance measurement device); leveling instrument; and related implements such as survey rods and other measurement devices, at the project site at all times.

E. Provision of facilities and assistance necessary for Architect to check lines and grade points placed by Contractor.
   1. Performance of excavation or embankment work until after all cross-sectioning necessary for determining payment quantities for Unit Price work have been completed and accepted by Architect.

F. Preparation and maintenance of daily reports of activity on the work. Submission of reports containing key progress indicators and job conditions to Architect.
   1. Major equipment and materials installed as part of the work.
   2. Location of areas in which construction was performed.
   3. Work performed, including field quality control measures and testing.
   4. Weather conditions.
   5. Instructions received from Architect or Owner, if any.

G. Preparation and maintenance of professional-quality, accurate, well organized, legible notes of all measurements and calculations made while surveying and laying out the work.

1.03 REFERENCE STANDARDS

A. FGDC-STD-007.1 - Geospatial Positioning Accuracy Standards - Part 1: Reporting Methodology; 1998.

B. FGDC-STD-007.2 - Geospatial Positioning Accuracy Standards - Part 2: Standards for Geodetic Networks; 1998.

C. FGDC-STD-007.4 - Geospatial Positioning Accuracy Standards - Part 4: Architecture, Engineering, Construction, and Facilities Measurement; 2002.

D. State Plane Coordinate System for each project location.

1.04 QUALITY ASSURANCE

A. Land Surveyor's Qualifications: Registered in Missouri.

B. Use adequate number of skilled and thoroughly-trained workers to perform the work of this section in a timely and comprehensive manner.

C. Minimum accuracy for required work is as follows:

1. Grade: Horizontal Tolerance: Plus or minus 0.5 feet, Vertical Tolerance: Plus or minus 0.05 feet.
2. Culverts and ditches: Horizontal Tolerance: Plus or minus 0.5 feet, Vertical Tolerance: Plus or minus 0.05 feet.
3. Utility Structures: Horizontal Tolerance: Plus or minus 0.5 feet (location), Vertical Tolerance: Plus or minus 0.05 feet.
4. Buildings: Horizontal Tolerance: Plus or minus 0.05 feet (location), Vertical Tolerance: Plus or minus 0.05 feet.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify layout information shown on drawings in relation to property survey and existing benchmarks.

B. Notify Owner's Representative and Architect of discrepancies immediately in writing before proceeding to lay out work.

C. Locate and protect existing benchmarks, base lines, and demarcations. Preserve permanent reference points during construction.

D. Existing Utilities and Equipment: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify existing conditions.

3.02 FIELD ENGINEERING

A. Maintain field office files, drawings, specifications, and record documents.

B. Coordinate field engineering services with Contractor's subcontractors, installers, and suppliers as appropriate.

C. Prepare layout and coordination drawings for construction operations.

D. Check and coordinate the work for conflicts and interferences, and immediately advise Architect and Owner of all discrepancies of which Contractor is aware.

E. Cooperate as required with Architect and Owner in observing the work and performing field inspections.

F. Review and coordinate work on a regular basis with shop drawings and Contractor's other submittals.

G. Check the location, line and grade of every major element as the work progresses. Notify the Architect when deviations from required lines or grades exceed allowable tolerances. Include in such notifications a thorough explanation of the problem, and a proposed plan and schedule for remedying the deviation. Do not proceed with remedial work without Owner's concurrence of the remediation plan.

3.03 LAND SURVEYING

A. General: Follow standards for geospatial positioning accuracy.
   1. FGDC-STD-007.1.
   2. FGDC-STD-007.2.
   3. FGDC-STD-007.4.

B. Provide the following. Coordinate horizontal survey data with the State Plane Coordinate System of the State of Missouri. Coordinate vertical survey data with NAVD 88 or as approved by Architect. However, if another system is indicated on the drawings, then that system shall govern.

C. Provide project control for both horizontal and vertical datum (ie., reference points, benchmarks, and control points.

1. Establish project control points from established and verified benchmarks. Provide written documentation as to the established and verified control points used to establish project control points. Record, at a minimum, benchmark name, description, station, and offset (if applicable), elevation and three (3) horizontal reference ties.
    a. It is not acceptable to merely use benchmark(s) referenced in the survey provided during design. Assure that benchmarks are verified prior to establishing the project control points.
2. Establish at least two (2) horizontal control points on site. Record description of marker and location, Northing and Easting to at least three places.
3. Establish at least two (2) vertical benchmarks on site. Record description of marker and location, with elevation to at least two places

D. Contractor is responsible for the restoration of all property corners and control monuments damaged or destroyed by construction-related activities. Any disturbed monuments must be replaced at Contractor's expense by a surveyor licensed in the State in which the Project is located, and approved by the Architect.
    1. Temporarily suspend work at such points and for such reasonable times as the Owner may require for resetting monuments. The Contractor will not be entitled to any additional compensation or extension of time.

3.04 BOUNDARY DEMARCATIONS

A. Undisturbed: Protect demarcations and areas from disturbance as indicated on drawings.

3.05 CONSTRUCTION SURVEYING

A. General: Perform surveying as applicable to specific items necessary for proper execution of work.
    1. Alignment Staking: Provide alignment stakes at 50 foot intervals on tangent, and at 25 foot intervals on curves.
    2. Slope Staking: Provide slope staking at 50 foot intervals on tangent, and at 25 foot intervals on curves. Re-stake at every ten-foot difference in elevation.
    3. Utility and similar structures: Provide staking for all structures, including elevations, and check prior to and during construction.
    4. Pipelines: Stake out pipelines including elevations, and check prior to and during construction.
    5. Site Utilities: Stake out utility lines including elevations, and check prior to and during construction.
    6. Road: Stake out roadway elevations at 50 foot50-foot intervals on tangent, and at 25 foot intervals on curves.
    7. Cross-sections: Provide original, intermediate, and final staking as required, for site work and other locations as necessary for quantity surveys.
    8. Easement Staking: Provide easement staking at 50 foot intervals on tangent, and at 25 foot intervals on curves. If required by project conditions, provide wooden laths with flagging at 100 foot intervals.
    9. Cross-sections: Provide original, intermediate, and final staking as required, for site work and other locations as necessary for quantity surveys.
    10. Easement Staking: Provide easement staking at 50-foot intervals on tangent, and at 25-foot intervals on curves. If required by project conditions, provide wooden laths with flagging at 100-foot intervals.
    11. Record Staking: Provide permanent stake at each blind flange and each utility cap is provided for future connections. Use stakes for record staking of material(s) acceptable to Architect.
    12. Buildings: Provide double off-set staking for each major building corner. Provide stakes for all building corners.

B. Record Log: Maintain a log of layout control work. Record any deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used.

C. Use by the Architect: The Architect may at any time use line and grade points and markers established by the Contractor. The Contractor's surveys are a part of the work and may be checked by the Architect at any time.

D. Accuracy:
   1. Establish Contractor's temporary survey references points for Contractor's use to at least second-order accuracy (e.g., 1:10000). Set construction staking used as a guide for the work to at least third-order accuracy (e.g., 1:5000). Provide the absolute margin for error specified below on the basis established by such orders.
      a. Horizontal Accuracy of Easement Staking: Plus/minus 0.1 foot.
      b. Accuracy of Other Staking: Plus/minus 0.04 foot horizontally and plus/minus 0.02 foot vertically.
      c. Include an error analysis sufficient to demonstrate required accuracy in survey calculations.
   2. Owner reserves the right to check the Contractor's survey, measurements, and calculations. The requirement for accuracy will not be waived, whether this right is exercised or not.

3.06 SUPPORT AND BRACING

A. General requirements: Design all support and bracing systems, if required. Provide for attachment to portions of the building structure capable of bearing the loads imposed. Design systems to not overstress the building structure.

3.07 RECORDS

A. Maintain at the Site a complete and accurate log of control and survey work as it progresses.
   1. Organize and record survey data in accordance with recognized professional surveying standards, Laws and Regulations, and prevailing standards of practice in the State in which the Project is located. Record Contractor's surveyor's original field notes, computations, and other surveying data in Contractor-furnished hard-bound field books. Contractor is solely responsible for completeness and accuracy of survey work, and completeness and accuracy of survey records, including field books. Survey records,(including field books) may be rejected by Owner due to failure to organize and maintain survey records in a manner that allows reasonable and independent verification of calculations, and/or allows identification of elevations, dimensions, and grades of the work.
   2. Illegible notes or data, and erasures on any page of field books, are unacceptable. Do not submit copied notes or data. Corrections by ruling or lining out errors will be unacceptable unless initialed by the surveyor. Violation of these requirements may require re-surveying the data questioned by Architect.

END OF SECTION

SECTION 01 78 00
CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Project record documents.

B. Operation and maintenance data.

C. Warranties and bonds.

1.02 RELATED REQUIREMENTS

A. Section 01 30 00 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.

B. Individual Product Sections: Specific requirements for operation and maintenance data.

C. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBMITTALS

A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.
   1. Contractor shall compile for the Owner Project Record Documents including "red-lined" copies of project changes throughout the course of the project to identify systems as they were actually installed. Project Record Documents shall be electronically recorded and submitted to the Owner, Architect, and Owner's Representative.

B. Operation and Maintenance Data:
   1. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
   2. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
   3. Submit two sets of revised final documents in final form within 10 days after final inspection.

C. Warranties and Bonds:
   1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
   2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
   3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.
   4. The beginning date of all warranties is as described in the General Conditions of the Contract for Construction, AIA A201-2017, Paragraph 12.2.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:
   1. Drawings.
   2. Specifications.
   3. Addenda.
   4. Change Orders and other modifications to the Contract.
   5. Reviewed shop drawings, product data, and samples.
   6. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress.

E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
   1. Manufacturer's name and product model and number.
   2. Product substitutions or alternates utilized.
   3. Changes made by Addenda and modifications.

F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
   1. Field changes of dimension and detail.
   2. Details not on original Contract drawings.

3.02 OPERATION AND MAINTENANCE DATA

A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.

B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.

C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.

D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

A. For Each Product, Applied Material, and Finish:
   1. Product data, with catalog number, size, composition, and color and texture designations.

B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.

C. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.

D. Additional information as specified in individual product specification sections.

E. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

A. For Each Item of Equipment and Each System:
   1. Description of unit or system, and component parts.
   2. Identify function, normal operating characteristics, and limiting conditions.
   3. Include performance curves, with engineering data and tests.
   4. Complete nomenclature and model number of replaceable parts.

B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

C. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.

D. Include color coded wiring diagrams as installed.

E. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

F. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

G. Include manufacturer's printed operation and maintenance instructions.

H. Include sequence of operation by controls manufacturer.

I. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

J. Provide control diagrams by controls manufacturer as installed.

K. Provide Contractor's coordination drawings, with color coded piping diagrams as installed.

L. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

M. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

N. Include test and balancing reports.

O. Additional Requirements: As specified in individual product specification sections.

3.05 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

A. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.

B. Where systems involve more than one specification section, provide separate tabbed divider for each system.

C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.

D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.

E. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Architect, Consultants, Contractor and subcontractors, with names of responsible parties.

F. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.

G. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.

H. Text: Manufacturer's printed data, or typewritten data on 20 pound paper.

I. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

J. Arrangement of Contents: Organize each volume in parts as follows:
   1. Project Directory.
   2. Table of Contents, of all volumes, and of this volume.
   3. Operation and Maintenance Data: Arranged by system, then by product category.
      a. Source data.
      b. Operation and maintenance data.
      c. Field quality control data.
      d. Photocopies of warranties and bonds.

3.06 WARRANTIES AND BONDS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.

B. Verify that documents are in proper form, contain full information, and are notarized.

C. Co-execute submittals when required.

D. Retain warranties and bonds until time specified for submittal.

E. Include originals of each in operation and maintenance manuals, indexed separately on Table of Contents.

3.07 WARRANTY PERIOD SERVICES

A. During the warranty period, the Contractor shall document, maintain, and update a Warranty Log of all warranty items and distribute the Warranty Log to the Owner and Owner's Representative. Contractor shall acknowledge the Owner's warranty call within four (4) hours and keep the Owner apprised of the resolution status. Any roof or building envelope leaks or issues which interfere with regular building operations shall be considered urgent. Contractor to provide a 24-hour on-call service for such urgent items.

END OF SECTION

SECTION 01 79 00
DEMONSTRATION AND TRAINING

PART 1 GENERAL

1.01 SUMMARY

A. Demonstration of products and systems where indicated in specific specification sections.

B. Training of Owner personnel in operation and maintenance is required for:
   1. All software-operated systems.
   2. HVAC systems and equipment.
   3. Plumbing equipment.
   4. Electrical systems and equipment.
   5. Items specified in individual product Sections.

C. Training of Owner personnel in care, cleaning, maintenance, and repair is required for:
   1. Finishes, including flooring, wall finishes, ceiling finishes.
   2. Fixtures and fittings.
   3. Items specified in individual product Sections.

1.02 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Training Plan: Owner will designate personnel to be trained; tailor training to needs and skill-level of attendees.
   1. Submit to Architect for transmittal to Owner.
   2. Submit not less than four weeks prior to start of training.
   3. Revise and resubmit until acceptable.
   4. Provide an overall schedule showing all training sessions.
   5. Include at least the following for each training session:
      a. Identification, date, time, and duration.
      b. Description of products and/or systems to be covered.
      c. Name of firm and person conducting training; include qualifications.
      d. Intended audience, such as job description.
      e. Objectives of training and suggested methods of ensuring adequate training.
      f. Methods to be used, such as classroom lecture, live demonstrations, hands-on, etc.
      g. Media to be used, such a slides, hand-outs, etc.
      h. Training equipment required, such as projector, projection screen, etc., to be provided by Contractor.

C. Training Manuals: Provide training manual for each attendee; allow for minimum of two attendees per training session.
   1. Include applicable portion of O&M manuals.
   2. Include copies of all hand-outs, slides, overheads, video presentations, etc., that are not included in O&M manuals.
   3. Provide one extra copy of each training manual to be included with operation and maintenance data.

D. Video Recordings: Submit digital video recording of each demonstration and training session for Owner's subsequent use.
   1. Contractor shall video tape demonstrations and on-site training and provide electronic submissions of video recordings as part of the closeout documents.
      a. Format: DVD Disc.
      b. Label each disc and container with session identification and date.

1.03 QUALITY ASSURANCE

A. Instructor Qualifications: Familiar with design, operation, maintenance and troubleshooting of the relevant products and systems.

1. Provide as instructors the most qualified trainer of those contractors and/or installers who actually supplied and installed the systems and equipment.
2. Where a single person is not familiar with all aspects, provide specialists with necessary qualifications.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 DEMONSTRATION - GENERAL

A. Demonstrations conducted during system start-up do not qualify as demonstrations for the purposes of this section, unless approved in advance by Owner.

B. Demonstration may be combined with Owner personnel training if applicable.

C. Operating Equipment and Systems: Demonstrate operation in all modes, including start-up, shut-down, seasonal changeover, emergency conditions, and troubleshooting, and maintenance procedures, including scheduled and preventive maintenance.
   1. Perform demonstrations not less than two weeks prior to Substantial Completion.
   2. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

D. Non-Operating Products: Demonstrate cleaning, scheduled and preventive maintenance, and repair procedures.
   1. Perform demonstrations not less than two weeks prior to Substantial Completion.

3.02 TRAINING - GENERAL

A. Conduct training on-site unless otherwise indicated.

B. Training schedule will be subject to availability of Owner's personnel to be trained; re-schedule training sessions as required by Owner; once schedule has been approved by Owner failure to conduct sessions according to schedule will be cause for Owner to charge Contractor for personnel "show-up" time.

C. Review of Facility Policy on Operation and Maintenance Data: During training discuss:
   1. The location of the O&M manuals and procedures for use and preservation; backup copies.
   2. Typical contents and organization of all manuals, including explanatory information, system narratives, and product specific information.
   3. Typical uses of the O&M manuals.

D. Product- and System-Specific Training:
   1. Review the applicable O&M manuals.
   2. For systems, provide an overview of system operation, design parameters and constraints, and operational strategies.
   3. Review instructions for proper operation in all modes, including start-up, shut-down, seasonal changeover and emergency procedures, and for maintenance, including preventative maintenance.
   4. Provide hands-on training on all operational modes possible and preventive maintenance.
   5. Emphasize safe and proper operating requirements; discuss relevant health and safety issues and emergency procedures.
   6. Discuss common troubleshooting problems and solutions.
   7. Discuss any peculiarities of equipment installation or operation.
   8. Discuss warranties and guarantees, including procedures necessary to avoid voiding coverage.
   9. Review recommended tools and spare parts inventory suggestions of manufacturers.
   10. Review spare parts and tools required to be furnished by Contractor.
   11. Review spare parts suppliers and sources and procurement procedures.

E. Be prepared to answer questions raised by training attendees; if unable to answer during training session, provide written response within three days.

END OF SECTION

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SECTION 03 05 16
UNDERSLAB VAPOR BARRIER

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Sheet vapor barrier under concrete slabs on grade.

1.02 REFERENCE STANDARDS

A. ASTM E1643 - Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs; 2024.

B. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2017 (Reapproved 2023).

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit manufacturers' data on manufactured products.

C. Samples: Submit samples of underslab vapor barrier to be used.

D. Manufacturer's Installation Instructions: Indicate installation procedures and interface required with adjacent construction.

PART 2 PRODUCTS

2.01 MATERIALS

A. Underslab Vapor Barrier:
   1. Water Vapor Permeance: Not more than 0.010 perms, maximum.
   2. Complying with ASTM E1745 Class A.
   3. Thickness: 15 mils.
   4. Product:
      a. Stego Industries LLC; Stego Wrap Vapor Barrier (15-mil): www.stegoindustries.com/#sle.
      b. Substitutions: See Section 01 60 00 - Product Requirements.

B. Accessory Products: Vapor barrier manufacturer's recommended tape, adhesive, mastic, etc., for sealing seams and penetrations in vapor barrier.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surface over which vapor barrier is to be installed is complete and ready before proceeding with installation of vapor barrier.

3.02 INSTALLATION

A. Install vapor barrier in accordance with manufacturer's instructions and ASTM E1643.

B. Install vapor barrier under interior slabs on grade; lap sheet over footings and seal to foundation walls.

C. Lap joints minimum 6 inches.

D. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions.

E. No penetration of vapor barrier is allowed except for reinforcing steel and permanent utilities.

F. Repair damaged vapor retarder before covering with other materials.

END OF SECTION

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SECTION 031000
CONCRETE FORMING AND ACCESSORIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:

1. Form-facing material for cast-in-place concrete.

1.03 DEFINITIONS

A. Form-Facing Material: Temporary structure or mold for the support of concrete while the concrete is setting and gaining sufficient strength to be self-supporting.

B. Formwork: The total system of support of freshly placed concrete, including the mold or sheathing that contacts the concrete, as well as supporting members, hardware, and necessary bracing.

1.04 ACTION SUBMITTALS

A. Product Data: For each of the following:

1. Exposed surface form-facing material.
2. Form ties.
3. Waterstops.
4. Form-release agent.

B. Samples:

1. For waterstops.

1.05 INFORMATIONAL SUBMITTALS

A. Qualification Data: For testing and inspection agency.

B. Field quality-control reports.

1.06 QUALITY ASSURANCE

A. Testing and Inspection Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

PART 2 - PRODUCTS

2.01 FORM-FACING MATERIALS

A. As-Cast Surface Form-Facing Material:

1. Provide continuous, true, and smooth concrete surfaces.
2. Furnish in largest practicable sizes to minimize number of joints.
3. Acceptable Materials: As required to comply with Surface Finish designations specified in Section 033000 "Cast-In-Place Concrete, and as follows:
    a. Plywood, metal, or other approved panel materials.

2.02 WATERSTOPS

A. Self-Expanding Butyl Strip Waterstops: Manufactured rectangular or trapezoidal strip, butyl rubber with sodium bentonite or other hydrophilic polymers, for adhesive bonding to concrete, 3/4 by 1 inch.

2.03 RELATED MATERIALS

A. Reglets: Fabricate reglets of not less than 0.022-inch-thick, galvanized-steel sheet. Temporarily fill or cover face opening of reglet to prevent intrusion of concrete or debris.

B. Dovetail Anchor Slots: Hot-dip galvanized-steel sheet, not less than 0.034 inch thick, with bent tab anchors. Temporarily fill or cover face opening of slots to prevent intrusion of concrete or debris.

C. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.

D. Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal.

E. Form-Release Agent: Commercially formulated form-release agent that does not bond with, stain, or adversely affect concrete surfaces and does not impair subsequent treatments of concrete surfaces.

1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
2. Form release agent for form liners shall be acceptable to form liner manufacturer.

F. Form Ties: Factory-fabricated, removable or snap-off, glass-fiber-reinforced plastic or metal form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

1. Furnish units that leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.

PART 3 - EXECUTION

3.01 INSTALLATION OF FORMWORK

A. Comply with ACI 301.

B. Construct formwork, so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117 and to comply with the Surface Finish designations specified in Section 033000 "Cast-In-Place Concrete" for as-cast finishes.

C. Limit concrete surface irregularities as follows:

1. Surface Finish-2.0: ACI 117 Class B, 1/4 inch.

D. Construct forms tight enough to prevent loss of concrete mortar.

1. Minimize joints.

E. Construct removable forms for easy removal without hammering or prying against concrete surfaces.

1. Provide crush or wrecking plates where stripping may damage cast-concrete surfaces.
2. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
3. Install keyways, reglets, recesses, and other accessories, for easy removal.

F. Do not use rust-stained, steel, form-facing material.

G. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces.

1. Provide and secure units to support screed strips
2. Use strike-off templates or compacting-type screeds.

H. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible.

1. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar.

2. Locate temporary openings in forms at inconspicuous locations.

I. Chamfer exterior corners and edges of permanently exposed concrete.

J. At construction joints, overlap forms onto previously placed concrete not less than 12 inches.

K. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work.

1. Determine sizes and locations from trades providing such items.

2. Obtain written approval of Architect prior to forming openings not indicated on Drawings.

L. Construction and Movement Joints:

1. Construct joints true to line with faces perpendicular to surface plane of concrete.

2. Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

3. Place joints perpendicular to main reinforcement.

4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.

5. Space vertical joints in walls as indicated on Drawings.

a. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.

M. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection.

1. Locate ports and openings in bottom of vertical forms, in inconspicuous location, to allow flushing water to drain.

2. Close temporary ports and openings with tight-fitting panels, flush with inside face of form, and neatly fitted, so joints will not be apparent in exposed concrete surfaces.

N. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

O. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

P. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.02 INSTALLATION OF EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete.

1. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

2. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC 303.

3. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.

4. Install dovetail anchor slots in concrete structures, as indicated on Drawings.

5. Clean embedded items immediately prior to concrete placement.

3.03 INSTALLATION OF WATERSTOPS

A. Self-Expanding Strip Waterstops: Install in construction joints and at other locations indicated on Drawings, according to manufacturer's written instructions, by adhesive bonding, mechanically fastening, and firmly pressing into place.

1. Install in longest lengths practicable.

2. Locate waterstops in center of joint unless otherwise indicated on Drawings.

3. Protect exposed waterstops during progress of the Work.

3.04 REMOVING AND REUSING FORMS

A. Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 72 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations, and curing and protection operations need to be maintained.

1. Leave formwork for beam soffits, joists, slabs, and other structural elements that support weight of concrete in place until concrete has achieved[at least 70 percent of] its 28-day design compressive strength.

B. Clean and repair surfaces of forms to be reused in the Work.

1. Split, frayed, delaminated, or otherwise damaged form-facing material are unacceptable for exposed surfaces.

2. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints.

1. Align and secure joints to avoid offsets.

2. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.05 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Testing Agency: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.

C. Inspections:

1. Inspect formwork for shape, location, and dimensions of the concrete member being formed.

END OF SECTION

SECTION 03 20 00

CONCRETE REINFORCING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:

1. Steel reinforcement bars.
2. Welded-wire reinforcement.

B. Related Requirements:

1. Section 32 13 13 "Concrete Paving" for reinforcing related to concrete pavement and walks.

1.03 ACTION SUBMITTALS

A. Product Data: For the following:

1. Each type of steel reinforcement.
2. Bar supports.
3. Mechanical splice couplers.

B. Shop Drawings: Comply with ACI SP-066:

1. Include placing drawings that detail fabrication, bending, and placement.
2. Include bar sizes, lengths, materials, grades, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, location of splices, lengths of lap splices, details of mechanical splice couplers, details of welding splices, tie spacing, hoop spacing, and supports for concrete reinforcement.

C. Construction Joint Layout: Indicate proposed construction joints required to build the structure.

1. Location of construction joints is subject to approval of the Architect.

1.04 INFORMATIONAL SUBMITTALS

A. Qualification Statements: For testing and inspection agency.

B. Welding certificates.

1. Reinforcement To Be Welded: Welding procedure specification in accordance with AWS D1.4/D1.4M

C. Material Test Reports: For the following, from a qualified testing agency:

1. Steel Reinforcement:
    a. For reinforcement to be welded, mill test analysis for chemical composition and carbon equivalent of the steel in accordance with ASTM A706/A706M.
2. Mechanical splice couplers.

D. Field quality-control reports.

1.05 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated.

B. Welding Qualifications: Qualify procedures and personnel in accordance with AWS D1.4/D 1.4M.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

1. Store reinforcement to avoid contact with earth.

PART 2 - PRODUCTS

2.01 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A615/A615M, Grade 60, deformed.

B. Low-Alloy Steel Reinforcing Bars: ASTM A706/A706M, deformed.

C. Headed-Steel Reinforcing Bars: ASTM A970/A970M.

D. Steel Bar Mats: ASTM A184/A184M, fabricated from ASTM A615/A615M, Grade 60, deformed bars, assembled with clips.

E. Plain-Steel Welded-Wire Reinforcement: ASTM A1064/A1064M, plain, fabricated from as-drawn steel wire into flat sheets.

2.02 REINFORCEMENT ACCESSORIES

A. Joint Dowel Bars: ASTM A615/A615M, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.

B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place.

1. Manufacture bar supports from steel wire, plastic, or precast concrete in accordance with CRSI's "Manual of Standard Practice," of greater compressive strength than concrete.

C. Mechanical Splice Couplers: ACI 318 Type 1, same material of reinforcing bar being spliced; tension-compression type.

D. Steel Tie Wire: ASTM A1064/A1064M, annealed steel, not less than 0.0508 inch in diameter.

1. Finish: Plain.

2.03 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

PART 3 - EXECUTION

3.01 PREPARATION

A. Protection of In-Place Conditions:

1. Do not cut or puncture vapor retarder.

2. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.

3.02 INSTALLATION OF STEEL REINFORCEMENT

A. Comply with CRSI's "Manual of Standard Practice" for placing and supporting reinforcement.

B. Accurately position, support, and secure reinforcement against displacement.

1. Locate and support reinforcement with bar supports to maintain minimum concrete cover.

2. Do not tack weld crossing reinforcing bars.

C. Preserve clearance between bars of not less than 1 inch, not less than one bar diameter, or not less than 1-1/3 times size of large aggregate, whichever is greater.

D. Provide concrete coverage in accordance with ACI 318.

E. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

F. Splices: Lap splices as indicated on Drawings.

1. Bars indicated to be continuous, and all vertical bars shall be lapped not less than 36 bar diameters at splices, or 24 inches, whichever is greater.

2. Stagger splices in accordance with ACI 318.

3. Mechanical Splice Couplers: Install in accordance with manufacturer's instructions.

4. Weld reinforcing bars in accordance with AWS D1.4/D 1.4M, where indicated on Drawings.

G. Install welded-wire reinforcement in longest practicable lengths.

1. Support welded-wire reinforcement in accordance with CRSI "Manual of Standard Practice."

a. For reinforcement less than W4.0 or D4.0, continuous support spacing shall not exceed 12 inches.

2. Lap edges and ends of adjoining sheets at least one wire spacing plus 2 inches for plain wire and 8 inches for deformed wire.

3. Offset laps of adjoining sheet widths to prevent continuous laps in either direction.

4. Lace overlaps with wire.

3.03 JOINTS

A. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

1. Place joints perpendicular to main reinforcement.

2. Continue reinforcement across construction joints unless otherwise indicated.

3. Do not continue reinforcement through sides of strip placements of floors and slabs.

B. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length, to prevent concrete bonding to one side of joint.

3.04 INSTALLATION TOLERANCES

A. Comply with ACI 117.

3.05 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Inspections:

1. Steel-reinforcement placement.

2. Steel-reinforcement mechanical splice couplers.

3. Steel-reinforcement welding.

END OF SECTION

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SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:

1. Cast-in-place concrete, including concrete materials, mixture design, placement procedures, and finishes.

B. Related Requirements:

1. Section 032000 "Concrete Reinforcing" for steel reinforcing bars and welded-wire reinforcement.
2. Section 312000 "Earth Moving" for drainage fill under slabs-on-ground.
3. Section 321313 "Concrete Paving" for concrete pavement and walks.

1.03 PREINSTALLATIONS MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review the following:

a. Special inspection and testing and inspecting agency procedures for field quality control.
b. Construction contraction and isolation joints.
c. Steel-reinforcement installation.

1.04 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.

B. Water/Cement Ratio (w/cm): The ratio by weight of water to cementitious materials.

1.05 ACTION SUBMITTALS

A. Product Data: For each of the following.

1. Portland cement.
2. Fly ash.
3. Aggregates.
4. Admixtures:

a. Include limitations of use, including restrictions on cementitious materials, supplementary cementitious materials, air entrainment, aggregates, temperature at time of concrete placement, relative humidity at time of concrete placement, curing conditions, and use of other admixtures.

5. Vapor retarders.
6. Curing materials.
7. Joint fillers.
8. Repair materials.

B. Design Mixtures: For each concrete mixture, include the following:

1. Mixture identification.
2. Minimum 28-day compressive strength.
3. Location within Project
4. Durability exposure class.
5. Maximum w/cm.
6. Slump limit.
7. Air content.
8. Nominal maximum aggregate size.
9. Indicate amounts of mixing water to be withheld for later addition at Project site if permitted.
10. Intended placement method.
11. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

C. Shop Drawings:

1. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
    a. Location of construction joints is subject to approval of the Architect.

1.06 INFORMATIONAL SUBMITTALS

A. Qualification Data: For the following:

1. Installer: Include copies of applicable ACI certificates.
2. Ready-mixed concrete manufacturer.
3. Testing agency: Include copies of applicable ACI certificates.

B. Material Certificates: For each of the following, signed by manufacturers:

1. Cementitious materials.
2. Admixtures.
3. Curing compounds.
4. Bonding agents.
5. Adhesives.
6. Vapor retarders.
7. Semirigid joint filler.
8. Joint-filler strips.
9. Repair materials.

C. Material Test Reports: For the following, from a qualified testing agency:

1. Portland cement.
2. Fly ash.
3. Aggregates.
4. Admixtures:

D. Floor surface flatness and levelness measurements report, indicating compliance with specified tolerances.

E. Field quality-control reports.

1.07 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs Project personnel qualified as an ACI-certified Flatwork Technician and Finisher and a supervisor who is a certified ACI Flatwork Concrete Finisher/Technician.

1. Post-Installed Concrete Anchors Installers: ACI-certified Adhesive Anchor Installer.

B. Ready-Mixed Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.

1. Manufacturer certified in accordance with NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

C. Laboratory Testing Agency Qualifications: A testing agency qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated and employing an ACI-certified Concrete Quality Control Technical Manager.

1. Personnel performing laboratory tests shall be an ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician, Grade I. Testing agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician, Grade II.

D. Field Quality Control Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated.

1. Personnel conducting field tests shall be qualified as an ACI Concrete Field Testing Technician, Grade 1, in accordance with ACI CPP 610.1 or an equivalent certification program.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Comply with ASTM C94/C94M and ACI 301.

1.09 FIELD CONDITIONS

A. Cold-Weather Placement: Comply with ACI 301 and ACI 306.1 and as follows.

1. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

2. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.

3. Do not use frozen materials or materials containing ice or snow.

4. Do not place concrete in contact with surfaces less than 35 deg F, other than reinforcing steel.

5. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

B. Hot-Weather Placement: Comply with ACI 301 and ACI 305.1, and as follows:

1. Maintain concrete temperature at time of discharge to not exceed 95 deg F.

2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.01 CONCRETE, GENERAL

A. ACI Publications: Comply with ACI 301 unless modified by requirements in the Contract Documents.

2.02 CONCRETE MATERIALS

A. Source Limitations:

1. Obtain all concrete mixtures from a single ready-mixed concrete manufacturer for entire Project.

2. Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant.

3. Obtain aggregate from single source.

4. Obtain each type of admixture from single source from single manufacturer.

B. Cementitious Materials:

1. Portland Cement: ASTM C150/C150M, Type I/II, gray.

2. Fly Ash: ASTM C618, Class C or F.

C. Normal-Weight Aggregates: ASTM C33/C33M, Class 3S coarse aggregate or better, graded. Provide aggregates from a single source.

1. Alkali-Silica Reaction: Comply with one of the following:

a. Expansion Result of Aggregate: Not more than 0.04 percent at one-year when tested in accordance with ASTM C1293.

b. Expansion Results of Aggregate and Cementitious Materials in Combination: Not more than 0.10 percent at an age of 16 days when tested in accordance with ASTM C1567.

c. Alkali Content in Concrete: Not more than 4 lb./cu. yd. for moderately reactive aggregate or 3 lb./cu. yd. for highly reactive aggregate, when tested in accordance with ASTM C1293 and categorized in accordance with ASTM C1778, based on alkali content being calculated in accordance with ACI 301.

2. Maximum Coarse-Aggregate Size: 1 inch nominal.

3. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

D. Air-Entraining Admixture: ASTM C260/C260M.

E. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C494/C494M, Type A.

2. Retarding Admixture: ASTM C494/C494M, Type B.

3. Water-Reducing and -Retarding Admixture: ASTM C494/C494M, Type D.

4. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F.

F. Water and Water Used to Make Ice: ASTM C94/C94M, potable

2.03 VAPOR RETARDERS

A. Sheet Vapor Retarder, Class A: ASTM E1745, Class A; not less than 15 mils thick. Include manufacturer's recommended adhesive or pressure-sensitive tape.

2.04 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.

C. Moisture-Retaining Cover: ASTM C171, polyethylene film burlap-polyethylene sheet.

1. Color:

a. Ambient Temperature Below 50 deg F: Black.

b. Ambient Temperature between 50 deg F and 85 deg F: Any color.

c. Ambient Temperature Above 85 deg F: White.

D. Water: Potable or complying with ASTM C1602/C1602M.

E. Clear, Waterborne, Membrane-Forming, Dissipating Curing Compound: ASTM C309, Type 1, Class B.

2.05 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D1751, asphalt-saturated cellulosic fiber or ASTM D1752, cork or self-expanding cork.

B. Bonding Agent: ASTM C1059/C1059M, Type II, nonredispersible, acrylic emulsion or styrene butadiene.

C. Epoxy Bonding Adhesive: ASTM C881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade and class to suit requirements, and as follows:

1. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

2.06 REPAIR MATERIALS

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C150/C150M portland cement or hydraulic or blended hydraulic cement, as defined in ASTM C219.
2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand, as recommended by underlayment manufacturer.
4. Compressive Strength: Not less than 4100 psi at 28 days when tested in accordance with ASTM C109/C109M.

B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch and that can be filled in over a scarified surface to match adjacent floor elevations.

1. Cement Binder: ASTM C150/C150M portland cement or hydraulic or blended hydraulic cement, as defined in ASTM C219.
2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.
4. Compressive Strength: Not less than 5000 psi at 28 days when tested in accordance with ASTM C109/C109M.

2.07 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, in accordance with ACI 301.

1. Use a qualified testing agency for preparing and reporting proposed mixture designs, based on laboratory trial mixtures.

B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:

1. Fly Ash or Other Pozzolans: 25 percent by mass.

C. Admixtures: Use admixtures in accordance with manufacturer's written instructions.

1. Use water-reducing, high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
2. Use water-reducing and -retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
3. Use water-reducing admixture in pumped concrete and concrete with a w/cm below 0.50.

2.08 CONCRETE MIXTURES

A. Class A: Normal-weight concrete used for footings.

1. Minimum Compressive Strength: 4000 psi at 28 days.
2. Maximum w/cm: 0.45.
3. Slump Limit: 8 inches, plus or minus 1 inch for concrete with verified slump of 3 inches plus or minus 1 inch before adding high-range water-reducing admixture or plasticizing admixture at Project site.
4. Air Content:
    a. 6 percent, plus or minus 1.5 percent at point of delivery for concrete containing 1-inch nominal maximum aggregate size.

B. Class B: Normal-weight concrete used for interior slabs-on-ground.

1. Minimum Compressive Strength: 4000 psi at 28 days.
2. Maximum w/cm: 0.45.
3. Slump Limit: 8 inches, plus or minus 1 inch for concrete with verified slump of 3 inches plus or minus 1 inch before adding high-range water-reducing admixture or plasticizing admixture at Project site.
4. Air Content:
    a. Do not use an air-entraining admixture or allow total air content to exceed 3 percent for concrete used in trowel-finished floors.

C. Class C: Normal-weight concrete used for interior suspended slabs.

1. Minimum Compressive Strength: 4000 psi at 28 days.
2. Maximum w/cm: 0.45.
3. Slump Limit: 8 inches, plus or minus 1 inch for concrete with verified slump of 3 inches plus or minus 1 inch before adding high-range water-reducing admixture or plasticizing admixture at Project site.
4. Air Content:
    a. Do not use an air-entraining admixture or allow total air content to exceed 3 percent for concrete used in trowel-finished floors.

2.09 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete in accordance with ASTM C94/C94M, and furnish batch ticket information.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verification of Conditions:

1. Before placing concrete, verify that installation of concrete forms, accessories, and reinforcement, and embedded items is complete and that required inspections have been performed.
2. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Provide reasonable auxiliary services to accommodate field testing and inspections, acceptable to testing agency, including the following:

1. Daily access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Secure space for storage, initial curing, and field curing of test samples, including source of water and continuous electrical power at Project site during site curing period for test samples.

4. Security and protection for test samples and for testing and inspection equipment at Project site.

3.03 INSTALLATION OF EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining Work that is attached to or supported by cast-in-place concrete.

1. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
2. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of ANSI/AISC 303.
3. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.

3.04 INSTALLATION OF VAPOR RETARDER

A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder in accordance with ASTM E1643 and manufacturer's written instructions.

1. Install vapor retarder with longest dimension parallel with direction of concrete pour.
2. Face laps away from exposed direction of concrete pour.
3. Lap vapor retarder over footings and grade beams not less than 6 inches, sealing vapor retarder to concrete.
4. Lap joints 6 inches and seal with manufacturer's recommended tape.
5. Seal penetrations in accordance with vapor retarder manufacturer's instructions.
6. Protect vapor retarder during placement of reinforcement and concrete.
    a. Repair damaged areas by patching with vapor retarder material, overlapping damages area by 6 inches on all sides, and sealing to vapor retarder.

3.05 JOINTS

A. Construct joints true to line, with faces perpendicular to surface plane of concrete.

B. Construction Joints: Coordinate with floor slab pattern and concrete placement sequence.

1. Install so strength and appearance of concrete are not impaired, at locations indicated on Drawings or as approved by Architect.
2. Place joints perpendicular to main reinforcement.
    a. Continue reinforcement across construction joints unless otherwise indicated.
    b. Do not continue reinforcement through sides of strip placements of floors and slabs.
3. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
5. Space vertical joints in walls as indicated on Drawings. Unless otherwise indicated on Drawings, locate vertical joints beside piers integral with walls, near corners, and in concealed locations where possible.
6. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Control Joints in Slabs-on-Ground: Form weakened-plane control joints, sectioning concrete into areas as indicated. Construct control joints for a depth equal to at least one-fourth of concrete thickness as follows:

1. Grooved Joints: Form control joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of control joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.

2. Sawed Joints: Form control joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random cracks.

D. Isolation Joints in Slabs-on-Ground: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated on Drawings.

2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface, where joint sealants, specified in Section 079200 "Joint Sealants," are indicated.

3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

E. Doweled Joints:

1. Install dowel bars and support assemblies at joints where indicated on Drawings.

2. Lubricate or asphalt coat one-half of dowel bar length to prevent concrete bonding to one side of joint.

F. Dowel Plates: Install dowel plates at joints where indicated on Drawings.

3.06 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, embedded items, and vapor retarder is complete and that required inspections are completed.

1. Immediately prior to concrete placement, inspect vapor retarder for damage and deficient installation, and repair defective areas.

2. Provide continuous inspection of vapor retarder during concrete placement and make necessary repairs to damaged areas as Work progresses.

B. Notify Architect and testing and inspection agencies 24 hours prior to commencement of concrete placement.

C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301, but not to exceed the amount indicated on the concrete delivery ticket.

1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness.

1. If a section cannot be placed continuously, provide construction joints as indicated.

2. Deposit concrete to avoid segregation.

3. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints.

4. Consolidate placed concrete with mechanical vibrating equipment in accordance with ACI 301.

a. Do not use vibrators to transport concrete inside forms.

b. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer.

c. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity.

d. At each insertion, limit duration of vibration to time necessary to consolidate concrete, and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Do not place concrete floors and slabs in a checkerboard sequence.
2. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
3. Maintain reinforcement in position on chairs during concrete placement.
4. Screed slab surfaces with a straightedge and strike off to correct elevations.
5. Level concrete, cut high areas, and fill low areas.
6. Slope surfaces uniformly to drains where required.
7. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface.
8. Do not further disturb slab surfaces before starting finishing operations.

3.07 FINISHING FORMED SURFACES

A. As-Cast Surface Finishes:

1. ACI 301 Surface Finish SF-1.0: As-cast concrete texture imparted by form-facing material.
   a. Patch voids larger than 1-1/2 inches wide or 1/2 inch deep.
   b. Remove projections larger than 1 inch.
   c. Tie holes do not require patching.
   d. Surface Tolerance: ACI 117 Class D.
   e. Apply to concrete surfaces not exposed to public view.
2. ACI 301 Surface Finish SF-2.0: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams.
   a. Patch voids larger than 3/4 inch wide or 1/2 inch deep.
   b. Remove projections larger than 1/4 inch.
   c. Patch tie holes.
   d. Surface Tolerance: ACI 117 Class B.
   e. Locations: Apply to concrete surfaces exposed to public view,.

B. Rubbed Finish: Apply the following to as cast surface finishes where indicated on Drawings:

1. Smooth-Rubbed Finish:
   a. Perform no later than one day after form removal.
   b. Moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture.

C. Related Unformed Surfaces:

1. At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a color and texture matching adjacent formed surfaces.
2. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.08 FINISHING FLOORS AND SLABS

A. Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Float Finish:

1. When bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operation of specific float apparatus, consolidate concrete surface with power-driven floats or by hand floating if area is small or inaccessible to power-driven floats.
2. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture and complies with ACI 117 tolerances for conventional concrete.
3. Apply float finish to surfaces to receive trowel finish.

C. Trowel Finish:

1. After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel.
2. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance.
3. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
4. Do not add water to concrete surface.
5. Do not apply hard-troweled finish to concrete, which has a total air content greater than 3 percent.
6. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.
7. Finish surfaces to the following tolerances, in accordance with ASTM E1155, for a randomly trafficked floor surface:
   a. Slabs on Ground:
      1) Specified overall values of flatness, F_F 35; and of levelness, F_L 25; with minimum local values of flatness, F_F 24; and of levelness, F_L 17.
   b. Suspended Slabs:
      1) Finish and measure surface so gap at any point between concrete surface and an unleveled, freestanding, 10-ft.- long straightedge resting on two high spots and placed anywhere on the surface does not exceed 3/16 inch.

3.09 INSTALLATION OF MISCELLANEOUS CONCRETE ITEMS

A. Filling In:

1. Fill in holes and openings left in concrete structures after Work of other trades is in place unless otherwise indicated.
2. Mix, place, and cure concrete, as specified, to blend with in-place construction.
3. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Equipment Bases and Foundations:

1. Coordinate sizes and locations of concrete bases with actual equipment provided.
2. Construct concrete bases 4 inches high unless otherwise indicated on Drawings, and extend base not less than 6 inches in each direction beyond the maximum dimensions of supported equipment unless otherwise indicated on Drawings, or unless required for seismic anchor support.
3. Minimum Compressive Strength: 4000 psi at 28 days.

4. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.
5. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete substrate.
6. Prior to pouring concrete, place and secure anchorage devices.
    a. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
    b. Cast anchor-bolt insert into bases.
    c. Install anchor bolts to elevations required for proper attachment to supported equipment.

D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items.
1. Cast-in inserts and accessories, as shown on Drawings.
2. Screed, tamp, and trowel finish concrete surfaces.

3.10 CONCRETE CURING

A. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
1. Comply with ACI 301 and ACI 306.1 for cold weather protection during curing.
2. Comply with ACI 301 and ACI 305.1 for hot-weather protection during curing.
3. Maintain moisture loss no more than 0.2 lb/sq. ft. x h before and during finishing operations.

B. Curing Formed Surfaces: Comply with ACI 308.1 as follows:
1. Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces.
2. If forms remain during curing period, moist cure after loosening forms.
3. If removing forms before end of curing period, continue curing for remainder of curing period, as follows:
    a. Water-Retention Sheeting Materials: Cover exposed concrete surfaces with sheeting material, taping, or lapping seams.
    b. Membrane-Forming Curing Compound: Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's written instructions.
        1) Recoat areas subject to heavy rainfall within three hours after initial application.
        2) Maintain continuity of coating and repair damage during curing period.

C. Curing Unformed Surfaces: Comply with ACI 308.1 as follows:
1. Begin curing immediately after finishing concrete.
2. Interior Concrete Floors:
    a. Floors to Receive Floor Coverings Specified in Other Sections: Contractor has option of the following:
        1) Absorptive Cover: As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorptive cover over entire area of floor.
            a) Lap edges and ends of absorptive cover not less than 12-inches.
            b) Maintain absorptive cover water saturated, and in place, for duration of curing period, but not less than seven days.

2) Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive.

a) Immediately repair any holes or tears during curing period, using cover material and waterproof tape.

b) Cure for not less than seven days.

3) Ponding or Continuous Sprinkling of Water: Maintain concrete surfaces continuously wet for not less than seven days, utilizing one, or a combination of, the following:

a) Water.

b) Continuous water-fog spray.

b. Floors to Receive Curing Compound:

1) Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's written instructions.

2) Recoat areas subjected to heavy rainfall within three hours after initial application.

3) Maintain continuity of coating, and repair damage during curing period.

4) Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound does not interfere with bonding of floor covering used on Project.

3.11 TOLERANCES

A. Conform to ACI 117.

3.12 JOINT FILLING

A. Prepare, clean, and install joint filler in accordance with manufacturer's written instructions.

1. Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joints clean and dry.

3.13 CONCRETE SURFACE REPAIRS

A. Defective Concrete:

1. Repair and patch defective areas when approved by Architect.

2. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of 1 part portland cement to 2-1/2 parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete.

a. Limit cut depth to 3/4 inch.

b. Make edges of cuts perpendicular to concrete surface.

c. Clean, dampen with water, and brush-coat holes and voids with bonding agent.

d. Fill and compact with patching mortar before bonding agent has dried.

e. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.

2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement, so that, when dry, patching mortar matches surrounding color.
   a. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching.
   b. Compact mortar in place and strike off slightly higher than surrounding surface.
3. Repair defects on concealed formed surfaces that will affect concrete's durability and structural performance as determined by Architect.

D. Repairing Unformed Surfaces:

1. Test unformed surfaces, such as floors and slabs, for finish, and verify surface tolerances specified for each surface.
   a. Correct low and high areas.
   b. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
2. Repair finished surfaces containing surface defects, including spalls, popouts, honeycombs, rock pockets, crazing, and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
3. After concrete has cured at least 14 days, correct high areas by grinding.
4. Correct localized low areas during, or immediately after, completing surface-finishing operations by cutting out low areas and replacing with patching mortar.
   a. Finish repaired areas to blend into adjacent concrete.
5. Correct other low areas scheduled to receive floor coverings with a repair underlayment.
   a. Prepare, mix, and apply repair underlayment and primer in accordance with manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
   b. Feather edges to match adjacent floor elevations.
6. Correct other low areas scheduled to remain exposed with repair topping.
   a. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations.
   b. Prepare, mix, and apply repair topping and primer in accordance with manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
7. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete.
   a. Remove defective areas with clean, square cuts, and expose steel reinforcement with at least a 3/4-inch clearance all around.
   b. Dampen concrete surfaces in contact with patching concrete and apply bonding agent.
   c. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate.
   d. Place, compact, and finish to blend with adjacent finished concrete.
   e. Cure in same manner as adjacent concrete.
8. Repair random cracks and single holes 1 inch or less in diameter with patching mortar.

a. Groove top of cracks and cut out holes to sound concrete, and clean off dust, dirt, and loose particles.

b. Dampen cleaned concrete surfaces and apply bonding agent.

c. Place patching mortar before bonding agent has dried.

d. Compact patching mortar and finish to match adjacent concrete.

e. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.14 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a special inspector to perform field tests and inspections and prepare testing and inspection reports.

B. Testing Agency: Owner will engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.

1. Testing agency shall be responsible for providing curing container for composite samples on Site and verifying that field-cured composite samples are cured in accordance with ASTM C31/C31M.

2. Testing agency shall immediately report to Architect, Contractor, and concrete manufacturer any failure of Work to comply with Contract Documents.

3. Testing agency shall report results of tests and inspections, in writing, to Owner, Architect, Contractor, and concrete manufacturer within 48 hours of inspections and tests.

a. Test reports shall include reporting requirements of ASTM C31/C31M, ASTM C39/C39M, and ACI 301, including the following as applicable to each test and inspection:

1) Project name.

2) Name of testing agency.

3) Names and certification numbers of field and laboratory technicians performing inspections and testing.

4) Name of concrete manufacturer.

5) Date and time of inspection, sampling, and field testing.

6) Date and time of concrete placement.

7) Location in Work of concrete represented by samples.

8) Date and time sample was obtained.

9) Truck and batch ticket numbers.

10) Design compressive strength at 28 days.

11) Concrete mixture designation, proportions, and materials.

12) Field test results.

13) Information on storage and curing of samples before testing, including curing method and maximum and minimum temperatures during initial curing period.

14) Type of fracture and compressive break strengths at seven days and 28 days.

C. Batch Tickets: For each load delivered, submit three copies of batch delivery ticket to testing agency, indicating quantity, mix identification, admixtures, design strength,

aggregate size, design air content, design slump at time of batching, and amount of water that can be added at Project site.

D. Inspections:

1. Headed bolts and studs.
2. Verification of use of required design mixture.
3. Concrete placement, including conveying and depositing.
4. Curing procedures and maintenance of curing temperature.

E. Concrete Tests: Testing of composite samples of fresh concrete obtained in accordance with ASTM C 172/C 172M shall be performed in accordance with the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
    a. When frequency of testing provides fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
2. Slump: ASTM C143/C143M:
    a. One test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture.
    b. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C231/C231M pressure method, for normal-weight concrete;.
    a. One test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
4. Concrete Temperature: ASTM C1064/C1064M:
    a. One test hourly when air temperature is 40 deg F and below or 80 deg F and above, and one test for each composite sample.
5. Compression Test Specimens: ASTM C31/C31M:
    a. Cast and laboratory cure two sets of two 6-inch by 12-inch cylinder specimens for each composite sample. If using 4-inch by 8-inch cylinders, two sets of three cylinders shall be used.
6. Compressive-Strength Tests: ASTM C39/C39M.
    a. Test one set of two laboratory-cured specimens at seven days and one set of two specimens at 28 days. If using four-inch cylinders, tests shall include three specimens.
    b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated. If using four-inch cylinders, average will be computed from a set of three specimens.
7. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
8. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength, and no compressive-strength test value falls below specified compressive strength by more than 500 psi if specified compressive strength is 5000 psi, or no compressive strength test value is less than 10 percent of specified compressive strength if specified compressive strength is greater than 5000 psi.

9. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
10. Additional Tests:
    a. Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect.
    b. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42/C42M or by other methods as directed by Architect.
        1) Acceptance criteria for concrete strength shall be in accordance with ACI 301 section 1.6.6.3.
11. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
12. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

F. Measure floor and slab flatness and levelness in accordance with ASTM E1155 within 24 hours of completion of floor finishing and promptly report test results to Architect.

3.15 PROTECTION

A. Protect concrete surfaces as follows:
1. Protect from petroleum stains.
2. Diaper hydraulic equipment used over concrete surfaces.
3. Prohibit vehicles from interior concrete slabs.
4. Prohibit use of pipe-cutting machinery over concrete surfaces.
5. Prohibit placement of steel items on concrete surfaces.
6. Prohibit use of acids or acidic detergents over concrete surfaces.
7. Protect concrete surfaces scheduled to receive surface hardener or polished concrete finish using Floor Slab Protective Covering.

END OF SECTION

SECTION 03 35 11
CONCRETE FLOOR FINISHES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Liquid densifiers and hardeners.

1.02 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

B. Coordinate the work with concrete floor placement and concrete floor curing.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Maintenance Data: Provide data on maintenance and renewal of applied finishes.

1.04 MOCK-UPS

A. For coatings, construct mock-up area under conditions similar to those that will exist during application, with coatings applied.

B. Mock-up may remain as part of the work.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's sealed packaging, including application instructions.

1.06 FIELD CONDITIONS

A. Maintain light level equivalent to a minimum 200 W light source at 8 feet above the floor surface over each 20 foot square area of floor being finished.

B. Maintain ambient temperature of 50 degrees F minimum.

PART 2 PRODUCTS

2.01 APPLICATIONS

A. Densifier and Hardener:
   1. Use at following locations: Where indicated on the drawings.

2.02 DENSIFIERS AND HARDENERS

A. Liquid Densifier and Hardener: Penetrating chemical compound that reacts with concrete, filling the pores, hardening, and dustproofing.
   1. Composition: Sodium silicate, with siliconate.
      a. Products:
         1) Curecrete Distribution, Inc; Ashford Formula: www.curecrete.com/#sle.
         2) Substitutions: See Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that floor surfaces are acceptable to receive the work of this section.

B. Verify that flaws in concrete have been patched and joints filled with methods and materials suitable for further finishes.

3.02 GENERAL

A. Apply materials in accordance with manufacturer's instructions.

END OF SECTION

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SECTION 04 20 00
UNIT MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete Masonry Units.

B. Clay Facing Brick.

C. Mortar and Grout.

D. Reinforcement and Anchorage.

E. Flashings.

F. Lintels

G. Accessories.

1.02 RELATED REQUIREMENTS

A. Section 04 72 00 - Cast Stone Masonry.

B. Section 05 50 00 - Metal Fabrications: Loose steel lintels.

C. Section 06 10 00 - Rough Carpentry: Nailing strips built into masonry.

D. Section 07 21 00 - Thermal Insulation: Insulation for cavity spaces.

E. Section 07 25 00 - Weather Barriers: Water-resistive barriers or air barriers applied to the exterior face of the backing sheathing or masonry.

F. Section 07 62 00 - Sheet Metal Flashing and Trim: Through-wall masonry flashings.

G. Section 07 84 00 - Firestopping: Firestopping at penetrations of fire-rated masonry and at top of fire-rated walls.

H. Section 07 92 00 - Joint Sealants: Sealing control and expansion joints.

1.03 REFERENCE STANDARDS

A. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures 2022.

B. ASTM A82/A82M - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement; 2007.

C. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2016a.

D. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement 2022.

E. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire 2019.

F. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar 2023.

G. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete 2022.

H. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units 2022.

I. ASTM C129 - Standard Specification for Nonloadbearing Concrete Masonry Units 2022.

J. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar 2018.

K. ASTM C150/C150M - Standard Specification for Portland Cement 2022.

L. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes 2018.

M. ASTM C270 - Standard Specification for Mortar for Unit Masonry 2019a, with Editorial Revision.

N. ASTM C404 - Standard Specification for Aggregates for Masonry Grout 2018.

O. ASTM C476 - Standard Specification for Grout for Masonry 2023.

P. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete 2016.

Q. ASTM C1072 - Standard Test Methods for Measurement of Masonry Flexural Bond Strength 2022.

R. ASTM C1148 - Standard Test Method for Measuring the Drying Shrinkage of Masonry Mortar 1992a (Reapproved 2014).

S. ASTM C1314 - Standard Test Method for Compressive Strength of Masonry Prisms 2023.

T. ASTM E514/E514M - Standard Test Method for Water Penetration and Leakage Through Masonry 2020.

U. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures 2022.

V. UL (FRD) - Fire Resistance Directory Current Edition.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all relevant installers.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data for masonry units, fabricated wire reinforcement, mortar, and masonry accessories.

C. Shop Drawings: Indicate pertinent dimensions, materials, anchorage, size and type of fasteners, and accessories for brickwork support system.
   1. Reinforcing Steel: Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315. Show elevation of reinforced walls.

D. Samples: Submit six samples of each facing brick unit to illustrate color, texture, and extremes of color range.

E. Qualification Data: For testing agency.

F. Manufacturer's Certificate: Certify that water repellent admixture manufacturer has certified masonry unit manufacturer as an approved user of water repellent admixture in the manufacture of concrete block.

G. Material Certificates: For each type and size of the following:
   1. Masonry units.
      a. Include data on material properties.
      b. For masonry units used in structural masonry, include data and calculations establishing average net-area compressive strength of units.
      c. Cementitious materials. Include name of manufacturer, brand name, and type.
      d. Mortar admixtures.
      e. Grout mixes. Include description of type and proportions of ingredients.
      f. Reinforcing bars.
      g. Joint reinforcement.
      h. Anchors, ties, and metal accessories.

H. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.
   1. Include test reports for mortar mixes required to comply with property specification.
      a. Test according to ASTM C109/C109M for compressive strength, ASTM C1506 for water retention, and ASTM C91/C91M for air content.
   2. Include test reports, according to ASTM C1019, for grout mixes required to comply with compressive strength requirement.

I. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined according to TMS 602/ACI 530.1/ASCE6.

J. Cold-Weather and Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

K. Test Reports: Concrete masonry manufacturer's test reports for units with integral water repellent admixture.

1.06 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM C 1093 for testing indicated.

B. Comply with provisions of TMS 402/602 except where exceeded by requirements of the contract documents.

C. Fire Rated Assemblies: Comply with applicable code for requirements of the indicated rating.

D. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section with minimum three years of documented experience.

E. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.07 MOCK-UP

A. Construct a masonry wall as a mock-up panel sized 8 feet long by 6 feet high; include samples of all mortar and accessories, structural backup, wall openings, flashings, wall insulation, and parging in mock-up.

B. Mock-up to be provided a minimum of four weeks prior to the start of building masonry to allow for proper approvals and/or modifications.

C. Locate as indicated on drawings.

D. Mock-up may remain as part of the Work, but must be on site until all masonry work is complete and accepted by the Architect.

E. Properly dispose of mock-up after the building is complete.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

B. Store brick and concrete masonry units off ground to prevent contamination by mud, dust or materials likely to cause staining or other defects.

C. If units are not stored in an enclosed location, cover materials to protect form elements. If units become wet, do not install until they are dry.

D. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

E. Cover materials when necessary to protect form elements.

F. Protect reinforcement from elements.

1.09 JOB CONDITIONS

A. Protection of Work:
   1. Wall Covering:
      1) During erection, cover top of wall with strong waterproof membrane at end of each day or shutdown.
      b. Cover partially completed walls when work is not in progress.
      c. Extend cover minimum of 24 inches down both sides.
      d. Hold cover securely in place.
   2. Load Application:

a. Do not apply uniform floor or roof loading for at least 12 hours after building masonry columns or walls.
b. Do not apply concentrated loads for at least 3 days after building masonry columns or walls.

3. Staining:
   a. Prevent grout or mortar from staining the face of masonry to be left exposed or painted:
      1) Remove immediately grout or mortar in contact with face of such masonry.
      2) Protect all sills, ledges and projections from droppings of mortar, protect door jambs and corners from damage during construction.
4. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.
   a. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.
5. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS

A. Performance Requirements:
   1. Provide structural unit masonry that develops indicated net-area compressive strengths at 28 days.
      a. Determine net-area compressive strength of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) according to TMS 602/ACI 530.1/ASCE 6.

B. Concrete Block: Comply with referenced standards and as follows:
   1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2800 psi
   2. Density Classification: Normal weight.
   3. Size: Standard units with nominal face dimensions of 16 inches wide x 8 inches tall and nominal depths as indicated on the drawings for specific locations (manufactured to dimensions 3/8 inch less than nominal dimensions). At exposed corners and door jambs, use a bullnose edge.
   4. Special Shapes: Provide non-standard blocks configured for corners, lintels, headers, control joint edges, and other detailed conditions.
      a. Provide bullnose units for outside corners.

2.02 LOAD-BEARING UNITS: ASTM C90, NORMAL WEIGHT.

   a. Hollow block, as indicated.
   b. Exposed faces: Manufacturer's standard color and texture where indicated unless indicated otherwise. Exposed faces: Refer to drawings for special colors, textures and locations.
   2. Non-Loadbearing Units: ASTM C129.
   3. Manufacturer:
      a. Water Table Units: Hebron, Modular, Wire Cut, Sea Gray #6 (Midwest Block & Brick).
      b. Cast Stone Units: Buckskin (Caliber Cast Stone).
      c. Substitutions: Not permitted.
   4. Units with Integral Water Repellent: Concrete block units as specified in this section with polymeric liquid admixture added to concrete masonry units at the time of manufacture.
      a. Performance of Units with Integral Water Repellent:

1) Water Permeance: When tested per ASTM E514/E514M and for a minimum of 72 hours.
   (a) No water visible on back of wall above flashing at the end of 24 hours.
   (b) No flow of water from flashing equal to or greater than 0.032 gallons per hour at the end of 24 hours.
   (c) No more than 25 percent of wall area above flashing visibly damp at end of test.
2) Flexural Bond Strength: ASTM C1072; minimum 10 percent increase.
3) Compressive Strength: ASTM C1314; maximum 5 percent decrease.
4) Drying Shrinkage: ASTM C1148; maximum 5 percent increase in shrinkage.

b. Use only in combination with mortar that also has integral water repellent admixture.
c. Use water repellent admixtures for masonry units and mortar by a single manufacturer.

2.03 BRICK UNITS

A. Manufacturer:
   1. Products as indicated on the drawings.
   2. Substitutions: Not permitted.

2.04 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C150/C150M
   1. Type I or II; color as required to produce approved color sample.
   2. Not more than 0.60 percent alkali.

B. Hydrated Lime: ASTM C207, Type S.

C. Masonry Cement: ASTM C91.

D. Mortar Cement: ASTM C1329.

E. Mortar Aggregate: ASTM C144 free of delirious material, including but not limited to lignite.

F. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.

G. Grout Aggregate: ASTM C404.

H. Pigments for Colored Mortar: Pure, concentrated mineral pigments specifically intended for mixing into mortar and complying with ASTM C979.
   1. Color(s): As selected by Architect from manufacturer's full range.
   2. Manufacturers:
      a. Davis Colors: www.daviscolors.com.
      b. Solomon Colors: www.solomoncolors.com.
      c. Substitutions: See Section 01 60 00 - Product Requirements.

I. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494/C 494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.

J. Water: Clean and potable.

K. Integral Water Repellent Admixture for Mortar: Polymeric liquid admixture added to mortar at the time of manufacture.
   1. Use only in combination with masonry units manufactured with integral water repellent admixture.
   2. Use only water repellent admixture for mortar from the same manufacturer as water repellent admixture in masonry units.
   3. Meet or exceed performance specified for water repellent admixture used in masonry units.

2.05 REINFORCEMENT AND ANCHORAGE

A. Manufacturers of Joint Reinforcement and Anchors:

1. Blok-Lok Limited: www.blok-lok.com.
2. Hohmann & Barnard, Inc (including Dur-O-Wal brand): www.h-b.com.
3. WIRE-BOND: www.wirebond.com/#sle.
4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Uncoated-Steel Reinforcing Bars: ASTM A615 or ASTM A996, Grade 60 (60,000 psi), deformed billet bars.

C. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and to hold reinforcing bars in center of cells. Units are formed from 0.148-inchsteel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.

D. Reinforcing Steel: ASTM A615/A615M, Grade 40 (40,000 psi), deformed billet bars; galvanized.

E. Masonry-Joint Reinforcement, General: ASTM A 951/A 951M.
1. Interior Walls: Hot-dip galvanized carbon steel.
2. Exterior Walls: Hot-dip galvanized carbon steel.
3. Wire Size for Side Rods: 0.148-inch diameter.
4. Wire Size for Cross Rods: 0.148-inch diameter.
5. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches o.c.
6. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.

F. Single Wythe Joint Reinforcement: Ladder type; ASTM A1064/A1064M steel wire, mill galvanized to ASTM A641/A641M, Class 3; 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage on each exposure.

G. Adjustable Multiple Wythe Joint Reinforcement: Truss type with adjustable ties or tabs spaced at 16 in on center and fabricated with moisture drip; ASTM A1064/A1064M steel wire, hot dip galvanized after fabrication to ASTM A153/153M, Class B; 0.1875 inch side rods with 0.1483 inch cross rods and adjustable components of 0.1875 inch wire; width of components as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage from each masonry face.
1. Vertical adjustment: Not less than 2 inches.
2. Seismic Feature: Provide lip, hook, or clip on extended leg of wall ties to engage or enclose not less than one continuous horizontal joint reinforcement wire of 0.1483 inch diameter.
3. Insulation Clips: Provide clips at tabs or ties designed to secure insulation against outer face of inner wythe of masonry.

H. Flexible Anchors: 2-piece anchors that permit differential movement between masonry and building frame, sized to provide not more than 1 inch and not less than 1/2 inch of mortar coverage from masonry face.
1. Concrete frame: Dovetail anchors of bent steel strap, nominal 1 inch width x 0.024 in thick, with trapezoidal wire ties 0.1875 inch thick, hot dip galvanized to ASTM A 153/A 153M, Class B.
2. Steel frame: Crimped wire anchors for welding to frame, 0.25 inch thick, with trapezoidal wire ties 0.1875 inch thick, hot dip galvanized to ASTM A 153/A 153M, Class B.

I. Masonry Veneer Anchors: 2-piece anchors that permit differential movement between masonry veneer and structural backup, hot dip galvanized to ASTM A 153/A 153M, Class B.
1. Anchor plates: Not less than 0.075 inch thick, designed for fastening to structural backup through sheathing by two fasteners. Provide strip flashing behind anchor plate which will self seal, is approved by weather barrier manufacturer and maintain integrity of air barrier specified in section 07 25 00 - Weather Barriers when installed.
2. Wire ties: Manufacturer's standard shape, 0.1875 inch thick.
3. Vertical adjustment: Not less than 3-1/2 inches.
4. Seismic Feature: Provide lip, hook, or clip on end of wire ties to engage or enclose not less than one continuous horizontal joint reinforcement wire of 0.1483 inch diameter.

2.06 FLASHINGS

A. Rubberized Asphalt Flashing: Self-adhering polymer-modified asphalt sheet; 0.025 inch total thickness; with cross-linked polyethylene top and bottom surfaces. Utilize pre-formed corners, end dams and termination bars with sealant on the inner face of construction.
   1. Manufacturers:
      a. Dur-O-Wall; Product DA1540.
      b. Hohman and Barnard; Product Textroflash Flashing.
      c. Grace Construction Products; Product Perm-a-Barrier.
      d. Substitutions: See Section 01 60 00 - Product Requirements.

B. Flashing System: System is for all heads, sills, shelf angles, spandrels, lintels, thru-wall conditions and other locations indicated on the drawings. System shall consist of a self-adhered rubberized asphalt laminate flashing material, self-adhered pre-formed flashing corners and end dams, stainless steel drip edge, and termination bar. Lap joints a minimum of six inches were required.

C. Factory-Fabricated Flashing Corners and End Dams: Stainless steel.
   1. Manufacturers:
      a. Mortar Net Solutions; CompleteFlash: www.mortarnet.com/#sle.
      b. Substitutions: See Section 01 60 00 - Product Requirements.

D. Stainless Steel Flashing: ASTM A 666, Type 304, soft temper; 26 gage (0.45 mm) thick; finish 2B to 2D. Utilize pre-welded interior and exterior corners and at exterior corners provide a blunt edge. Stainless Steel is to be used to form visible edge of concealed flashing.
   1. Manufacturers:
      a. Dur-O-Wall; Product DA 1545.
      b. Illinois Product Corporation: Product IPCO Drip Edge.

E. Lap Sealant: Butyl type as specified in Section 07 90 05.

2.07 ACCESSORIES

A. Preformed Control Joints: Rubber material. Provide with corner and tee accessories, fused joints.
   1. Manufacturers:
      a. Hohmann & Barnard, Inc (including Dur-O-Wal brand): www.h-b.com.
      b. WIRE-BOND: www.wirebond.com/#sle.
      c. Substitutions: See Section 01 60 00 - Product Requirements.

B. Joint Filler: Closed cell rubber; oversized 50 percent to joint width; self expanding; 3 inch wide x by maximum lengths available.
   1. Manufacturers:
      a. Dur-O-Wal: www.dur-o-wal.com.
      b. Hohmann & Barnard, Inc (including Dur -O-Wal brand): www.h-b.com.
      c. WIRE-BOND: www.wirebond.com/#sle.
      d. Substitutions: See Section 01 60 00 - Product Requirements.

C. Cavity Mortar Control: Semi-rigid polyethylene or polyester mesh panels, sized to thickness of wall cavity, and designed to prevent mortar droppings from clogging weeps and cavity vents and allow proper cavity drainage.
   1. Mortar Diverter: Panels designed for installation at flashing locations and fill the depth of the cavity.
      a. Manufacturers:
         1) Mortar Net USA, Ltd: www.mortarnet.com.
         2) Substitutions: See Section 01 60 00 - Product Requirements

D. Weeps:
   1. .Type: Polyester mesh.

E. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials. Special attention is to be paid to stainless steel flashing to make sure cleaning solution is completely removed and flashing left in like new condition.
   1. Manufacturers:
      a. EaCo Chem; Product NMD 80: www.eacochem.com
      b. Prosoco; Product 600 Detergent: www.prosoco.com
      c. Substitutions: See Section 01 60 00 - Product Requirements.

2.08 LINTELS

A. Miscellaneous steel lintels as indicated on structural drawings or Section 05 50 00 - Metal Fabrications. Minimum bearing of 8 inches on each side of opening.

2.09 MORTAR AND GROUT MIXES

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
   1. Do not use calcium chloride in mortar or grout.
   2. Use portland cement-lime mortar unless otherwise indicated.
   3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.

B. Mortar for Unit Masonry: ASTM C270, using the Proportion Specification.

C. Provide the following types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.
   1. Masonry below grade and in contact with earth: Type M.
   2. For reinforced masonry, use Type S.
   3. For mortar parge coats, use Type S.
   4. For exterior, above-grade, load-bearing and nonload-bearing walls and parapet walls; for interior load-bearing walls; for interior nonload-bearing partitions; and for other applications where another type is not indicated, use Type N.
   5. For interior nonload-bearing partitions, Type O may be used instead of Type N.

D. Colored Mortar: Proportion selected pigments and other ingredients to match Architect's sample, without exceeding manufacturer's recommended pigment-to-cement ratio.

E. Grout: ASTM C476
   1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with TMS 602/ACI 530.1/ASCE 6 for dimensions of grout spaces and pour height.
   2. Proportion grout in accordance with ASTM C 476.Provide grout with a slump of 8 to 11 inches as measured according to ASTM C 143/C 143M.

F. Grout: ASTM C476; consistency required to fill completely volumes indicated for grouting; fine grout for spaces with smallest horizontal dimension of 2 inches or less; coarse grout for spaces with smallest horizontal dimension greater than 2 inches.

G. Admixtures: Add to mixture at manufacturer's recommended rate and in accordance with manufacturer's instructions; mix uniformly.

H. Mixing: Use mechanical batch mixer and comply with referenced standards.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive masonry.

B. Verify that related items provided under other sections are properly sized and located.

C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.02 PREPARATION

A. Direct and coordinate placement of metal anchors supplied for installation under other sections.

B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

3.03 COLD AND HOT WEATHER REQUIREMENTS

A. Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

3.04 COURSING

A. Establish lines, levels, and coursing indicated. Protect from displacement.

B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

C. Concrete Masonry Units:
   1. Bond: Running. Do not use units with less-than-nominal 4 inch horizontal face dimensions at corners or joints.
   2. Coursing: One unit and one mortar joint to equal 8 inches.
   3. Mortar Joints: Concave.

D. Brick Units:
   1. Bond: Running.
   2. Coursing: Three units and three mortar joints to equal 8 inches.
   3. Mortar Joints: Concave.

3.05 PLACING AND BONDING

A. Mix clay units from multiple cubes when supplying the mason.

B. Lay hollow masonry units with face shell bedding on head and bed joints.

C. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.

D. Remove excess mortar and mortar smears as work progresses.

E. Remove excess mortar with water repellent admixture promptly. Do not use acids, sandblasting or high pressure cleaning methods.

F. Interlock intersections and external corners.

G. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.

H. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.

I. Broken, chipped, or stained masonry units will not be acceptable.

J. Isolate top joint of masonry partitions from horizontal structural framing members and slabs or decks with compressible joint filler.

K. Do not parge openings between veneer and back up material. This area to be filled as noted in Section 07 90 00 - Joint Sealers.

L. Build non-load bearing interior partitions full height of story to underside of solid floor or roof structure above unless otherwise indicated.
   1. Fasten partition to structure above as indicated.

M. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
   1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
   2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and that of other loads that may be placed on them during construction.

N. Placing Reinforcement: Comply with requirements in TMS 602/ACI 530.1/ASCE 6.

O. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
   1. Comply with requirements in TMS 602/ACI 530.1/ASCE 6 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
   2. Limit height of vertical grout pours to not more than 60 inches.

3.06 WEEPS/CAVITY VENTS

A. Install weeps in veneer walls at 24 inches on center horizontally above through-wall flashing, above shelf angles and lintels, and at bottom of walls.

3.07 CAVITY MORTAR CONTROL

A. Do not permit mortar to drop or accumulate into cavity air space or to plug weep/cavity vents.

B. For cavity walls, build inner wythe ahead of outer wythe to accommodate accessories.

C. Install cavity mortar diverter at base of cavity and at other flashing locations as recommended by manufacturer to prevent mortar droppings from blocking weep/cavity vents.

3.08 REINFORCEMENT AND ANCHORAGE - GENERAL

A. Masonry-Joint Reinforcement:
   1. Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere.
   2. Unless otherwise indicated on drawings or specified under specific wall type, install continuous horizontal joint reinforcement 16 inches on center.
   3. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
   4. Place continuous joint reinforcement in first and second joint below top of walls.
   5. Lap joint reinforcement ends minimum 6 inches.
   6. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.
   7. Provide continuity at wall intersections by using prefabricated T-shaped units. Provide continuity at corners by using prefabricated L-shaped units.

B. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Unless otherwise indicated on drawings or closer spacing is indicated under specific wall type, space anchors at maximum of 24 inches horizontally and 16 inches vertically.

3.09 REINFORCEMENT AND ANCHORAGE - SINGLE WYTHE MASONRY

A. Install horizontal joint reinforcement 16 inches on center.

B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.

C. Place continuous joint reinforcement in first and second joint below top of walls.

D. Lap joint reinforcement ends minimum 6 inches.

3.10 REINFORCEMENT AND ANCHORAGE - MASONRY VENEER

A. Install horizontal joint reinforcement 8 inches on center.

B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.

C. Place continuous joint reinforcement in first and second joint below top of walls.

D. Lap joint reinforcement ends minimum 6 inches.

E. Masonry Back-Up: Embed anchors to bond veneer at maximum 16 inches on center vertically and 36 inches on center horizontally. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches on center.

F. Stud Back-Up: Secure veneer anchors to stud framed back-up and embed into masonry veneer at maximum 16 inches on center vertically and 24 inches on center horizontally. Place

additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches on center.

G. Seismic Reinforcement: Connect veneer anchors with continuous horizontal wire reinforcement before embedding anchors in mortar.

3.11 REINFORCEMENT AND ANCHORAGES - CAVITY WALL MASONRY

A. Install horizontal joint reinforcement 16 inches on center.

B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of openings.

C. Place continuous joint reinforcement in first and second joint below top of walls.

D. Lap joint reinforcement ends minimum 6 inches.

E. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Space anchors at maximum of 24 inches horizontally and 16 inches vertically.

3.12 REINFORCEMENT AND ANCHORAGES - MULTIPLE WYTHE UNIT MASONRY

A. Install horizontal joint reinforcement 16 inches on center.

B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.

C. Place continuous joint reinforcement in first and second joint below top of walls.

D. Lap joint reinforcement ends minimum 6 inches.

E. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.

F. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Space anchors at maximum of 24 inches horizontally and 16 inches vertically.

3.13 MASONRY FLASHINGS

A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
   1. Extend flashings full width at such interruptions and at least 6 inches into adjacent masonry or turn up at least 8 inches to form watertight pan at non-masonry construction.
   2. Remove or cover protrusions or sharp edges that could puncture flashings.
   3. Seal lapped ends and penetrations of flashing before covering with mortar.

B. Extend metal flashings through exterior face of masonry and turn down to form drip. Install joint sealer below drip edge to prevent moisture migration under flashing.

C. Extend flashings to within 1/4 inch of exterior face of masonry.

D. Lap end joints of flashings at least 6 inches and seal watertight with mastic or elastic sealant.

E. Provide end dams at all locations where flashing terminates into different materials or changes direction.

3.14 LINTELS

A. Install loose steel lintels over openings.

B. Provide masonry lintels where shown and where openings of more than 12 inches (305 mm) for brick-size units and 24 inches for block-size units are shown without structural steel or other supporting lintels.

C. Provide minimum bearing of 8 inches at each jamb unless otherwise indicated.

3.15 GROUTED COMPONENTS

A. Lap splices minimum 24 bar diameters.

B. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.

C. Place and consolidate grout fill without displacing reinforcing.

D. At bearing locations, fill masonry cores with grout for a minimum 12 inches either side of opening.

E. Fill masonry cores with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.

3.16 CONTROL AND EXPANSION JOINTS

A. Do not continue horizontal joint reinforcement through control or expansion joints.

B. Form control joint with a sheet building paper bond breaker fitted to one side of the hollow contour end of the block unit. Fill the resultant core with grout fill. Rake joint at exposed unit faces for placement of backer rod and sealant.

C. Size control joints as indicated on drawings; if not shown, 3/4 inch wide and deep.

D. Size control joint in accordance with Section 07 92 00 for sealant performance.

E. Form expansion joint as detailed on drawings.

F. Locate joints at distances indicated on drawings but not more than 30 feet on center. Contact Architect for exact locations.

3.17 BUILT-IN WORK

A. As work progresses, install built-in metal door frames, glazed frames, fabricated metal frames, window frames, anchor bolts, and plates and other items to be built into the work and furnished under other sections.

B. Install built-in items plumb, level, and true to line.

C. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout. Verify that frame has bituminous coating and is prepared for grout.

D. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.

E. Do not build into masonry construction organic materials that are subject to deterioration.

3.18 TOLERANCES

A. Maximum Variation from Alignment of Columns: 1/4 inch.

B. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.

C. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.

D. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.

E. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.

F. Maximum Variation of Mortar Joint Thickness: Head joint, minus 1/4 inch, plus 3/8 inch.

G. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

3.19 CUTTING AND FITTING

A. Cut and fit for pipes, conduit, and sleeves. Coordinate with other sections of work to provide correct size, shape, and location.

B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.20 PARGING

A. Dampen masonry walls prior to parging.

B. Scarify each parging coat to ensure full bond to subsequent coat.

C. Strike top edge of parging at 45 degrees.

3.21 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.

B. Inspections: Special inspections according to Level B in TMS 402/ACI 530/ASCE 5.
   1. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.
   2. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement.
   3. Place grout only after inspectors have verified proportions of site-prepared grout.

C. Testing Frequency: One set of tests for each 5000 sq. ft. of wall area or portion thereof.

D. Concrete Masonry Unit Test: For each type of unit provided, according to ASTM C 140 for compressive strength.

E. Mortar Test (Property Specification): For each mix provided, according to ASTM C 780. Test mortar for mortar air content and compressive strength.

F. Grout Test (Compressive Strength): For each mix provided, according to ASTM C 1019.

G. Prism Test: For each type of construction provided, according to ASTM C 1314 at 7 days and at 28 days.

3.22 CLEANING

A. Remove excess mortar and mortar droppings.

B. Replace defective mortar. Match adjacent work.

C. Clean soiled surfaces with cleaning solution.

3.23 PROTECTION

A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

END OF SECTION

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SECTION 04 72 00
CAST STONE MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Architectural cast stone.

1.02 RELATED REQUIREMENTS

A. Section 04 20 00 - Unit Masonry: Installation of cast stone in conjunction with masonry.

B. Section 07 92 00 - Joint Sealants: Sealing joints indicated to be left open for sealant.

1.03 REFERENCE STANDARDS

A. ACI CODE-318 - Building Code for Structural Concrete—Code Requirements and Commentary; 2025.

B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2024.

C. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2026.

D. ASTM A767/A767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement; 2024.

E. ASTM A884/A884M - Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement; 2025.

F. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2024.

G. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2024a.

H. ASTM C150/C150M - Standard Specification for Portland Cement; 2024.

I. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2026.

J. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2024.

K. ASTM C642 - Standard Test Method for Density, Absorption, and Voids in Hardened Concrete; 2021.

L. ASTM C1364 - Standard Specification for Architectural Cast Stone; 2025.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Test results of cast stone components made previously by the manufacturer.

C. Shop Drawings: Include elevations, dimensions, layouts, profiles, cross sections, reinforcement, exposed faces, arrangement of joints, anchoring methods, anchors, and piece numbers.

D. Cast Stone Color Selection Samples.

E. Mortar Color Selection Samples.

F. Verification Samples: Pieces of actual cast stone components not less than 6 inches square, illustrating range of color and texture to be anticipated in components furnished for the project.

G. Manufacturer's Qualification Data: Documentation showing compliance with specified requirements.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications:

1. A firm with a minimum of 5 years experience producing cast stone of types required for project.

2. Adequate plant capacity to furnish quality, sizes, and quantity of cast stone required without delaying progress of the work.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least five years of documented experience.

1.06 MOCK-UPS

A. Provide full size cast stone components for installation in mock-up of exterior wall.

B. See Section 01 40 00 - Quality Requirements for additional requirements.

C. Approved mock-up will become standard for appearance and workmanship.

D. Mock-up may not remain as part of the completed work.

E. Remove mock-up not incorporated into the work and dispose of debris.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver cast stone components secured to shipping pallets and protected from damage and discoloration. Protect corners from damage.

B. Number each piece individually to match shop drawings and schedule.

C. Store cast stone components and installation materials in accordance with manufacturer's instructions.

D. Store cast stone components on pallets with nonstaining, waterproof covers. Ventilate under covers to prevent condensation. Prevent contact with dirt.

E. Protect cast stone components during handling and installation to prevent chipping, cracking, or other damage.

F. Store mortar materials where contamination can be avoided.

G. Schedule and coordinate production and delivery of cast stone components with unit masonry work to optimize on-site inventory and to avoid delaying the work.

PART 2 PRODUCTS

2.01 ARCHITECTURAL CAST STONE

A. Cast Stone: Architectural concrete product manufactured to simulate appearance of natural granite, complying with ASTM C1364.
   1. Compressive Strength: As specified in ASTM C1364; calculate strength of pieces to be field cut at 80 percent of uncut piece.
   2. Freeze-Thaw Resistance: Demonstrated by laboratory testing in accordance with ASTM C1364.
   3. Surface Texture: Fine grained texture, with no bugholes, air voids, or other surface blemishes visible from distance of 20 feet.
   4. Color: Selected by Architect from manufacturer's full range.
   5. Remove cement film from exposed surfaces before packaging for shipment.

B. Shapes: Provide shapes indicated on drawings.
   1. Variation from Any Dimension, Including Bow, Camber, and Twist: Maximum of plus/minus 1/8 inch or length divided by 360, whichever is greater, but not more than 1/4 inch.
   2. Unless otherwise indicated on drawings, provide:
      a. Wash or slope of 1:12 on exterior horizontal surfaces.
      b. Drips on projecting components, wherever possible.
      c. Raised fillets at back of sills and at ends to be built in.

C. Reinforcement: Provide reinforcement as required to withstand handling and structural stresses; comply with ACI CODE-318.
   1. Pieces More than 24 inches in Any Dimension: Provide full length two-way reinforcement of cross-sectional area not less than 0.25 percent of unit cross-sectional area.

2.02 MATERIALS

A. Portland Cement: ASTM C150/C150M.
   1. For Mortar: Type I or II, except Type III may be used in cold weather.

B. Coarse Aggregate: ASTM C33/C33M, except for gradation; granite, quartz, or limestone.

C. Fine Aggregate: ASTM C33/C33M, except for gradation; natural or manufactured sands.

D. Admixtures: ASTM C494/C494M.

E. Water: Potable.

F. Reinforcing Bars: ASTM A615/A615M, Grade 40 (40,000 psi), deformed bars, galvanized.
   1. Galvanized in accordance with ASTM A767/A767M, Class I.

G. Steel Welded Wire Reinforcement: ASTM A1064/A1064M, galvanized or ASTM A884/A884M, epoxy coated.

H. Embedded Anchors, Dowels, and Inserts: Type 304 stainless steel, of type and size as required for conditions.

I. Shelf Angles and Similar Structural Items: Hot-dip galvanized steel per ASTM A123/A123M, of shapes and sizes as required for conditions.

J. Mortar: Portland cement-lime, as specified in Section 04 05 11 ; do not use masonry cement.

K. Cleaner: General-purpose cleaner designed for removing mortar and grout stains, efflorescence, and other construction stains from new masonry surfaces without discoloring or damaging masonry surfaces; approved for intended use by cast stone manufacturer and by cleaner manufacturer for use on cast stone and adjacent masonry materials.

2.03 SOURCE QUALITY CONTROL

A. Test compressive strength and absorption of specimens selected at random from plant production.
   1. Test in accordance with ASTM C642.
   2. Select specimens at rate of 3 per 500 cubic feet, with a minimum of 3 per production week.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine construction to receive cast stone components. Notify Architect if construction is not acceptable.

B. Do not begin installation until unacceptable conditions have been corrected.

3.02 INSTALLATION

A. Install cast stone components in conjunction with masonry, complying with requirements of Section 04 20 00.

B. Mechanically anchor cast stone units indicated; set remainder in mortar.

C. Setting:
   1. Drench cast stone components with clear, running water immediately before installation.
   2. Set units in a full bed of mortar unless otherwise indicated.
   3. Fill vertical joints with mortar.
   4. Fill dowel holes and anchor slots completely with mortar or non-shrink grout.

3.03 TOLERANCES

A. Joints: Make all joints 3/8 inch, except as otherwise detailed.
   1. Rake mortar joints 3/4 inch for pointing.
   2. Remove excess mortar from face of stone before pointing joints.
   3. Point joints with mortar in layers 3/8 inch thick and tool to a slight concave profile.
   4. Leave the following joints open for sealant:

a. Head joints in top courses, including copings, parapets, cornices, sills, and steps.
b. Joints in projecting units.
c. Joints between rigidly anchored units, including soffits, panels, and column covers.
d. Joints below lugged sills and stair treads.
e. Joints below ledge and relieving angles.
f. Joints labeled "expansion joint".

B. Installation Tolerances:
1. Variation from Plumb: Not more than 1/8 inch in 10 feet or 1/4 inch in 20 feet or more.
2. Variation from Level: Not more than 1/8 inch in 10 feet or 1/4 inch in 20 feet, or 3/8 inch maximum.
3. Variation in Joint Width: Not more than 1/8 inch in 36 inches or 1/4 of nominal joint width, whichever is less.
4. Variation in Plane Between Adjacent Surfaces (Lipping): Not more than 1/16 inch difference between planes of adjacent units or adjacent surfaces indicated to be flush with units.

3.04 REPAIR

A. Repair chips and other surface damage noticeable when viewed in direct daylight at 20 feet.

B. Repair with matching touch-up material provided by the manufacturer and in accordance with manufacturer's instructions.

C. Repair methods and results subject to Architect 's approval.

3.05 CLEANING

A. Keep cast stone components clean as work progresses.

B. Clean completed exposed cast stone after mortar is thoroughly set and cured.
1. Wet surfaces with water before applying cleaner.
2. Apply cleaner to cast stone in accordance with manufacturer's instructions.
3. Remove cleaner promptly by rinsing thoroughly with clear water.
4. Do not use acidic cleaners.

3.06 PROTECTION

A. Protect completed work from damage.

B. Clean, repair, or restore damaged or mortar-splashed work to condition of new work.

END OF SECTION

SECTION 05 12 00
STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:

1. Structural steel.
2. Shear stud connectors.
3. Shrinkage-resistant grout.

B. Related Requirements:

1. Section 053100 "Steel Decking" for field installation of shear stud connectors through deck.
2. Section 099113 "Exterior Painting" and Section 099123 "Interior Painting" for painting requirements.

1.03 DEFINITIONS

A. Structural Steel: Elements of the structural frame indicated on Drawings and as described in ANSI/AISC 303.

1.04 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

1.05 ACTION SUBMITTALS

A. Product Data:

1. Structural-steel materials.
2. High-strength, bolt-nut-washer assemblies.
3. Shear stud connectors.
4. Anchor rods.
5. Threaded rods.
6. Shop primer.
7. Shrinkage-resistant grout.

B. Shop Drawings: Show fabrication of structural-steel components.

1. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
2. Include embedment drawings.
3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.
4. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical, high-strength bolted connections.

C. Welding Procedure Specifications (WPSs) and Procedure Qualification Records (PQRs): Provide in accordance with AWS D1.1/D1.1M for each welded joint whether prequalified or qualified by testing, including the following:

1. Power source (constant current or constant voltage).
2. Electrode manufacturer and trade name, for demand-critical welds.

D. Delegated-Design Submittal: For structural-steel connections indicated on Drawings to comply with design loads, include analysis data.

1.06 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer, fabricator and testing agency.

B. Welding certificates.

C. Mill test reports for structural-steel materials, including chemical and physical properties.

D. Product Test Reports: For the following:

1. Bolts, nuts, and washers, including mechanical properties and chemical analysis.
2. Direct-tension indicators.
3. Tension-control, high-strength, bolt-nut-washer assemblies.
4. Shear stud connectors.

E. Source quality-control reports.

F. Field quality-control reports.

1.07 QUALITY ASSURANCE

A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category BU or is accredited by the IAS Fabricator Inspection Program for Structural Steel (Acceptance Criteria 172).

B. Installer Qualifications: A qualified Installer who participates in the AISC Quality Certification Program and is designated an AISC-Certified Erector, Category CSE.

C. Welding Qualifications: Qualify procedures and personnel in accordance with AWS D1.1/D1.1M.

1. Welders and welding operators performing work on bottom-flange, demand-critical welds shall pass the supplemental welder qualification testing, as required by AWS D1.8/D1.8M. FCAW-S and FCAW-G shall be considered separate processes for welding personnel qualification.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.

1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.

1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.
2. Clean and relubricate bolts and nuts that become dry or rusty before use.
3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F3125/F3125M, Grade F1852 bolt assemblies and for retesting bolt assemblies after lubrication.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Comply with applicable provisions of the following specifications and documents:

1. ANSI/AISC 303.
2. ANSI/AISC 360.
3. RCSC's "Specification for Structural Joints Using High-Strength Bolts."

B. Connection Design Information:

1. Option 2: Fabricator's experienced steel detailer shall select or complete connections in accordance with ANSI/AISC 303.
    a. Select and complete connections using ANSI/AISC 360.
    b. Use Load and Resistance Factor Design; data are given at factored-load level.

C. Construction: Shear wall system.

2.02 STRUCTURAL-STEEL MATERIALS

A. W-Shapes: ASTM A992/A992M.

B. Channels, Angles: ASTM A572/A572M.

C. Plate and Bar: ASTM A572/A572M.

D. Cold-Formed Hollow Structural Sections: ASTM A500/A500M, Grade C.

E. Steel Pipe: ASTM A53/A53M, Grade B.

1. Weight Class: Standard.
2. Finish: Black except where indicated to be galvanized.

F. Welding Electrodes: Comply with AWS requirements.

2.03 BOLTS AND CONNECTORS

A. High-Strength A325 Bolts, Nuts, and Washers: ASTM F3125/F3125M, Grade A325, Type 1, heavy-hex steel structural bolts; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers; all with plain finish.

1. Direct-Tension Indicators: ASTM F959/F959M, Type 325-1, compressible-washer type with plain finish.

B. High-Strength A490 Bolts, Nuts, and Washers: ASTM F3125/F3125M, Grade A490, Type 1, heavy-hex steel structural bolts or Grade F2280 tension-control, bolt-nut-washer assemblies with splined ends; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers; all with plain finish.

1. Direct-Tension Indicators: ASTM F959/F959M, Type 490-1, compressible-washer type with plain finish.

C. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F3125/F3125M, Grade F1852, Type 1, heavy-hex head assemblies, consisting of steel structural bolts with splined ends; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers.

1. Finish: Plain.

D. Shear Stud Connectors: ASTM A108, AISI C-1015 through C-1020, headed-stud type, cold-finished carbon steel; AWS D1.1/D1.1M, Type B.

2.04 RODS

A. Unheaded Anchor Rods: ASTM F1554, Grade 36.

1. Configuration: Straight.
2. Nuts: ASTM A563 heavy-hex carbon steel.
3. Plate Washers: ASTM A36/A36M carbon steel.

4. Washers: ASTM F436, Type 1, hardened carbon steel.
5. Finish: Plain.

B. Threaded Rods: ASTM A36/A36M.
1. Nuts: ASTM A63 heavy-hex carbon steel.
2. Washers: ASTM A36/A36M carbon steel.
3. Finish: Plain.

2.05 PRIMER

A. Steel Primer:
1. Comply with Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

2.06 SHRINKAGE-RESISTANT GROUT

A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C1107/C1107M, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.07 FABRICATION

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate in accordance with ANSI/AISC 303 and to ANSI/AISC 360.
1. Camber structural-steel members where indicated.
2. Fabricate beams with rolling camber up.
3. Identify high-strength structural steel in accordance with ASTM A6/A6M and maintain markings until structural-steel framing has been erected.
4. Mark and match-mark materials for field assembly.
5. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.

B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.
1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1/D1.1M.

C. Bolt Holes: Cut, drill,or punch standard bolt holes perpendicular to metal surfaces.

D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.

E. Cleaning: Clean and prepare steel surfaces that are to remain unpainted in accordance with SSPC-SP 3.

F. Shear Stud Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Weld using automatic end welding of headed-stud shear connectors in accordance with AWS D1.1/D1.1M and manufacturer's written instructions.

G. Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel members.
1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
2. Baseplate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

2.08 SHOP CONNECTIONS

A. High-Strength Bolts: Shop install high-strength bolts in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts" for type of bolt and type of joint specified.

1. Joint Type: Snug tightened.

B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in ANSI/AISC 303 for mill material.

2.09 GALVANIZING

A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel in accordance with ASTM A123/A123M.

1. Fill vent and drain holes that are exposed in the finished Work unless they function as weep holes, by plugging with zinc solder and filing off smooth.

2. Galvanize lintels and shelf angles attached to structural-steel frame and located in exterior walls.

2.10 SOURCE QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform shop tests and inspections.

1. Allow testing agency access to places where structural-steel work is being fabricated or produced to perform tests and inspections.

2. Bolted Connections: Inspect and test shop-bolted connections in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts."

3. Welded Connections: Visually inspect shop-welded connections in accordance with AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:

a. Liquid Penetrant Inspection: ASTM E165/E165M.

b. Magnetic Particle Inspection: ASTM E709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.

c. Ultrasonic Inspection: ASTM E164.

d. Radiographic Inspection: ASTM E94/E94M.

4. In addition to visual inspection, test and inspect shop-welded shear stud connectors in accordance with requirements in AWS D1.1/D1.1M for stud welding and as follows:

a. Perform bend tests if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear stud connector.

b. Conduct tests in accordance with requirements in AWS D1.1/D1.1M on additional shear stud connectors if weld fracture occurs on shear stud connectors already tested.

5. Prepare test and inspection reports.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify, with certified steel erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.

1. Prepare a certified survey of existing conditions. Include bearing surfaces, anchor rods, bearing plates, and other embedments showing dimensions, locations, angles, and elevations.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated on Drawings.

1. Do not remove temporary shoring supporting composite deck construction and structural-steel framing until cast-in-place concrete has attained its design compressive strength.

3.03 ERECTION

A. Set structural steel accurately in locations and to elevations indicated and in accordance with ANSI/AISC 303 and ANSI/AISC 360.

B. Baseplates, Bearing Plates and Leveling Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.

1. Set plates for structural members on wedges, shims, or setting nuts as required.
2. Weld plate washers to top of baseplate.
3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
4. Promptly pack shrinkage-resistant grout solidly between bearing surfaces and plates, so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for grouting.

C. Maintain erection tolerances of structural steel within ANSI/AISC 303.

D. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that are in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

1. Level and plumb individual members of structure. Slope roof framing members to slopes indicated on Drawings.

E. Splice members only where indicated.

F. Do not use thermal cutting during erection.

G. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.

3.04 FIELD CONNECTIONS

A. High-Strength Bolts: Install high-strength bolts in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts" for bolt and joint type specified.

1. Joint Type: Snug tightened.

B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Comply with ANSI/AISC 303 and ANSI/AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
2. Remove backing bars or runoff tabs, back gouge, and grind steel smooth.
3. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in ANSI/AISC 303 for mill material.

3.05 REPAIR

A. Galvanized Surfaces: Clean areas where galvanizing is damaged or missing, and repair galvanizing to comply with ASTM A780/A780M.

B. Touchup Painting:

1. Cleaning and touchup painting are specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

3.06 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a special inspector to perform the following special inspections:

1. Verify structural-steel materials and inspect steel frame joint details.
2. Verify weld materials and inspect welds.
3. Verify connection materials and inspect high-strength bolted connections.

B. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

1. Bolted Connections: Inspect bolted connections in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts."
2. Welded Connections: Visually inspect field welds in accordance with AWS D1.1/D1.1M.
    a. In addition to visual inspection, test and inspect field welds in accordance with AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:
        1) Liquid Penetrant Inspection: ASTM E165/E165M.
        2) Magnetic Particle Inspection: ASTM E709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
        3) Ultrasonic Inspection: ASTM E164.
        4) Radiographic Inspection: ASTM E94/E94M.

END OF SECTION

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SECTION 05 31 00
STEEL DECKING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:

1. Composite floor deck.

B. Related Requirements:

1. Section 033000 "Cast-in-Place Concrete" for normal-weight and lightweight structural concrete fill over steel deck.
2. Section 051200 "Structural Steel Framing" for shop- and field-welded shear connectors.
3. Section 099123 "Interior Painting" for repair painting of primed deck and finish painting of deck.

1.03 ACTION SUBMITTALS

A. Product Data: For the following:

1. Composite floor deck.

B. Shop Drawings:

1. Include layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.

1.04 INFORMATIONAL SUBMITTALS

A. Welding certificates.

B. Product Certificates: For each type of steel deck.

C. Product Test Reports: For tests performed by a qualified testing agency, indicating that each of the following complies with requirements:

1. Power-actuated mechanical fasteners.
2. Acoustical roof deck.

D. Research Reports: For steel deck, from ICC-ES.

E. Field quality-control reports.

1.05 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM E329 for testing indicated.

B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel."

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.

B. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

1. Protect and ventilate acoustical cellular roof deck with factory-installed insulation to maintain insulation free of moisture.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."

2.02 COMPOSITE FLOOR DECK

A. Composite Floor Deck: Fabricate panels, with integrally embossed or raised pattern ribs and interlocking side laps, to comply with "SDI Specifications and Commentary for Composite Steel Floor Deck," in SDI Publication No. 31, with the minimum section properties indicated, and with the following:

1. Galvanized-Steel Sheet: ASTM A653/A653M, Structural Steel (SS), Grade 33, G60 zinc coating.
2. Profile Depth: As indicated.
3. Design Uncoated-Steel Thickness: As indicated.
4. Span Condition: Triple span or more.

2.03 ACCESSORIES

A. Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.

B. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.

C. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 minimum diameter.

D. Flexible Closure Strips: Vulcanized, closed-cell, synthetic rubber.

E. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi, not less than 0.0359-inch design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.

F. Pour Stops and Girder Fillers: Steel sheet, minimum yield strength of 33,000 psi, of same material and finish as deck, and of thickness and profile recommended by SDI Publication No. 31 for overhang and slab depth.

G. Column Closures, End Closures, Z-Closures, and Cover Plates: Steel sheet, of same material, finish, and thickness as deck unless otherwise indicated.

H. Piercing Hanger Tabs: Piercing steel sheet hanger attachment devices for use with floor deck.

I. Flat Sump Plates: Single-piece steel sheet, 0.0747 inch thick, of same material and finish as deck. For drains, cut holes in the field.

J. Galvanizing Repair Paint: ASTM A780/A780M.

K. Repair Paint: Manufacturer's standard rust-inhibitive primer of same color as primer.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION, GENERAL

A. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 31, manufacturer's written instructions, and requirements in this Section.

B. Install temporary shoring before placing deck panels if required to meet deflection limitations.

C. Locate deck bundles to prevent overloading of supporting members.

D. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.

E. Place deck panels flat and square and fasten to supporting frame without warp or deflection.

F. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.

G. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.

H. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.

I. Mechanical fasteners may be used in lieu of welding to fasten deck. Locate mechanical fasteners and install according to deck manufacturer's written instructions.

3.03 INSTALLATION OF FLOOR DECK

A. Fasten floor-deck panels to steel supporting members as indicated.

B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding the lesser of one-half of the span or 36 inches, and as follows:

1. Mechanically fasten with self-drilling, No. 10 diameter or larger, carbon-steel screws.

C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:

1. End Joints: Lapped or butted at Contractor's option.

D. Pour Stops and Girder Fillers: Weld steel sheet pour stops and girder fillers to supporting structure according to SDI recommendations unless otherwise indicated.

E. Floor-Deck Closures: Weld steel sheet column closures, cell closures, and Z-closures to deck, according to SDI recommendations, to provide tight-fitting closures at open ends of ribs and sides of deck.

3.04 REPAIR

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A780/A780M and manufacturer's written instructions.

B. Repair Painting:

1. Wire brushing, cleaning, and repair painting of bottom deck surfaces are included in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

2. Wire brushing, cleaning, and repair painting of rust spots, welds, and abraded areas of both deck surfaces are included in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

3.05 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Field welds will be subject to inspection.

C. Prepare test and inspection reports.

END OF SECTION

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SECTION 05 50 00
METAL FABRICATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Shop fabricated steel items.

1.02 REFERENCE STANDARDS

A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

B. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2024.

C. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

D. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2024.

E. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2021.

F. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2021.

G. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi, 144 ksi, and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength; 2026.

H. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 2004.

I. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic); 2019.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.

PART 2 PRODUCTS

2.01 MATERIALS - STEEL

A. Steel Sections: ASTM A36/A36M.

B. Steel Tubing: ASTM A501/A501M hot-formed structural tubing.

C. Plates: ASTM A283/A283M.

D. Pipe: ASTM A53/A53M, Grade B Schedule 40, hot-dip galvanized finish.

E. Mechanical Fasteners: Same material as or compatible with materials being fastened; type consistent with design and specified quality level.

F. Bolts, Nuts, and Washers: ASTM A307, Grade A, galvanized to ASTM A153/A153M where connecting galvanized components.

G. Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, galvanized to ASTM A153/A153M where connecting galvanized components.

H. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

I. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.02 FABRICATION

A. Fit and shop assemble items in largest practical sections, for delivery to site.

B. Fabricate items with joints tightly fitted and secured.

C. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

D. Furnish components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.03 FABRICATED ITEMS

A. Bollards: Steel pipe, concrete filled, crowned cap, as detailed; galvanized finish.

B. Joist Hangers: Strap anchors, fabricated with sheet steel, 18 gauge, 0.0478 inch minimum base metal thickness; galvanized finish.

C. Ledge Angles, Shelf Angles, Channels, and Plates Not Attached to Structural Framing: For support of metal decking; prime paint finish.

D. Lintels: As detailed; galvanized finish.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install items plumb and level, accurately fitted, free from distortion or defects.

B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

C. Obtain approval prior to site cutting or making adjustments not scheduled.

3.02 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.

END OF SECTION

SECTION 06 10 00
ROUGH CARPENTRY

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:

1. Framing with dimension lumber.
2. Framing with engineered wood products.
3. Shear wall panels.
4. Rooftop equipment bases and support curbs.
5. Wood blocking and nailers.

B. Related Requirements:

1. Section 06 17 53 "Shop-Fabricated Wood Trusses" for wood trusses made from dimension lumber.

1.03 DEFINITIONS

A. Boards or Strips: Lumber of less than 2 inches nominal size in least dimension.

B. Dimension Lumber: Lumber of 2 inches nominal size or greater but less than 5 inches nominal size in least dimension.

C. Exposed Framing: Framing not concealed by other construction.

D. OSB: Oriented strand board.

E. Timber: Lumber of 5 inches nominal size or greater in least dimension.

1.04 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
2. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

1.05 INFORMATIONAL SUBMITTALS

A. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.

B. Evaluation Reports: For the following, from ICC-ES:

1. Wood-preservative-treated wood.

2. Engineered wood products.

3. Shear panels.

4. Power-driven fasteners.

5. Post-installed anchors.

6. Metal framing anchors.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Stack wood products flat with spacers beneath and between each bundle to provide air circulation. Protect wood products from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.01 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Grade lumber by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.

2. Dress lumber, S4S, unless otherwise indicated.

B. Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated.

C. Engineered Wood Products: Acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.

1. Allowable design stresses, as published by manufacturer, shall meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

2.02 WOOD-PRESERVATIVE-TREATED LUMBER

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.

2. For exposed items indicated to receive a stained or natural finish, chemical formulations shall not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

D. Application: Treat items indicated on Drawings, and the following:

1. Wood sills, sleepers, blocking, and similar concealed members in contact with masonry or concrete.

2. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.

3. Wood floor plates that are installed over concrete slabs-on-grade.

2.03 DIMENSION LUMBER FRAMING

A. Load-Bearing Partitions: No. 2 grade or better.

1. Application: Exterior walls and interior load-bearing partitions.

2. Species:

a. Spruce-pine-fir; NLGA.

B. Joists, Rafters, and Other Framing Not Listed Above: No. 2 grade or better.

1. Species:

a. Southern pine; SPIB.

2.04 ENGINEERED WOOD PRODUCTS

A. Source Limitations: Obtain each type of engineered wood product from single source from a single manufacturer.

B. Laminated-Veneer Lumber: Structural composite lumber made from wood veneers with grain primarily parallel to member lengths, evaluated and monitored according to ASTM D5456 and manufactured with an exterior-type adhesive complying with ASTM D2559.

1. Minimum Extreme Fiber Stress in Bending, Edgewise: 2600 psi for 12-inch nominal-depth members.

2. Minimum Modulus of Elasticity, Edgewise: 2,000,000 psi.

2.05 SHEAR WALL PANELS

A. Wood-Framed Shear Wall Panels: Prefabricated assembly consisting of wood perimeter framing, tie downs, and Exposure I, Structural I plywood or OSB sheathing.

2.06 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.

2. Nailers.

B. Dimension Lumber Items: No. 2 grade or better lumber of the following species:

1. Southern pine; SPIB.

C. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.

D. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

E. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

2.07 FASTENERS

A. General: Fasteners shall be of size and type indicated and shall comply with requirements specified in this article for material and manufacture.

1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A153/A153M.

B. Nails, Brads, and Staples: ASTM F1667.

C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

D. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01, ICC-ES AC58, ICC-ES AC193 or ICC-ES AC308 as appropriate for the substrate.

1. Material: Carbon-steel components, zinc plated to comply with ASTM B633, Class Fe/Zn 5.

2.08 METAL FRAMING ANCHORS

A. Allowable design loads, as published by manufacturer, shall meet or exceed those of basis-of-design products. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a

qualified independent testing agency. Framing anchors shall be punched for fasteners adequate to withstand same loads as framing anchors.

B. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A653/A653M, G60 coating designation.

1. Use for interior locations unless otherwise indicated.

C. Hot-Dip, Heavy-Galvanized Steel Sheet: ASTM A653/A653M; structural steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 coating designation; and not less than 0.036 inch thick.

1. Use for wood-preservative-treated lumber and where indicated.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

B. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.

C. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry accurately to other construction. Locate furring, nailers, blocking,and similar supports to comply with requirements for attaching other construction.

D. Install shear wall panels to comply with manufacturer's written instructions.

E. Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.

F. Do not splice structural members between supports unless otherwise indicated.

G. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.

1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches o.c.

H. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:

1. Fire block furred spaces of walls, at each floor level, at ceiling, and at not more than 96 inches o.c. with solid wood blocking or noncombustible materials accurately fitted to close furred spaces.

2. Fire block concealed spaces of wood-framed walls and partitions at each floor level, at ceiling line of top story, and at not more than 96 inches o.c. Where fire blocking is not inherent in framing system used, provide closely fitted solid wood blocks of same width as framing members and 2-inch nominal thickness.

3. Fire block concealed spaces between floor sleepers with same material as sleepers to limit concealed spaces to not more than 100 sq. ft. and to solidly fill space below partitions.

I. Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

J. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

1. Use inorganic boron for items that are continuously protected from liquid water.

2. Use copper naphthenate for items not continuously protected from liquid water.

K. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.

L. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code (IBC).

2. ICC-ES evaluation report for fastener.

M. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

3.02 WOOD BLOCKING, AND NAILER INSTALLATION

A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

3.03 WOOD FURRING INSTALLATION

A. Install level and plumb with closure strips at edges and openings. Shim with wood as required for tolerance of finish work.

B. Furring to Receive Plywood or Hardboard Paneling: Install 1-by-3-inch nominal-size furring vertically at 24 inches o.c.

C. Furring to Receive Gypsum Board: Install 1-by-2-inch nominal-size furring vertically at 16 inches o.c.

3.04 WALL AND PARTITION FRAMING INSTALLATION

A. General: Provide single bottom plate and double top plates using members of 2-inch nominal thickness whose widths equal that of studs, except single top plate may be used for non-load-bearing partitions. Fasten plates to supporting construction unless otherwise indicated.

1. For exterior walls, provide 2-by-6-inch nominal- size wood studs spaced 16 inches o.c. unless otherwise indicated.

2. For interior partitions and walls, provide indicated nominal- size wood studs spaced as indicated.

3. Provide continuous horizontal blocking at midheight of partitions more than 96 inches high, using members of 2-inch nominal thickness and of same width as wall or partitions.

B. Construct corners and intersections with three or more studs, except that two studs may be used for interior non-load-bearing partitions.

C. Frame openings with multiple studs and headers. Provide nailed header members of thickness equal to width of studs. Support headers on jamb studs.

1. For non-load-bearing partitions, provide double-jamb studs and headers not less than 4-inch nominal depth for openings 48 inches and less in width, 6-inch nominal depth for openings 48 to 72 inches in width, 8-inch nominal depth for openings 72 to 120 inches in width, and not less than 10-inch nominal depth for openings 10 to 12 feet in width.

2. For load-bearing walls, provide double-jamb studs for openings 60 inches and less in width, and triple-jamb studs for wider openings. Provide headers of depth indicated or as indicated.

3.05 FLOOR JOIST FRAMING INSTALLATION

A. General: Install floor joists with crown edge up and support ends of each member with not less than 1-1/2 inches of bearing on wood or metal, or 3 inches on masonry. Attach floor joists as follows:

1. Where supported on wood members, by toe nailing or by using metal framing anchors.

2. Where framed into wood supporting members, by using wood ledgers as indicated or, if not indicated, by using metal joist hangers.

B. Frame openings with headers and trimmers supported by metal joist hangers; double headers and trimmers where span of header exceeds 48 inches.

C. Do not notch in middle third of joists; limit notches to one-sixth depth of joist, one-third at ends. Do not bore holes larger than one-third depth of joist; do not locate closer than 2 inches from top or bottom.

D. Provide solid blocking of 2-inch nominal thickness by depth of joist at ends of joists unless nailed to header or band.

E. Lap members framing from opposite sides of beams, girders, or partitions not less than 4 inches or securely tie opposing members together. Provide solid blocking of 2-inch nominal thickness by depth of joist over supports.

F. Provide solid blocking between joists under jamb studs for openings.

G. Under non-load-bearing partitions, provide double joists separated by solid blocking equal to depth of studs above.

1. Provide triple joists separated as above, under partitions receiving ceramic tile and similar heavy finishes or fixtures.

H. Provide bridging of type indicated below, at intervals of 96 inches o.c., between joists.

1. Diagonal wood bridging formed from bevel-cut, 1-by-3-inch nominal-size lumber, double-crossed and nailed at both ends to joists.

2. Steel bridging installed to comply with bridging manufacturer's written instructions.

3.06 CEILING JOIST AND RAFTER FRAMING INSTALLATION

A. Ceiling Joists: Install with crown edge up and complying with requirements specified above for floor joists. Face nail to ends of parallel rafters.

1. Where ceiling joists are at right angles to rafters, provide additional short joists parallel to rafters from wall plate to first joist; nail to ends of rafters and to top plate, and nail to first joist or anchor with framing anchors or metal straps. Provide 1-by-8-inch nominal-size or 2-by-4-inch nominal-size stringers spaced 48 inches o.c. crosswise over main ceiling joists.

B. Provide special framing as indicated for eaves, overhangs, dormers, and similar conditions if any.

3.07 PROTECTION

A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION

SECTION 06 16 13.02
AIR AND MOISTURE RESISTANT SHEATHING

GENERAL

1.01 SECTION INCLUDES

A. Wall sheathing with integral weather-resistive barrier

B. Roof sheathing with integral roof underlayment.

1.02 ACTION SUBMITTALS

A. Product Data: Product Data: For each type of sheathing product. Include manufacturer's technical data indicating performance properties

B. Shop Drawings: Indicating location and extent of sheathing, accessories, and assemblies. Include details of joints, corners, and penetrations.

1.03 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: ICC-ES, for wood sheathing and seam tape and flashing.

B. Product Certifications: Indicating that sheathing products comply with indicated ICC-ES Acceptance Criteria.

C. Warranty: Sample unexecuted copy of manufacturer warranty.

1.04 CLOSEOUT SUBMITTALS

A. Warranty: Executed copy of manufacturer warranty

1.05 PREINSTALLATION MEETING

A. Preinstallation Meeting: Convene at least one week before starting work of this section.
   1. Required attendance: Contractor, Owner's Representative, Installers, Manufacturer's Representative.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Capable of demonstrating that all wood procurement operations are conducted in accordance with procedures and policies of the Sustainable Forestry Initiative (SFI) Program, and the 2015-2019 Standards.

B. Wall sheathing meeting requirements for water-resistive barrier in accordance with ICC-ES AC310 – Water-resistive Membranes Factory-bonded to Wood-based Structural Sheathing, Used as Water-resistive Barriers.

C. Roof sheathing meeting requirements for roof underlayment in accordance with ICC-ES AC266- Wood Structural Panel Roof Sheathing Factory-laminated with an Alternative Roof Underlayment.

1.07 MOCK-UPS

A. Provide components for construction of a mock-up wall as indicated in Section 01 40 00 Quality Requirements and as indicated on the drawings.

B. Locate as indicated on drawings.

C. Provide all materials required for the mock-up wall.

D. Refer to Section 01 40 00 Quality Requirements for addtional information.

E. Mock-up may not remain as part of the Work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Comply with manufacturer's written instructions for protection of sheathing products from weather prior to installation.

1.09 WARRANTY

A. Manufacturer's Warranty: Manufacturer’s standard form in which sheathing manufacturer agrees to repair or replace sheathing products that demonstrate deterioration or failure under normal use due to manufacturing defects within warranty period specified, when installed according to manufacturer's instructions.
   1. Warranty Period for Sheathing Products: 30 years from date of Substantial Completion.

PRODUCTS

2.01 MANUFACTURER

A. Provide entire sheathing system with products from a single manufacturer.

B. Basis of Design: Huber Engineered Woods LLC, Charlotte NC; Phone: (800) 933-9220; Website: www.huberwood.com
   1. Substitutions: See Section 01 60 00-Product Requirements.

2.02 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics:
   1. Fire-Resistance Ratings (Wall sheathing): Where irovide approved products that are part of fire-resistance-rated assemblies tested in accordance with ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials
   2. Exterior Fire-Test Exposure (Roof sheathing): Provide approved products that are part of fire-resistance-rated assemblies with approved Class A coverings, tested in accordance with ASTM E108 – Standard Test Methods for Fire Test of Roof Coverings

B. Air-Barrier Assembly Air Leakage: Less than 0.04 cfm/sq. ft. at 1.57 lbf/sq. ft. (0.2 L/s x sq. m at 75 Pa), per ASTM E2357 – Standard Test Method for Determining Air Leakage of Air Barrier Assemblies

C. Water-Vapor Permeance, Facer: Minimum 12 perms (689 ng/Pa x s x sq. m), when tested in accordance with ASTM E96/E96M – Standard Test Methods for Water Vapor Transmission of Materials.

2.03 WOOD PANEL PRODUCTS

A. Single Source Limitations: Provide wall sheathing with integral weather-resistive barrier and roof sheathing with integral roof underlayment by a single manufacturer.

B. Oriented Strand Board: US Department of Commerce DOC PS 2 - Performance Standard for Wood-Based Structural Panels
   1. Panels made with binder containing no added urea formaldehyde.

C. Panel Exposure: No damage from weather exposure for up to 180 days.

D. Printed fastener spacing symbols on facer for 16-inch (406 mm) and 24-inch (610 mm) on center spacing.

2.04 WALL SHEATHING WITH INTEGRAL WEATHER-RESISTIVE BARRIER

A. Oriented-Strand-Board Wall Sheathing: Exposure 1, Structural 1 sheathing with factory-laminated water-resistive barrier facer and printed fastener location symbols.
   1. Basis-of-Design: Huber Engineered Woods LLC; ZIP System® sheathing.
   2. Characteristics
      a. Span Rating and Performance Category: Not less than 32/16; Structural 1; 1/2 Performance Category .
      b. Edge Profile: Tongue-and-Tongue along long edges and square-edge along 4 ft edges.
      c. Weather Barrier Facer: Medium-density, phenolic-impregnated sheet material qualifying as an ASTM D779 Grade D weather-resistive barrier in accordance with ICC-ES AC38 – Water-Resistive Barriers

2.05 ROOF SHEATHING WITH INTEGRAL ROOF UNDERLAYMENT

A. Oriented-Strand-Board Roof Sheathing: Exposure 1 sheathing with factory-laminated water-resistive barrier facer with printed fastener location symbols.
   1. Basis-of-Design: Huber Engineered Woods LLC; ZIP System® sheathing.
   2. Characteristics
      a. Span Rating, Panel Grade and Performance Category: Not less than 40/20; Structural 1; 5/8 Performance Category .
      b. Edge Profile: Tongue-and-groove and square-edge along 4 ft edges.
      c. Exterior Surface Facer: Medium-density, phenolic-impregnated kraft paper overlay in accordance with ICC-ES AC266 – Wood Structural Panel Roof Sheathing Factory-laminated with an Alternative Roof Underlayment.
      d. Interior Surface Facer: Radiant Barrier Foil Facer.

B. Panel Edge Clips: Provide panel edge clips approved for roof application in accordance with code approvals and panel manufacturer's written instructions.

2.06 FASTENERS

A. Fasteners, General: Size and type complying with manufacturer's written instructions for Project conditions and requirements of authorities having jurisdiction.
   1. Corrosion Resistant.

B. Nails, Brads, and Staples: Conform with ICC-ES AC116 - Acceptance Criteria for Nails and Spikes and ICC-ES AC201 Acceptance Criteria for Staples

C. Power-Driven Fasteners: ICC-ES ESR-1539 - Power Driven Staples and Nails for Use in Engineered and Non-Engineered Connections or ICC-ES NER-272 - Power Driven Staples and Nails for Use in All Types of Building Construction

2.07 ACCESSORY PRODUCTS

A. Self-Adhering Seam and Flashing Tape: Pressure-sensitive, self-adhering, cold-applied, seam tape consisting of polyolefin film with acrylic adhesive, meeting ICC-ES AC148 – Acceptance Criteria for Flexible Flashing Materials, and tested as part of an assembly meeting performance requirements.
   1. Basis-of-Design: Huber Engineered Woods; ZIP System™ flashing tape.
   2. Characteristics
      a. Adhesive type: Acrylic
      b. Thickness: 0.012 inch
      c. Tensile Strength: 938 psi
      d. Elongation: 400-800 percent
      e. Complies with AAMA 711 – Voluntary Specification for Self Adhering Flashing Used for Installation of Exterior Wall Fenestration and ICC-ES AC148 – Acceptance Criteria for Flexible Flashing Materials,

B. Liquid-Applied Flashing Membrane: Gun-grade, cold-applied, silyl-terminated polymer (STP) liquid flashing membrane compatible with sheathing/weather barrier, self-adhering seam and flashing tape, and tested as part of an assembly meeting performance requirements.
   1. Basis-of-Design: Huber Engineered Woods; ZIP System™ Liquid Flash.
   2. Characteristics
      a. Composition: Single component silyl-terminated polymer (STP)
      b. Application Temperature Range: Between 35 Deg F and 110 Deg F surface and ambient.
      c. VOC Content: 30 g/L
      d. Hardness, Shore A: 40 to 45 in accordance with ASTM C661 – Standard Test Method for Indentation Hardness of Elastomeric Type Sealants by Means of a Durometer
      e. Tensile Strength: 75 psi in accordance with ASTM D412 – Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers

f. Elongation at Break: 225 percent in accordance with ASTM D412 – Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers

C. Self-Adhering Flexible Flashing Tape: Pressure-sensitive, self-adhering, cold-applied, seam tape consisting of polyolefin film with acrylic adhesive; tested as part of an assembly meeting performance requirements.
   1. Basis-of-Design: Huber Engineered Woods; ZIP System™ stretch tape.
   2. Characteristics
      a. Adhesive type: Acrylic
      b. Thickness: 0.042 inch
      c. Tensile Strength: 225 psi
      d. Elongation: 800-1200 percent
      e. Complies with AAMA 711 – Voluntary Specification for Self Adhering Flashing Used for Installation of Exterior Wall Fenestration and ICC-ES AC148 – Acceptance Criteria for Flexible Flashing Materials

EXECUTION

3.01 EXAMINATION

A. Examine framing spacing and alignment to determine if work is ready to receive sheathing. Proceed with sheathing work once conditions meet requirements.

3.02 SHEATHING INSTALLATION

A. General: Install sheathing panels in accordance with manufacturer's written instructions, requirements of applicable Evaluation Reports, and requirements of authorities having jurisdiction.
   1. Do not bridge expansion joints; allow joint spacing equal to spacing of structural supports.
   2. Install panels with laminated facer to exterior. Stagger end joints of adjacent panel runs. Support all panel edges.
   3. Panel Edge Spacing: In accordance with sheathing panel manufacturer’s recommendations.
   4. Attach sheathing panels securely to substrate with manufacturer-approved fasteners in compliance with the following:
      a. ICC-ES ESR-1539 - Power Driven Staples and Nails for Use in Engineered and Non-Engineered Connections or ICC-ES NER-272 - Power Driven Staples and Nails for Use in All Types of Building Construction
      b. ICC IBC - International Building Code Table 2304.9.1 Fastening Schedule.
   5. Install Roof Sheathing Panel Clips where required under code approvals based upon panel thickness and support spacing, provide panel clips located at each unsupported panel butt joint centered between supports.

3.03 SEAM AND PENETRATION TREATMENT

A. Assembly continuity: Coordinate sheathing installation with flashing and joint sealant sequencing and installation and with adjacent building air and moisture barrier components to provide complete, continuous air- and moisture- barrier.

B. Tape panel seams, penetrations, and facer defects or cracks with Manufacturer’s self-adhering seam tape to form continuous weathertight surface. Apply tape according to manufacturer's written instructions and requirements of ICC-ES applicable to tape application.

C. Flash penetrations, gaps, and cracks with Manufacturer’s liquid-applied flashing membrane to form continuous weathertight surface. Apply according to manufacturer's written instructions. Follow manufacturer’s recommendation for integration with self-adhering seam tape.

D. Tape window and doors openings and radius penetrations with Manufacturer’s self-adhering flexible flashing stretch tape to form continuous weathertight surface. Apply tape according to manufacturer’s written instructions and requirements of ICC-AC applicable to tape application.

END OF SECTION

SECTION 06 17 53
SHOP-FABRICATED WOOD TRUSSES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:

1. Wood roof trusses.

2. Wood girder trusses.

1.03 DEFINITIONS

A. Metal-Plate-Connected Wood Trusses: Planar structural units consisting of metal-plate-connected members fabricated from dimension lumber and cut and assembled before delivery to Project site.

1.04 ACTION SUBMITTALS

A. Product Data: For metal-plate connectors, metal truss accessories, and fasteners.

B. Shop Drawings: Show fabrication and installation details for trusses.

1. Show location, pitch, span, camber, configuration, and spacing for each type of truss required.

2. Indicate sizes, stress grades, and species of lumber.

3. Indicate locations, sizes, and materials for permanent bracing required to prevent buckling of individual truss members due to design loads.

4. Indicate type, size, material, finish, design values, orientation, and location of metal connector plates.

5. Show splice details and bearing details.

C. Delegated-Design Submittal: For metal-plate-connected wood trusses indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.05 INFORMATIONAL SUBMITTALS

A. Qualification Data: For metal connector-plate manufacturer.

B. Material Certificates: For dimension lumber specified to comply with minimum specific gravity. Indicate species and grade selected for each use and specific gravity.

C. Product Certificates: For metal-plate-connected wood trusses, signed by officer of truss-fabricating firm.

D. Evaluation Reports: For the following, from ICC-ES:

1. Metal-plate connectors.

2. Metal truss accessories.

1.06 QUALITY ASSURANCE

A. Metal Connector-Plate Manufacturer Qualifications: A manufacturer that is a member of TPI and that complies with quality-control procedures in TPI 1 for manufacture of connector plates.

1. Manufacturer's responsibilities include providing professional engineering services needed to assume engineering responsibility.

2. Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Handle and store trusses to comply with recommendations in SBCA BCSI, "Building Component Safety Information: Guide to Good Practice for Handling, Installing, Restraining, & Bracing Metal Plate Connected Wood Trusses."

1. Store trusses flat, off of ground, and adequately supported to prevent lateral bending.

2. Protect trusses from weather by covering with waterproof sheeting, securely anchored.

3. Provide for air circulation around stacks and under coverings.

B. Inspect trusses showing discoloration, corrosion, or other evidence of deterioration. Discard and replace trusses that are damaged or defective.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 40 00 "Quality Requirements," to design metal-plate-connected wood trusses.

B. Structural Performance: Metal-plate-connected wood trusses shall be capable of withstanding design loads within limits and under conditions indicated. Comply with requirements in TPI 1 unless more stringent requirements are specified below.

1. Design Loads: As indicated.

2. Maximum Deflection under Design Loads:

a. Roof Trusses: Vertical deflection of 1/240 of the span under total load and 1/360 of the span under snow or live loading.

C. Comply with applicable requirements and recommendations of TPI 1, TPI DSB, and SBCA BCSI.

D. Wood Structural Design Standard: Comply with applicable requirements in AF&PA's "National Design Specifications for Wood Construction" and its "Supplement."

2.02 DIMENSION LUMBER

A. Lumber: DOC PS 20 and applicable rules of any rules-writing agency certified by the American Lumber Standard Committee (ALSC) Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.

2. Provide dressed lumber, S4S.

3. Provide dry lumber with 19 percent maximum moisture content at time of dressing.

B. Minimum Specific Gravity for Top Chords: 0.50.

C. Permanent Bracing: Provide wood bracing that complies with requirements for miscellaneous lumber in Section 06 10 00 "Rough Carpentry."

2.03 METAL CONNECTOR PLATES

A. General: Fabricate connector plates to comply with TPI 1.

B. Hot-Dip Galvanized-Steel Sheet: ASTM A653/A653M; Structural Steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G60 coating designation; and not less than 0.036 inch thick.

1. Use for interior locations unless otherwise indicated.

2.04 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

1. Provide fasteners for use with metal framing anchors that comply with written recommendations of metal framing manufacturer.

B. Nails, Brads, and Staples: ASTM F1667.

2.05 METAL FRAMING ANCHORS AND ACCESSORIES

A. Allowable design loads, as published by manufacturer, shall comply with or exceed those of basis-of-design products. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency. Framing anchors shall be punched for fasteners adequate to withstand same loads as framing anchors.

B. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A653/A653M, G60 coating designation.

1. Use for interior locations unless otherwise indicated.

2.06 MISCELLANEOUS MATERIALS

A. Galvanizing Repair Paint: SSPC-Paint 20, with dry film containing a minimum of 92 percent zinc dust by weight.

2.07 FABRICATION

A. Cut truss members to accurate lengths, angles, and sizes to produce close-fitting joints.

B. Fabricate metal connector plates to sizes, configurations, thicknesses, and anchorage details required to withstand design loads for types of joint designs indicated.

C. Assemble truss members in design configuration indicated; use jigs or other means to ensure uniformity and accuracy of assembly, with joints closely fitted to comply with tolerances in TPI 1. Position members to produce design camber indicated.

1. Fabricate wood trusses within manufacturing tolerances in TPI 1.

D. Connect truss members by metal connector plates located and securely embedded simultaneously in both sides of wood members by air or hydraulic press.

2.08 SOURCE QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform special inspections.

1. Provide special inspector with access to fabricator's documentation of detailed fabrication and quality-control procedures that provide a basis for inspection control of the workmanship and the fabricator's ability to conform to approved construction documents and referenced standards.

2. Provide special inspector with access to places where wood trusses are being fabricated to perform inspections.

B. Correct deficiencies in Work that special inspections indicate do not comply with the Contract Documents.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install wood trusses only after supporting construction is in place and is braced and secured.

B. If trusses are delivered to Project site in more than one piece, assemble trusses before installing.

C. Hoist trusses in place by lifting equipment suited to sizes and types of trusses required, exercising care not to damage truss members or joints by out-of-plane bending or other causes.

D. Install and brace trusses according to TPI recommendations and as indicated.

E. Install trusses plumb, square, and true to line and securely fasten to supporting construction.

F. Space trusses as indicated; adjust and align trusses in location before permanently fastening.

G. Anchor trusses securely at bearing points; use metal truss tie-downs or floor truss hangers as applicable. Install fasteners through each fastener hole in metal framing anchors according to manufacturer's fastening schedules and written instructions.

H. Securely connect each truss ply required for forming built-up girder trusses.

1. Anchor trusses to girder trusses as indicated.

I. Install and fasten permanent bracing during truss erection and before construction loads are applied. Anchor ends of permanent bracing where terminating at walls or beams.

1. Install bracing to comply with Section 06 10 00 "Rough Carpentry."

J. Install wood trusses within installation tolerances in TPI 1.

K. Do not alter trusses in field. Do not cut, drill, notch, or remove truss members.

L. Replace wood trusses that are damaged or do not comply with requirements.

1. Damaged trusses may be repaired according to truss repair details signed and sealed by the qualified professional engineer responsible for truss design, when approved by Architect.

3.02 REPAIRS AND PROTECTION

A. Protect wood trusses from weather. If, despite protection, wood trusses become wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

B. Repair damaged galvanized coatings on exposed surfaces according to ASTM A780/A780M and manufacturer's written instructions.

3.03 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform special inspections to verify that temporary installation restraint/bracing and the permanent individual truss member restraint/bracing are installed in accordance with the approved truss submittal package.

END OF SECTION

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SECTION 06 20 00
FINISH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Finish carpentry items.

B. Wood paneling.

1.02 RELATED REQUIREMENTS

A. Section 06 41 00 Architectural Wood Casework

B. Section 09 64 33 Laminated Wood Flooring

C. Section 09 93 00 - Staining and Transparent Finishing.

1.03 REFERENCE STANDARDS

A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2026.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with plumbing rough-in, electrical rough-in, and installation of associated and adjacent components.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data:
   1. Provide manufacturer's product data, storage and handling instructions for factory-fabricated units.

C. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
   1. Provide information as required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).

D. Samples:
   1. Submit two samples of each type of standing and running trim and moldings.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store finish carpentry items under cover, elevated above grade, and in a dry, well-ventilated area not exposed to heat or sunlight.

B. Protect from moisture damage.

C. Handle materials and products to prevent damage to edges, ends, or surfaces.

PART 2 PRODUCTS

2.01 FINISH CARPENTRY ITEMS

A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

2.02 LUMBER MATERIALS

A. Hardwood Lumber: white oak species, quarter sawn, maximum moisture content of 6 percent ; with vertical grain , of quality suitable for transparent finish.

2.03 FASTENINGS

A. Adhesive for Purposes Other Than Laminate Installation: Suitable for the purpose; not containing formaldehyde or other volatile organic compounds.

2.04 FABRICATION

A. Shop assemble work for delivery to site, permitting passage through building openings.

B. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install custom fabrications in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.

B. Set and secure materials and components in place, plumb and level.

C. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.

3.02 PREPARATION FOR SITE FINISHING

A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.

3.03 TOLERANCES

A. Maximum Variation from True Position: 1/16 inch.

B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

END OF SECTION

SECTION 06 41 00
ARCHITECTURAL WOOD CASEWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wood casework with laminate cladding.

B. Cabinet and drawer hardware.

1.02 RELATED REQUIREMENTS

A. Section 12 36 00 - Countertops.

1.03 ABBREVIATIONS AND ACRONYMS

A. AWI: Architectural Woodwork Institute.

B. HPDL: High-pressure decorative laminate.

C. MDF: Medium-density fiberboard.

D. PTB: Particleboard.

E. QCP: Quality Certification Program

F. TFL: Thermally-fused laminate.

G. WI: Woodwork Institute.

1.04 REFERENCE STANDARDS

A. ANSI A208.1 - American National Standard for Particleboard; 2022.

B. ANSI A208.2 - Medium Density Fiberboard (MDF) for Interior Applications; 2022.

C. ANSI/AWI 0400 - Factory Finishing; 2022.

D. ANSI/AWI 0620 - Finish Carpentry/Installation; 2024.

E. ANSI/AWI 0641 - Architectural Wood Casework; 2019.

F. ASTM D1037 - Standard Test Methods for Evaluating Properties of Wood-Base Fiber and Particle Panel Materials; 2012 (Reapproved 2020).

G. AWI 200 - Care and Storage; 2018.

H. AWI 300 - Materials; 2018.

I. BHMA A156.9 - Cabinet Hardware; 2020.

J. CARB (ATCM) - Airborne Toxic Control Measure to Reduce Formaldehyde Emissions from Composite Wood Products; Current Edition.

K. ISO 4586-3 - High-Pressure Decorative Laminates (HPL, HPDL) – Sheets Based on Thermosetting Resins (Usually Called Laminates) – Part 3: Classification and Specifications for Laminates Less than 2 mm Thick and Intended for Bonding to Supporting Substrates; 2018.

1.05 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate schedule of climate-controlled rooms with schedule of storage of wood and wood-based materials requiring climate-controlled environments.
   2. Coordinate work of this section with installation of wood blocking, wood backing, metal strapping, and other anchorage that provides casework backing and structural support.

1.06 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data for casework, hardware, laminate, and finish items : Submit manufacturer's published, product descriptive data.
   1. HPDL Laminates: For each type, indicate description, thickness, finish, pattern, and color.
   2. Hardware: For each type of cabinet and drawer hardware.

C. Shop Drawings:
    1. General: Each sheet sequentially numbered and dated.
        a. Contents: Indicate project name and project address.
    2. Shop Drawing Requirements:
        a. Cover Sheet: Include phone numbers of general contractor and fabricator firms.
        b. Aesthetic Grade: Identify specified grade and indicate compliance.
        c. Performance Duty Level: Identify specified duty level and indicate compliance.
        d. Identification of Materials: Include material lists or schedules.
        e. Plans and Elevations: Plan and elevation views of each assembly type.
        f. Detailed Sections: Dimensioned section views of each casework configuration.
        g. Details: Dimensioned casework assembly details with material thicknesses.
            1) Include laminate-clad panels, panel cores, and concealed casework components.
    3. Detailed Section: Dimensioned section views of each casework configuration.
        a. Include appropriate locations for casework wall anchorage.

D. Samples:
    1. Samples, Laminate-Clad Panels: For each laminate-clad type, submit two, laminate-clad sample panels; size: 8 by 8 inches, minimum; thickness: 3/4 inch.
    2. Samples, Edgebanding:
        a. Edgebanding: For each edgebanding type, submit one sample strip, one sample strip, two sample strips two sample strips, 6 inches 6 inches long, minimum , minimum.
    3. Samples, Laminates: For each laminate type, submit two samples for each specified color.
    4. Samples, Hardware: For each hinge and pull type, submit one sample, full-size, indicating specified finish.

E. Fabricator's qualification statement.

F. Installer's qualification statement.

G. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.

1.07 QUALITY ASSURANCE

A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.
    1. Casework fabricator with at least one project in past five years with value of casework within 40 percent of casework cost for this project.
    2. Single Source Responsibility: Provide fabrication and installation from single casework fabricator.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Store products prior to installation on flat, level, clean surfaces; elevate products above floors and protect from sunlight.

B. Store products in interior rooms with completed wet work and overhead work.

C. Relative Humidity Conditions for Storing Wood and Wood-Based Core Products:
    1. Maintain relative humidity between 30 and 55 percent.

D. For products other than wood and wood-based products, store and handle in accordance with fabricator's documented instructions.

E. Handle materials and products to prevent damage to edges, ends, or surfaces.

1.09 FIELD CONDITIONS

A. Ambient Conditions for Acclimation, Installation, and Post-Installation of Wood-Based Products:

1. Acclimation Period Prior to Installation: 72 hours minimum, inside installation environment.
2. Temperature Conditions During Installation and Post-Installation: Maintain temperature between 60 degrees F and 90 degrees F.
3. Relative Humidity Conditions During Acclimation, Installation, and Post-Installation: Maintain relative humidity between 30 and 55 percent.

B. Do not deliver or install cabinets until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during the remainder of the construction period.

C. Field Measurements: Where cabinets are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
1. Locate concealed framing, blocking, and reinforcements that support cabinets by field measurements before being enclosed/concealed by construction, and indicate measurements on Shop Drawings.

D. Established Dimensions: Where cabinets are indicated to fit to other construction, establish dimensions for areas where cabinets are to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

PART 2 PRODUCTS

2.01 ARCHITECTURAL WOOD CASEWORK

A. Provide casework and casework components in sizes and profiles as indicated on drawings.

B. Adjustable Shelves, Number of Shelves Per Cabinet Unit:
1. Base Cabinets: As indicated on drawings.
2. Wall Cabinets: As indicated on drawings.

C. Scribed Fillers:
1. Finish and Materials: Same materials and finish as exposed surfaces.

2.02 PERFORMANCE REQUIREMENTS

A. Architectural Woodwork Institute (AWI) Performance Requirements:
1. Comply with AWI 300, ANSI/AWI 0641, ANSI/AWI 0400, and ANSI/AWI 0620 as applicable for specified casework finish, aesthetic grade, and performance duty level.
   a. Aesthetic Grade: Custom.
   b. Product Performance Duty Level: Duty Level 3.
2. Panel and Material Thicknesses: Provide panels and materials as required to meet specified performance duty level, subject to minimum thickness requirements of AWI 300 and ANSI/AWI 0641 and flatness requirements indicated below.
3. Panel Flatness: Provide panels with maximum variation from flat in 12 inches as measured diagonally across panel.
   a. Custom Grade: Plus or minus 0.047 inch maximum.
4. Cabinet Door Flatness:
   a. Provide cabinet doors with 1/8 inch maximum variation from flat.

2.03 WOOD CASEWORK WITH LAMINATE CLADDING

A. Casework Construction:
1. Frameless Cabinet and Door Interface: Flush overlay.
2. Door and Drawer Front Profile: Flush.
3. Reveal Dimensions: Comply with performance requirements.

B. Wood Drawer Boxes with Laminate Cladding:
1. Cladding: HPDL or TFL.

C. Custom Grade - Laminate-Clad Wood Casework:
    1. Exposed Exterior Surfaces, Panels to Receive Laminate Cladding:
        a. Comply with specified performance requirements.
    2. Exposed Interior Surfaces at Door and Drawer Fronts, Panels Receiving Laminate Cladding:
        a. Same laminate materials and thicknesses as exposed exterior surfaces.
            1) Color to match exposed interior or face.
    3. Exposed Interior Surfaces Except Door and Drawer Front Surfaces:
        a. HPDL: Compatible laminate in color to exposed exterior surfaces.
    4. Semi-Exposed Surfaces; Panels to Receive Laminate Cladding:
        a. Fabricator's Option:
            1) HPDL Panels; Surface Finish: As indicated on drawings.
            2) TFL Panels; Surface Finish: As indicated on drawings.

D. Edgebanding Applications for Laminate-Clad Wood Casework:
    1. Drawer Box Top Edges:
        a. Visible Cores: Not permitted.

E. Edgebanding Materials for Laminate-Clad Wood Casework:
    1. Thickness: 1 mm.
    2. PVC: Well matched to exposed face.

2.04 EDGE TREATMENT APPLICATIONS

A. Front Edges of Frameless Cabinets:
    1. Provide edgebanding.

B. Top Edges of Cabinets:
    1. Comply with specified performance requirements.

C. Bottom Edges of Wall Cabinet Ends and Light Valances:
    1. Comply with specified performance requirements.

D. Hinged Door Edges:
    1. Provide edgebanding on all four edges except for solid wood doors.

E. Drawer Front and Drawer False Front Edges:
    1. Provide edgebanding on all .

F. Edges of Solid Wood Panel Drawer Boxes:
    1. Comply with specified performance requirements.

G. Adjustable Shelf Edges, Semi-Exposed Surfaces:
    1. Edgebanding to match shelf.

2.05 HPDL-CLAD PANELS

A. Description: Panels consisting of High-Pressure Decorative Laminate (HPDL) faces applied to cores; panel layup with face ply, back ply, and core of either single ply or odd number of inner plies, to produce balanced construction panel.
    1. Panels subject to size limitations, minimum thickness requirements, and fabrication tolerances of specified aesthetic grade and performance duty level in accordance with AWI 300 and ANSI/AWI 0641.

B. High-Pressure Decorative Laminate (HPDL): Sheet consisting of fibrous material impregnated with thermosetting resins; bonded by high-pressure process.

C. HPDL Laminates Less than 0.08 inch Thick: Comply with ISO 4586-3.
    1. Horizontal Grades:
        a. HPDL HGS.
    2. Vertical Grades:
        a. HPDL VGS.
    3. Exposed Backer Materials:

a. Same materials, thickness and color as laminate face.

4. Concealed Backer Materials:
   a. Laminate materials as required for balanced construction panel and recommended by laminate manufacturer for application.
5. Products:
   a. Refer to finish schedule on the drawings for products.

D. Panel Cores:
   1. Particleboard (PTB).
   2. Medium Density Fiberboard Core (MDF).

2.06 THERMALLY FUSED LAMINATE PANELS

A. Thermally Fused Laminate (TFL): Melamine-resin-saturated decorative papers; for fusion to composite wood substrates under heat and pressure.

B. Backs:
   1. Same materials, thicknesses, and colors as laminate faces.

C. Panel Cores:
   1. Particleboard (PTB).
   2. Medium Density Fiberboard Core (MDF).

D. Exposed Interior Surfaces, Color: As indicated on drawings.

E. Semi-Exposed Surfaces, Color: Match exposed surfaces.

2.07 PANEL CORES

A. Moisture-Resistant Cores: Provide color-tinting or other distinguishing markings to indicate cores with moisture-resistant properties.

B. Particleboard (PTB):
   1. Description: Composite panel composed of cellulosic particles, additives, and bonding system; comply with ANSI A208.1.
   2. Grade:
      a. M-2.
   3. ANSI A208.1, High Density, Grade M-2, 40 - 44 lbs/ft³ (640–700 kg/m³).
   4. Thickness: 3/4 inch.
   5. Moisture-Resistant Category: MR30.

C. Medium Density Fiberboard (MDF):
   1. Description: Composite panel composed of cellulosic fibers, additives, and bonding system cured under heat and pressure; comply with ANSI A208.2.
   2. Grade: 155.
   3. Panel Thickness: 3/4 inch.
   4. Moisture Resistance: MR30; color-tinted to indicate moisture-resistance core.
   5. No-Added Formaldehyde Based (NAUF) Resins: Comply with CARB (ATCM).

2.08 CONCEALED CABINET BASE COMPONENTS

A. Cabinet Base Toe-Kick Subfronts:
   1. Materials and Size: Fabricator's choice subject to requirements of ANSI/AWI 0641.
   2. Height Above Subfloor: As indicated on drawings.

B. Cabinet Base Blocking and Stretchers:
   1. Materials and Size: Fabricator's choice subject to requirements of ANSI/AWI 0641.

C. Cabinet Base Sleepers:
   1. Materials and Size: Fabricator's choice subject to requirements of ANSI/AWI 0641.

2.09 WOOD AND WOOD-BASED MATERIALS

A. AWI 200 Wood Moisture Content Requirements:
   1. Climate Zone 2: Between 6 and 10 percent.

B. AWI 300 General Requirements for Wood.
   1. Provide wood that is sound, free of decay, shake, pith, wane, and warp; plain-sawn unless otherwise indicated.
   2. Provide wood in accordance with AWI 300.

C. Moisture-Resistant Wood: Where moisture-resistant wood is specified or indicated on drawings for cabinet base components, provide wood with thickness swelling of not more than 5 percent when tested in accordance with ASTM D1037.

2.10 CABINET AND DRAWER HARDWARE

A. Hinges, Number of Hinges for Each Cabinet Door:
   1. Comply with specified performance requirements.

B. Hinges, Self-Closing, Integrated Damper Hinges:
   1. Description: Self-closing hinges with integrated damper mechanisms.
   2. Comply with specified performance requirements.

C. Cabinet Door and Drawer Pulls: Provide one at each door and drawer.
   1. Description: Back-mounted pulls.
   2. Provide one pull for each drawer 24 inches or less in width.
   3. Provide two pulls for each drawer over 24 inches in width.
   4. Comply with BHMA A156.9, B02011.
   5. Design: As indicated on drawings.

D. Shelf Rests:
   1. Description: Metal shelf rests for installation into prepared holes in substrate.
   2. Comply with BHMA A156.9, B04013.

E. Drawer Slides: Provide at each drawer.
   1. Description: Hardware units that suspend drawers and provide controlled drawer sliding.
   2. Comply with BHMA A156.9, Heavy Duty Grade 1HD-100.
   3. Features: Self-closing and soft-closing.
   4. Mounting: Side-mounted self-closing.
   5. Travel: Full extension.

2.11 CASEWORK ACCESSORY COMPONENTS

2.12 ACCESSORIES

A. Fasteners: Size and type to suit application.

B. Concealed Joint Fasteners: Threaded steel.

C. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; chrome-plated finish in concealed locations and stainless steel or chrome-plated finish in exposed locations.

D. Adhesives: Type recommended by fabricator to suit application.

2.13 FABRICATION

A. Shop-fabricate casework to dimensions, profiles, and details indicated on drawings.

B. Fabricate to maximum extents plausible, including doors, drawers, and hardware; fabricate units in sizes transportable through building openings.

C. When necessary to cut and fit on site, provide materials with sufficient allowance for cutting.

D. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 3 feet from sink cut-outs.

E. Matching Wood Grain: Comply with requirements of quality standard for specified Grade and as follows:

F. Provide cutouts for plumbing fixtures; verify locations of cutouts from on-site dimensions. Sand and seal cut edges.

G. Edgebanding: Apply where specified; do not use more than one piece for any single length.

H. T-Mold Edgebanding:
   1. Substrate Grooving: Rout a precise, machine-guided centerline kerf slot matching the exact depth of the T-mold barb.
   2. Corner Profiles: On outside radii, 90-degree corners must be smooth, non-blanching, and notched cleanly at the barb to ensure the decorative cap face remains perfectly flat and tight to the panel core.
   3. Seams: Not permitted

I. Hardware: Install hardware in accordance with hardware manufacturer's written instructions; use fasteners supplied by hardware manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify casework and materials required for installation have been delivered, handled and stored as specified.

B. Verify wood blocking that provides casework backing is installed as indicated on drawings.

C. Verify location and sizes of rough-in plumbing and rough-in electrical associated with work of this section.

D. Verify location and sizes of cutouts for appliances and special equipment to be mounted in or adjacent to casework.

3.02 PREPARATION

A. Acclimate casework to environments indicated for installation.

3.03 PREPARATION

A. Before installation, condition cabinets to humidity conditions in installation areas for not less than 72 hours.

3.04 INSTALLATION

A. Install and secure work of this section in accordance with specified performance requirements.

B. Install work of this section rigid, plumb, and level and in accordance with fabricator's documented instructions; secure casework as indicated on drawings.
   1. Align and secure adjoining cabinet units with fasteners in concealed locations.

C. Base and Wall Cabinet Anchorage Support Construction:

D. Install scribe fillers to close gaps between casework and adjacent walls.

E. Assemble cabinets and complete fabrication at Project site to extent that it was not completed in the shop.

F. Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with wafer-head cabinet installation screws.

G. Install cabinets level, plumb, and true in line to a tolerance of 1/8 inch in 96 inches using concealed shims.
   1. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
   2. Install cabinets without distortion so doors and drawers fit openings and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.

H. Fasten wall cabinets through back, near top and bottom, and at ends not more than 16 inches o.c.

3.05 TOLERANCES

A. Maximum Variation From Plumb: 1/8 inch in 96 inches.

B. Maximum Variation From Level: 1/8 inch in 96 inches.

3.06 ADJUSTING

A. Repair damaged and defective cabinets to eliminate functional and visual defects.

B. Adjust hardware for smooth operation in accordance with hardware manufacturer's documented instructions.

3.07 CLEANING

A. See Section 01 70 00 - Execution and Closeout Requirements for additional requirements.

B. Clean exposed surfaces of casework, shelving, and hardware.

3.08 PROTECTION

A. Protect installed casework from subsequent construction operations.

END OF SECTION

SECTION 06 73 00
COMPOSITE DECKING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Plastic composite decking.

1.02 DEFINITIONS

A. Composite Materials: Materials made from two or more constituent materials with significantly different physical or chemical properties that, when combined, produce materials with characteristics different from the individual components.

B. Plastic Composites, or Wood-Plastic Composites: Composite materials made primarily from wood- or cellulose-based materials and plastics.

1.03 REFERENCE STANDARDS

A. ANSI/ACMA/PIC (CSP) - Code of Standard Practice, Industry Guidelines for Fabrication and Installation of Pultruded FRP Structures; 2011 (Reapproved 2012).

B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

C. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2021.

D. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts; 2021a.

E. ASTM A563M - Standard Specification for Carbon and Alloy Steel Nuts (Metric); 2021a.

F. ASTM D7032 - Standard Specification for Establishing Performance Ratings for Wood-Plastic Composite and Plastic Lumber Deck Boards, Stair Treads, Guards, and Handrails; 2021.

G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.

H. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's published product literature:
   1. Include sizes and profiles; structural properties data and allowable span tables.

C. Samples: Submit two samples indicating specified texture and finish.

D. Manufacturer's Instructions: Manufacturer's published installation instructions.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to project site in original, unbroken packages, or bundles bearing label of manufacturer and component identification markings.

B. Store materials under cover and elevated above grade.

C. Protect decking units from damage including cracking or chipping.

PART 2 PRODUCTS

2.01 PLASTIC COMPOSITE DECKING

A. Plastic Composite Decking: Extruded thermoplastic composite decking boards; for exterior applications where ICC (IBC) permits combustible construction; complying with ASTM D7032.
   1. Shell: Fully enclosed.
   2. Filler: Manufacturer's standard
   3. Deck Board Size: 7/8 inch by 6 inches.
   4. Board Edges: Radiused.

5. Color: To be selected by Architect from manufacturer's full range.
6. Flame Spread Index: 200 or less when tested in accordance with ASTM E84.

2.02 ACCESSORIES:

A. Carbon Steel Fasteners:.
1. Bolts and Nuts: ASTM A307 bolts and ASTM A563 (ASTM A563M) nuts.
2. Zinc Coating Finish: Galvanized by hot-dip process complying with ASTM A153/A153M.

PART 3 EXECUTION

3.01 EXAMINATION - GENERAL

A. Verify support work has been constructed to allow accurate placement and alignment of anchor bolts and other connections to supporting assemblies.

B. Verify substrates to determine that conditions are acceptable for installation of decking in accordance with manufacturer's written instructions.

3.02 INSTALLATION - PLASTIC COMPOSITE DECKING

A. Install decking in accordance with manufacturer's published instructions, subject to conditions of its evaluation report.

3.03 TOLERANCES

A. Install decking complying with installation tolerances indicated in ANSI/ACMA/PIC (CSP).

3.04 PROTECTION

A. Protect installed decking from subsequent construction operations.

END OF SECTION

SECTION 06 83 16
FIBERGLASS REINFORCED PANELING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fiberglass reinforced plastic panels.

B. Trim.

1.02 REFERENCE STANDARDS

A. ASTM D256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics; 2026.

B. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2021.

C. ASTM D5319 - Standard Specification for Glass-Fiber Reinforced Polyester Wall and Ceiling Panels; 2022.

D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Store panels flat, indoors, on a clean, dry surface. Remove packaging and allow panels to acclimate to room temperature for 48 hours prior to installation.

PART 2 PRODUCTS

2.01 PANEL SYSTEMS

A. Wall Panels:
   1. Panel Size: 4 by 10 feet.
   2. Panel Thickness: 0.10 inch.
   3. Surface Design: Embossed.
   4. Color: As indicated on the drawings.
   5. Attachment Method: Adhesive only, sealant joints, no trim.

2.02 MATERIALS

A. Panels: Fiberglass reinforced plastic (FRP), complying with ASTM D5319.
   1. Surface Burning Characteristics: Maximum flame spread index of 25 and smoke developed index of 450; when system tested in accordance with ASTM E84.
   2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
   3. Impact Strength: Greater than 6 ft lb force per inch, when tested in accordance with ASTM D256.

B. Trim: Vinyl; color coordinating with panel.

C. Fasteners: Nylon rivets.

D. Adhesive: Type recommended by panel manufacturer.

E. Sealant: Type recommended by panel manufacturer; color matching panel.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions and substrate flatness before starting work.

B. Verify that substrate conditions are ready to receive the work of this section.

3.02 INSTALLATION - WALLS

A. Install panels in accordance with manufacturer's instructions.

B. Cut and drill panels with carbide tipped saw blades, drill bits, or snips.

C. Pre-drill fastener holes in panels, 1/8 inch greater in diameter than fastener, spaced as indicated by panel manufacturer.

D. Apply adhesive to the back side of the panel using trowel as recommended by adhesive manufacturer.

E. Apply panels to wall with seams plumb and pattern aligned with adjoining panels.

F. Install panels with manufacturer's recommended gap for panel field and corner joints.

G. Drive fasteners to provide snug fit, and do not over-tighten.

H. Place trim on panel before fastening edges, as required.

I. Fill channels in trim with sealant before attaching to panel.

J. Install trim with adhesive and screws or nails, as required.

K. Seal gaps at floor, ceiling, and between panels with applicable sealant to prevent moisture intrusion.

L. Remove excess sealant after paneling is installed and prior to curing.

END OF SECTION

SECTION 07 21 00
THERMAL INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Board insulation at perimeter foundation wall and underside of floor slabs.

B. Batt insulation in exterior wall construction.

C. Batt insulation for filling perimeter window and door shim spaces.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Installation requirements for board insulation over steep slope roof sheathing or roof structure.

1.03 REFERENCE STANDARDS

A. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2023.

B. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2024.

C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.

D. ASTM E136 - Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750 Degrees C; 2026.

E. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components; 2025.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.

C. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.

1.05 FIELD CONDITIONS

A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

PART 2 PRODUCTS

2.01 APPLICATIONS

A. Insulation Under Concrete Slabs: Extruded polystyrene (XPS) board.

B. Insulation at Perimeter of Foundation: Extruded polystyrene (XPS) board.

C. Insulation in Wood Framed Walls: Batt insulation with no vapor retarder.

2.02 FOAM BOARD INSULATION MATERIALS

A. Extruded Polystyrene (XPS) Board Insulation: Comply with ASTM C578 with either natural skin or cut cell surfaces.
   1. Type and Compressive Resistance: Type IV, 25 psi (173 kPa), minimum.
   2. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
   3. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
   4. Type and Thermal Resistance, R-value: Type IV, 5.0 (0.88), minimum, per 1 inch thickness at 75 degrees F mean temperature.
   5. Complies with fire resistance requirements indicated on drawings as part of an exterior non-load-bearing exterior wall assembly when tested in accordance with NFPA 285.
   6. Board Edges: Square.

7. Type and Water Absorption: Type XII, 0.3 percent by volume, maximum, by total immersion.

2.03 MINERAL FIBER BLANKET INSULATION MATERIALS

A. Flexible Glass Fiber Blanket Thermal Insulation: Preformed insulation, complying with ASTM C665; friction fit.
   1. Flame Spread Index: 75 or less, when tested in accordance with ASTM E84.
   2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
   3. Combustibility: Non-combustible, when tested in accordance with ASTM E136, except for facing, if any.
   4. Formaldehyde Content: Zero.
   5. Thermal Resistance: As indicated on the drawings.
   6. Thickness: As indicated on the drawings.
   7. Facing: Unfaced.

2.04 ACCESSORIES

A. Tape: Reinforced polyethylene film with acrylic pressure sensitive adhesive.
   1. Application: Sealing of interior circular penetrations, such as pipes or cables.
   2. Width: As required for application.

B. Sill Plate Sealer: Closed-cell foam tape with rubberized adhesive membrane; bridges gap between foundation structure and sill plate or skirt board.
   1. Width: 5-1/2 inches.
   2. Ultraviolet (UV) and Weathering Resistance: Approved in writing by manufacturer for up to 30 days of weather exposure.

C. Insulation Fasteners: Lengths of unfinished, 13-gauge, 0.072-inch high carbon spring steel with chisel or mitered tips, held in place by tension, length to suit insulation thickness and substrate, capable of securely and rigidly fastening insulation in place.

D. Protection Board for Below Grade Insulation: Cementitious, 1/4 inch thick.

E. Adhesive: Type recommended by insulation manufacturer for application.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.

B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.02 BOARD INSTALLATION AT FOUNDATION PERIMETER

A. Apply adhesive to back of boards:
   1. Three continuous beads per board length.

B. Install boards horizontally on foundation perimeter.
   1. Place boards to maximize adhesive contact.
   2. Install in running bond pattern.
   3. Butt edges and ends tightly to adjacent boards and to protrusions.

C. Extend boards over expansion joints, unbonded to foundation on one side of joint.

D. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

E. Immediately following application of board insulation, place protective boards over exposed insulation surfaces.
   1. Apply adhesive in five continuous beads per board length.
   2. Install boards horizontally from base of foundation to top of insulation.
   3. Butt boards tightly, with joints staggered from insulation joints.

3.03 BOARD INSTALLATION UNDER CONCRETE SLABS

A. Place insulation under slabs on grade after base for slab has been compacted.

B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

C. Prevent insulation from being displaced or damaged while placing vapor retarder and placing slab.

3.04 BATT INSTALLATION

A. Install insulation and vapor retarder in accordance with manufacturer's instructions.

B. Install in exterior wall and roof spaces without gaps or voids. Do not compress insulation.

C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.

D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.

3.05 PROTECTION

A. Do not permit installed insulation to be damaged prior to its concealment.

END OF SECTION

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SECTION 07 21 26
BLOWN INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Exterior Walls: Blown insulation pneumatically placed into wall spaces through access holes.

B. Ceiling and Attic: Blown insulation pneumatically placed into joist spaces.

1.02 REFERENCE STANDARDS

A. ASTM C764 - Standard Specification for Mineral Fiber Loose-Fill Thermal Insulation; 2025.

B. ASTM C1015 - Standard Practice for Installation of Cellulosic and Mineral Fiber Loose-Fill Thermal Insulation; 2017 (Reapproved 2025).

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on product characteristics, performance criteria, and limitations.

PART 2 PRODUCTS

2.01 MATERIALS

A. Applications: Provide blown insulation in attic, exterior walls, and ceiling as indicated on drawings.

B. Blown Insulation: ASTM C764, fiberglass type, nodulated for pour and bulk for pneumatic placement.
   1. Thermal Transmittance (U-Factor): 0.27 BTU/hr sq ft deg F, maximum.
   2. Installed Thickness: As indicated on drawings.

2.02 ACCESSORIES

A. Roof Ventilation Baffles: Prefabricated ventilation channels for placement under roof sheathing with baffles to prevent wind-washing.
   1. Material: Polyvinyl chloride (PVC).
   2. Roof Joist/Truss Spacing: As indicated on the drawings on center, nominal.
   3. Manufacturers:
      a. Brentwood Industries, Inc; AccuVent Original: www.brentwoodindustries.com/#sle.
      b. Substitutions: See Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate and adjacent materials are dry and ready to receive insulation.

B. Verify that light fixtures have thermal cut-out device to restrict over-heating in soffit or ceiling spaces.

C. Verify spaces are unobstructed to allow for proper placement of insulation.

3.02 INSTALLATION

A. Install insulation and ventilation baffle in accordance with ASTM C1015 and manufacturer's instructions.

B. Place insulation pneumatically to completely fill rafter spaces.

C. Place insulation against baffles, and do not impede natural attic ventilation to soffit.

D. Place against and behind mechanical and electrical services within the plane of insulation.

E. Completely fill intended spaces leaving no gaps or voids.

3.03 CLEANING

A. Remove loose insulation residue.

END OF SECTION

SECTION 07 31 13
ASPHALT SHINGLES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Asphalt shingle roofing.

B. Roof ridge ventilation.

C. Flashing.

1.02 REFERENCE STANDARDS

A. ASTM D3462/D3462M - Standard Specification for Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules; 2025.

B. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings; 2025.

C. ASTM F1667/F1667M - Standard Specification for Driven Fasteners: Nails, Spikes, and Staples; 2021a.

D. NRCA (RM) - The NRCA Roofing Manual; 2026.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data indicating material characteristics, performance criteria, and limitations.

C. Shop Drawings: For metal flashings, indicate specially configured metal flashings, jointing methods and locations, fastening methods and locations, and installation details.

D. Samples: Submit two samples of each shingle color indicating color range and finish texture/pattern .

E. Manufacturer's Installation Instructions: Indicate installation criteria and procedures.

F. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

G. Installer's qualification statement.

H. Warranty Documentation: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacture of roofing systems similar to those required for this project, with not less than 10 years of documented experience.

B. Provide all primary roofing products, including shingles, underlayment, ice and water barrier, and ventilation, by a single manufacturer.

C. Installer Qualifications: Company specializing in installing asphalt shingles, with at least 5 years of documented experience, and certified by the manufacturer.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store materials with labels intact in manufacturer's unopened packaging until ready for installation.

B. Store materials under dry and waterproof cover, well ventilated, and elevated above grade on a flat surface.

C. Protect materials from harmful environmental elements, construction dust, direct sunlight, and other potentially detrimental conditions.

D. When storing roofing materials on roofing system ensure no damage occurs to supporting members and other materials.

1.06 FIELD CONDITIONS

A. Do not install shingles, eave protection membrane or underlayment when surface, ambient air, or wind chill temperatures are below 45 degrees F.

1.07 WARRANTY

A. Provide lifetime manufacturer's warranty for coverage against black streaks caused by algae.

B. Extended Correction Period: Correct defective work within 2-year period commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Asphalt Shingles:
   1. Owens Corning Corporation; _____: www.owenscorning.com/en-us/#sle.
      a. Product as indicated on the drawings.
   2. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 ASPHALT SHINGLES

A. Asphalt Shingles: Asphalt-coated glass felt, mineral granule surfaced, complying with ASTM D3462/D3462M.
   1. Fire Resistance: Class A, complying with ASTM E108.

2.03 ACCESSORIES

A. Roofing Nails: Standard round wire shingle type, galvanized steel, stainless steel, aluminum roofing nails, or copper roofing nails, minimum 3/8-inch head diameter, 12-gauge, 0.109-inch nail shank diameter, 1-1/2 inches long and complying with ASTM F1667/F1667M.

B. Roof Ventilation Systems:
   1. Manufacturer: Cor-A-Vent V-600.
   2. Substitutions: See Section 01 60 00-Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify roof deck is of sufficient thickness to accept fasteners.

B. Verify roof penetrations and plumbing stacks are in place and flashed to deck surface.

C. Verify roof openings are correctly framed.

D. Verify deck surfaces are dry, free of ridges, warps, or voids.

3.02 PREPARATION

A. Seal roof deck joints wider than 1/16 inch as recommended by shingle manufacturer.

B. At areas where eave protection membrane is to be adhered to substrate, fill knot holes and surface cracks with latex filler.

C. Broom clean deck surfaces before installing underlayment or eave protection.

D. Protect surrounding areas and adjacent surfaces from damage during execution of this work.

E. Install eave edge flashings tight with fascia boards, weather lap joints 2 inches and seal with roof cement, and secure flange with nails spaced 12 inches on center.

3.03 INSTALLATION

A. Eave Protection Membrane:
   1. Install eave protection membrane from eave edge to minimum 48 inches up-slope beyond interior face of exterior wall.
   2. Install eave protection membrane in accordance with manufacturer's instructions and NRCA (RM) applicable requirements.

B. Valley Protection:

1. Install one ply of flexible flashing, minimum 18 inches wide, centered over valleys.
2. Install flexible flashing in accordance with manufacturer's instructions and NRCA (RM) applicable requirements.
3. Weather lap joints minimum 2 inches.
4. Nail in place minimum 18 inches on center, 1 inch from edges.
5. At Exposed Valleys: Install one layer of sheet metal flashing, minimum 24 inches wide, centered over open valley and crimped to guide water flow. Weather lap joints minimum 2-inch wide band of lap cement along each edge of first layer, press roll roofing into cement, and nail in place minimum 18 inches on center and 1 inch from edges.

C. Metal Flashing:
1. Weather lap joints minimum 2 inches and seal weather tight with plastic cement.
2. Secure in place with nails at ____ inches on center, and conceal fastenings.
3. Items Projecting Through or Mounted on Roofing: Flash and seal weather tight with plastic cement.

D. Shingles:
1. Install shingles in accordance with manufacturer's instructions and NRCA (RM) applicable requirements.
   a. Fasten individual shingles using two nails per shingle, or as required by manufacturer and local building code, whichever is greater.
   b. Fasten strip shingles using four nails per strip, or as required by manufacturer and local building code, whichever is greater.
2. Place shingles in straight coursing pattern with 5-inch weather exposure to produce double thickness over full roof area, and provide double course of shingles at eaves.
3. Project first course of shingles 3/4 inch beyond fascia boards.
4. Extend shingles 1/2 inch beyond face of gable edge fascia boards.
5. Extend shingles on one slope across valley and fasten; trim shingles from other slope 2 inches from valley center line to achieve closed cut valley, concealing valley protection.
6. Cap hips with individual shingles, maintaining 5-inch weather exposure, and place to avoid exposed nails.
7. Complete installation to provide weathertight service.

3.04 CLEANING

A. See Section 01 70 00 - Execution and Closeout Requirements for additional requirements.

B. Clean exposed work upon completion of installation; remove grease and oil films, excess joint sealer, handling marks, and debris from installation, leaving work clean and unmarked, free from dents, creases, waves, scratch marks, or other damage to finish.

3.05 PROTECTION

A. Do not permit traffic over finished roof surface; protect roofing until completion of project.

B. Touch-up, repair, or replace damaged asphalt shingles or accessories before Date of Substantial Completion.

END OF SECTION

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SECTION 07 46 43.13
ENGINEERED WOOD SIDING

GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Engineered wood siding.
      a. Panel and lap siding.
      b. Trim and fascia.
      c. Soffit.
   2. Accessories.

1.02 DEFINITIONS

A. Treated Engineered Wood: Engineered wood products manufactured for exterior use treated with manufacturer's proprietary process to resist fungal decay and termite damage.

1.03 COORDINATION

A. Coordinate engineered wood siding installation with flashings, trim, and construction of other adjoining work to ensure proper sequencing, construction progress, and to provide a leakproof, secure, and noncorrosive installation.

1.04 ACTION SUBMITTALS

A. Product Data: For each type of product and component included in engineered wood siding system. Include the following:
   1. Construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of product and accessory included in siding system.
   2. Installation methods, including nailing patterns.
   3. Siding manufacturer's requirements for products to be installed by others.
   4. Maintenance and periodic inspection recommendations.

B. Shop Drawings: For engineered wood siding.
   1. Include plans, elevations, sections, and attachment details.
   2. Detail expansion joints, material joints, angle changes, flashings, and abutment to adjacent Work.

C. Samples for Verification: For each type, color, texture, and pattern required.
   1. 6-inch- long Sample of engineered wood siding and trim.

1.05 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of product, including related accessories, to include in maintenance manuals.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: Installers trained by siding manufacturer.

1.07 MOCKUPS

A. Provide components for construction of a mock-up wall as indicated in Section 01 40 00 Quality Requirements and as indicated on the drawings.

B. Locate as indicated on drawings.

C. Provide all materials required for the mock-up wall.

D. Refer to Section 01 40 00 Quality Requirements for addtional information.

E. Mock-up may not remain as part of the Work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver components and other manufactured items so as not to be damaged or deformed. Package components for protection during transportation and handling with manufacturer's name and identification of products.

B. Unload, store, and erect components in a manner to prevent bending, warping, twisting, and surface damage. Maintain slip sheet until piece is being prepared for installation.

C. Store components on flat surfaces clear of the ground. Store under roof or covered with suitable weathertight and ventilated covering, and in accordance with manufacturers' written instructions.

1.09 WARRANTY

A. Manufacturer's Trim and Siding Limited Warranty: Manufacturer agrees to repair or replace components of engineered wood siding against substrate damage within specified warranty period.
   1. Substrate damage is defined as deterioration, buckling, and overlay issues caused by manufacturing defects or termite damage.
   2. Hail damage is defined as a crack or chip in the surface overlay, or product substrate dents exceeding 3/8 inch in length or diameter and is caused by hail.
   3. Limited Warranty Period: 50 years from date of installation and written to Owner on date of Substantial Completion.

B. Manufacturer's Trim and Siding Prefinish Limited Warranty: Manufacturer agrees to repair or replace components of prefinished engineered wood siding against finish and substrate damage within specified warranty period.
   1. Substrate damage is defined as deterioration, buckling, or overlay issues caused by manufacturing defects or termite damage.
   2. Hail damage is defined as cracks or chips in the surface overlay or dent in the substrate of the product that exceeds 3/8 inch in length or diameter, and is caused by hail.
   3. Finish damage is defined as, under normal conditions and use, discoloring due to chalking, peeling, blisters, cracks; erosion to the extent of exposing the substrate; or yellowing or color fade change from light exposure not to exceed 5 Delta E CMC (2:1).
   4. Limited Warranty Period for Substrate: 50 years from date of installation and communicated to Owner on date of Substantial Completion.
   5. Limited Warranty Period for Finish: 15 years from date of installation and communicated to Owner on date of Substantial Completion.

C. Manufacturer's Accessories and Non-Standard Applications Limited Warranty: Manufacturer agrees to repair or replace components of manufacturer's accessories and when used in approved non-standard applications against substrate and finish damage within specified warranty period.
   1. Substrate damage is defined as deterioration, buckling, or overlay issues caused by manufacturing defects or termite damage.
   2. Hail damage is defined as cracks or chips in the surface overlay or dent in the substrate of the product that exceeds 3/8 inch in length or diameter, and is caused by hail.
   3. Finish damage is defined as, under normal conditions and use, discoloring due to chalking, peeling, blisters, cracks; erosion to the extent of exposing the substrate; or yellowing or color fade change from light exposure not to exceed 5 Delta E CMC (2:1).
   4. Limited Warranty Period for Substrate and Finish: 10 years from date of installation and communicated to Owner on date of Substantial Completion.

PART 2 - PRODUCTS

2.01 SOURCE LIMITATIONS

A. Provide components and materials specified in this Section from single manufacturer for a complete and compatible assembly.

2.02 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide engineered wood siding system tested to APA PS2 and PRP 108, in compliance with IBC Section 2308.9.3, Table 2308.9.3(5), and certified to be without permanent deformation or failure of structural members in accordance with design wind velocities for Project geographic location and probability of occurrence based on data from wind velocity maps provided in ASCE 7 and as approved by authorities having jurisdiction (AHJ).
   1. Design Loads: As indicated on Drawings.

B. Structural: Test in accordance with FL TAS 202 as follows:
   1. When tested at positive and negative wind-load design pressures, assemblies do not evidence deflection exceeding specified limits.
   2. When tested at 150 percent of positive and negative wind-load design pressures, assemblies, including anchorage, do not evidence material failures, structural distress, or permanent deformation of main framing members exceeding 0.2 percent of span.
   3. Test Durations: As required by design wind velocity, but not less than 10 seconds.

C. Fire-Resistance Performance: Comply with ASTM E119 for testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency acceptable to AHJ.
   1. Surface-Burning Characteristics: Provide engineered wood siding system with a Class C flame-spread index of 76 to 200 or less and a smoke-developed index of 0 to 450 or less when tested in accordance with ASTM E84 and UL 723.

D. Thermal Movement Performance: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects.

E. Composite Wood Products: Products to be made using ultra-low-emitting formaldehyde resins as defined in the California Air Resources Board's "Airborne Toxic Control Measure to Reduce Formaldehyde Emissions from Composite Wood Products" or made with no added formaldehyde.

F. Composite Wood Products: Products to be made without added urea formaldehyde.

2.03 ENGINEERED WOOD SIDING

A. Basis-of-Design Product: Subject to compliance with requirements, provide Louisiana-Pacific Corporation; LP ExpertFinish Trim & Siding or comparable product:
   1. Manufacturer's Representative: Brandon Hofstetter, Brandon.Hofstetter@dksiding.com, 314-960-9752.
   2. Substitutions: See Section 01 60 00-Product Requirements.

B. Treated Engineered Wood Lap Siding: Exterior-grade, resin-saturated, paper overlay laminated to EPA-registered zinc-borate-treated engineered wood siding. Exposed edges sealed for moisture resistance. Manufacturer's acrylic finish.
   1. Basis-of-Design Product: Subject to compliance with requirements, provide Louisiana-Pacific Corporation; LP ExpertFinish Lap Siding,76 Series or comparable product.
   2. Thickness: 0.418 inch total thickness.
   3. Width: 7.84 inches .
   4. Length: Select lengths to minimize butt joints.
   5. Color: As indicated on the drawings.
   6. Texture: Smooth finish .

C. Treated Engineered Wood Soffit: Exterior-grade, resin-saturated, paper overlay laminated to EPA-registered zinc-borate-treated engineered wood siding. Exposed edges beveled and sealed for moisture resistance. Manufacturer's acrylic finish.
   1. Basis-of-Design Product: Subject to compliance with requirements, provide Louisiana-Pacific Corporation; LP ExpertFinish Soffit, 76 Series or comparable product.
   2. Thickness: 0.418 inches.
   3. Width: 11.94 inches.

4. Length: Select lengths to minimize butt joints .
5. Edges: Square.
6. Color: As indicated on the drawings.
7. Texture: Smooth finish and vented .

D. Treated Engineered Wood Trim and Fascia: Provide manufacturer's standard trim, fascia board, angles, and similar components at corners, transitions, and rough openings meeting the performance requirements.
1. Basis-of-Design Product: Subject to compliance with requirements, provide Louisiana-Pacific Corporation; LP ExpertFinish Trim and Fascia 190 Series or comparable product.
2. Thickness: 0.970 [total thickness.
3. Width: As indicated on the drawings].
4. Length: Select lengths to minimize butt joints.
5. Edges: Square.
6. Color: As indicated on the drawings.
7. Texture: Smooth finish.

E. Treated Engineered Wood Outside Corners: Exterior-grade, resin-saturated, paper overlay laminated to EPA-registered zinc-borate-treated engineered wood siding. Exposed edges sealed for moisture resistance. Manufacturer's acrylic primer finish.
1. Basis-of-Design Product: Subject to compliance with requirements, provide Louisiana-Pacific Corporation; LP ExpertFinish Outside Corners 540 Series or comparable product.
2. Thickness: 0.970 inch total thickness.
3. Width: 5.5 inches.
4. Length: Select lengths to minimize butt joints 10 ft. (3.0 m).
5. Edges: Square.
6. Color: [As selected by Architect from manufacturer's full range] ???Insert color???.
7. Texture: Smooth finish

F. Treated Engineered Wood J-Block: Exterior-grade, phenolic resin-saturated, paper overlay laminated to EPA-registered zinc-borate preservative-treated engineered wood siding. Exposed edges sealed for moisture resistance. Manufacturer's standard acrylic latex primer finish.
1. Basis-of-Design Product: Subject to compliance with requirements, provide Louisiana-Pacific Corporation; LP ExpertFinish J-Block or comparable product.
2. Thickness: 0.970 inch total thickness.
3. Width: 7.21 inches.
4. Edges: Square.
5. Color: As indicated on the drawings
6. Texture: Smooth finish

2.04 ACCESSORIES

A. Fasteners: Hot-dipped galvanized nails, with 0.092-inch diameter shank, in length required to penetrate [wood structural panels and]structural framing a minimum of 1-1/2 inches, as recommended in writing by composite siding system manufacturer suitable for and compatible with system materials. Larger diameter fasteners may be required depending on wind pressure, wind speed, and wind exposure category limitations for structures in product approvals PR-N124 or ESR-1301.

B. Non-Compressible Drainable Housewrap:
1. Non-compressible type with a minimum 40-mil drainage gap not reduced by force of fastening during siding installation.
2. Drainable housewrap type that removes bulk water by creating a minimum 40-mil drainage gap (air gap) at individual measurement points between housewrap and back of siding.

C. Flashing:
1. Provide flashing at window and door heads and where indicated on Drawings. Refer to Division 07 for sheet metal flashing.

2. Material: Aluminum.
    a. Finish: Siliconized polyester coating.
    b. Finish: High-performance organic finish.
    c. Finish: Factory-prime coating.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, engineered wood siding system supports, and other conditions affecting performance of the Work.
    1. Examine wall framing to verify that support members and anchorage have been installed within alignment tolerances required by engineered wood siding manufacturer.
    2. Examine wall sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by engineered wood siding manufacturer.
        a. Verify that air and moisture barrier has been installed over sheathing substrate to prevent air infiltration and water penetration.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. General: Install engineered wood siding in accordance with manufacturer's written instructions in orientation, sizes, and locations indicated. Anchor engineered wood siding and other components of the Work securely in place.
    1. Shim or otherwise plumb substrates receiving engineered wood siding system.
    2. Flash engineered wood siding at perimeter of all openings.
    3. Locate and space fastenings in uniform vertical and horizontal alignment.
    4. Seal engineered wood substrates exposed to weather to prevent moisture intrusion and water buildup.
        a. Seal around penetrations.
        b. Seal each exposed cut of siding and trim. It is not recommended to field spray-applied coatings on cuts.
        c. Seal each butt joint from weather by covering with joint moldings, sealant, or factory prefinished ends.
    5. Install flashing and trim as engineered wood siding work proceeds.
    6. Align bottoms of engineered wood siding.
    7. Provide weathertight escutcheons for pipe- and conduit-penetrating engineered wood siding system.

B. Metal Protection: Where dissimilar metal flashings contact each other or corrosive substrates, protect against galvanic action as recommended in writing by siding manufacturer.

C. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

D. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level. Install work with laps, joints, and seams that are permanently watertight.
    1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to achieve waterproof performance.

E. Replace engineered wood siding components that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION

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SECTION 07 46 46
FIBER CEMENT SIDING

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Fiber Cement Plank Lap Siding.

B. Trim, Fascia, Molding, and Accessories.

1.02 REFERENCE STANDARDS

A. ASTM C1185, Standard Test Methods for Sampling and Testing Fiber-Cement Flat Sheet, Roofing and siding Shingles, and Clapboards; 2023.

B. ASTM C1186, Standard Specification for Flat Fiber-Cement Sheets; 2022, with 2023 Editorial Revision.

C. ASTM D3359, Standard Test Methods for Rating Adhesion by Tape Test; 2023.

D. ASTM E84, Standard Test Method for Surface Burning Characteristics of Building Materials; 2020.

E. ASTM E119, Standard Test Methods for Fire Tests of Building Construction and Materials; 2024.

F. ASTM E136, Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750 Degrees C; 2022.

G. ASTM E330/E330M, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2021.

H. ICC-ES Evaluation Reports ESR-2290 and ESR-2273 (IBC, IRC, CBC, CRC); Current Editions.

I. Pre-Installation Conference:
   1. A minimum of 2-weeks prior to the commencement of the Work of this section, conduct a preliminary pre-installation conference at project site.
   2. Meet with Owner, Architect, and Installer, and Subcontractors completing related work.
   3. Review the Following:
      a. Methods and procedures to complete the Work.
      b. Substrate and installation requirements.
      c. Temporary protection requirements.
      d. Repair procedures.
      e. Schedule.
      f. Other pertinent topics.
   4. Provide record of discussion with meeting minutes distributed to all attendees.

1.03 SUBMITTALS

A. See Section 01 30 00, Administrative Requirements.

B. Product Data:
   1. Manufacturer’s product data sheets.
   2. Manufacturer’s storage and handling requirements.
   3. Manufacturer’s preparation instructions.
   4. Manufacturer’s installation instructions.
   5. Manufacturer’s operation and maintenance instructions.

C. Shop Drawings:
   1. Provide detailed drawings showing dimensions, layout, joints, construction details, and attachments.
   2. Indicate atypical non-standard applications outside of manufacturer’s standard details and specifications.

D. Selection Samples:

1. Provide two complete sets of color ships representing manufacturer's full range of available colors and patterns for each finish product specified.

E. Verification Samples:
   1. Provide two samples, minimum 4-inch x 6-inch (100 mm x 150 mm) representing selected product, color, texture, and patterns for each finish product specified.

F. Installers qualification statement.

G. Warranty:
   1. Manufacturer's sample warranty.
   2. Manufacturer's executed written warranty, completed in Owner's name and registered with manufacturer.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in work specified in this section with a minimum of five-years of experience with installation of products of this type.

B. Mock-up:
   1. Mock-Up: Build mock-up for evaluation of surface preparation techniques, installation workmanship, and to verify selections made from sample submittals to demonstrate aesthetic effects and set quality standards for fabrication and installation.
      a. Minimum 48-inches wide x 60-inches high or similar area as fits the layout of the building exterior.
      b. Include outside corner on one end of mockup and inside corner on the other end.
      c. Approval of mock-up does not constitute approval of deviations from the Contract Documents unless approved in writing.
      d. Approved mock-up may remain as a part of the completed work.
   2. Provide a minimum of 7-days notification to Architect, Installer, and Manufacturer's Representative prior to application of mock-up for review.
   3. Obtain approval of mock-up from Architect prior to commencement of Work.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store products in manufacturer's unopened packaging with labels intact until ready for installation.

B. Store siding flat on a smooth level surface and carry on its side.

C. Protect edges and corners from chipping.

D. Store materials under dry, waterproof, well-ventilated cover, elevated above grade, and kept dry prior to installation.

E. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of the Authorities Having Jurisdiction.

F. Protect materials from damage, dust, or other detrimental conditions.

1.06 FIELD CONDITIONS

A. Maintain environmental conditions including temperature, humidity, and ventilation in accordance with the limits indicated in the manufacturer's written instructions.

B. Do not install products in conditions outside of the manufacturer's stated limits.

1.07 WARRANTY

A. Manufacturer's Limited, Non Pro-rated Product Warranty:
   1. Plank, Soffit, and Trim: 30-year Warranty.
   2. Color-Plus Finish: 15-year Warranty.
   3. When installed and maintained in accordance with manufacturer's written requirements, warranty for 15-years from date of purchase covering peeling, cracking, and chipping.

B. Installers Warranty:
   1. Provide 2-year installers warranty covering workmanship for work of this Section.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. Basis-of-Design: James Hardie Building Products, Inc.; Hardie Plank Lap Siding; www.jameshardie.com.

B. Substitutions: See Section 01 60 00-Product Requirements.

2.02 FIBER CEMENT – LAP SIDING

A. Fiber Cement Lap Siding:
   1. Type A, Grade II, ASTM C1186.
   2. Non-combustible Material, ASTM E136.
   3. Flame Spread Index: 0, ASTM E84.
   4. Smoke Developed Index: <5, ASTM E84.

B. Type:
   1. As indicated on the drawings.
   2. Select Cedarmill:
      a. 5-1/4 inches (133 mm) with 4-inches (102 mm) exposure.
      b. 6-1/4 inches (159 mm) with 5-inches (127 mm) exposure.
      c. 7-1/4 inches (184 mm) with 6-inches (152 mm) exposure.
      d. 8-1/4 inches (210 mm) with 7-inches (178 mm) exposure.
      e. 9-1/4 inches (235 mm) with 8-inches (203 mm) exposure.
      f. 12-inches (305 mm) with 10-3/4 inches (273 mm) exposure.

C. Color:
   1. As indicated on the drawings.

D. Type A, Grade II, ASTM C1186.

E. Non-combustible Material, ASTM E136.

F. Flame Spread Index: 0, ASTM E84.

G. Smoke Developed Index: <5, ASTM E84.

H. Thickness: 1/4-inch (6 mm).

I. Type:
   1. Smooth:
      a. 12-inches (305 mm) x 12-feet (3658 mm).
      b. 16-inches (406 mm) x 12-feet (3658 mm.
      c. 24-inches (610 mm) x 8-feet (2438 mm).

J. Color:
   1. _____.
   2. As selected by Architect from manufacturer's standard range.

K. Product:
   1. Basis-of-Design: HardieSoffit; www.jameshardie.com.
   2. Substitutions: In accordance with the requirements of Division 01, General Requirements.

2.03 FIBER CEMENT VENTED SOFFIT PANELS

A. Type A, Grade II, ASTM C1186.
   1. Non-combustible Material, ASTM E136.

B. Flame Spread Index: 0, ASTM E84.

C. Smoke Developed Index: <5, ASTM E84.

D. Net Free Ventilation: 5-square inches per linear foot (10583 sq. mm per linear meter).
   1. Thickness: 1/4-inch (6 mm).

E. Type:

1. Textured Cedarmill:
    a. 24-inches (610 mm) x 8-feet (2438 mm).
2. Color:
    a. _____.
    b. As selected by Architect from manufacturer's standard range.

F. Type A, Grade II, ASTM C1186.

G. Non-combustible Material, ASTM E136.

H. Flame Spread Index: 0, ASTM E84.
1. Smoke Developed Index: 5, ASTM E84.

I. Net Free Ventilation: 12.6-square inches per linear foot (26670 sq. mm per linear meter).

J. Thickness: 1/4-inch (6 mm).

K. Type:
1. Smooth, Vented:
    a. 12-inches (305 mm) x 12-feet (3658 mm).
    b. 16-inches (406 mm) x 12-feet (3658 mm).
    c. 24-inches (610 mm) x 8-feet (2438 mm).
2. Textured Cedarmill:
    a. 12-inches (305 mm) x 12-feet (3658 mm).
    b. 16-inches (406 mm) x 12-feet (3658 mm).
    c. 24-inches (610 mm) x 8-feet (2438 mm).
3. Color:
    a. _____.
    b. As selected by Architect from manufacturer's standard range.
4. Product:
    a. Basis-of-Design: HardieSoffit VentedPlus Panels; www.jameshardie.com.
    b. Substitutions: In accordance with the requirements of Division 01, General Requirements.

2.04 ACCESSORIES

A. HardieTrim Trim Boards; www.jameshardie.com:
1. Type A, Grade I, ASTM C1186.
2. Flame Spread Index: 0, ASTM E84.
3. Smoke Developed Index: <5, ASTM E84.
4. 4/4 and 5/4 Boards as indicated on the drawings.
5. Texture:
    a. Smooth.
6. Length: 12-feet (3658 mm).

B. Seam Tape: HardieWrap; www.jameshardie.com.

C. Flashing:
1. HardieWrap Flashing Tape; www.jameshardie.com.
2. HardieWrap Flex Flashing Tape; www.jameshardie.com.

D. Fasteners:
1. Wood Framing Fasteners:
    a. As recommended by Manufacturer for the project conditions.

2.05 FINISHES

A. Factory Finish: Reference project Finish Schedule.
1. As supplied by manufacturer.
2. Factory applied finish is finish applied by the same company and in the same facility that manufactures the siding substrate.

3. Require factory applied finish by fiber cement manufacturer applied in controlled environment within manufacturer's facility utilizing multi-coat, heat cured finish within one manufacturing process.
4. Each finish color to have documented color match to Delta E of 0.5 or better between product lines, manufacturing lots, or production runs as measured by photospectrometer and verified by third party.
5. Provide factory applied finish protection prior to transit to site. Remove finish protection after installation.
6. Accessories: Provide complete finishing system including pre-packaged touch-up kit provided by manufacturer.
7. Provide quantities as recommended by manufacturer.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. Examine substrate, clean and repair to eliminate conditions detrimental to installation.

C. Do not commence with the Work until unacceptable conditions are remedied.

D. Verify that weather barrier is installed over substrate and ready to receive the Work.

E. If framing preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation prior to commencement of Work.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using methods recommended by manufacturer’s written requirements.

C. Protect surrounding work areas and surface during installation.

D. Repair punctures or tears in weather barrier prior to installation of siding.

3.03 WEATHER BARRIER

A. See Section 07 25 00, Weather Barriers.

B. Ensure weather barrier is installed with penetration and junction flashing in accordance with manufacturer’s written requirements and the Authorities Having Jurisdiction.

3.04 INSTALLATION – LAP SIDING

A. Install in strict accordance with manufacturer's written installation instructions at locations shown on Drawings.

B. General:
1. Protect siding from Work of other trades.
2. Surfaces to be dry prior to installation of weather barriers and siding.
3. Reference trim details on Drawings.
4. Touch-up cut edges prior to installation.

C. Flashing:
1. Install above door and window trim and casings.
2. Install above horizontal trim in field of siding.

3.05 INSTALLATION OF SOFFIT AND VENTED PANELS

A. Install in strict accordance with manufacturer's written installation instructions at locations shown on Drawings.

B. Panels may be installed as soffit or ceiling over wood or steel framing.

C. 20-gauge (33 mil) minimum to 16-gauge (54 mil) in compliance with the Authorities Having Jurisdiction.

D. Additional framing may be necessary to ensure proper fastening of siding.

3.06 INSTALLATION OF TRIM BOARDS

A. Install in strict accordance with manufacturer's written installation instructions at locations shown on Drawings.

B. Install flashing around all wall openings.

3.07 CLEANING

A. Clean siding in accordance with manufacturer’s written instructions using materials and methods acceptable to manufacturer.

3.08 PROTECTION

A. Protect installed products until date of Substantial Completion.

B. Touch-up, repair or replace damaged areas prior to date of Substantial Completion.

END OF SECTION

SECTION 07 62 00
SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fabricated sheet metal items, including flashings, counterflashings, gutters, and downspouts.

B. Sealants for joints within sheet metal fabrications.

1.02 REFERENCE STANDARDS

A. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2026.

B. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018 (Reapproved 2024).

D. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement; 2025.

E. CDA A4050 - Copper in Architecture - Handbook; Current Edition.

F. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.

C. Samples: Submit two samples, 4 by 4 inches in size, illustrating metal finish color.

1.04 QUALITY ASSURANCE

A. Perform work in accordance with SMACNA (ASMM) and CDA A4050 requirements and standard details, except as otherwise indicated.

B. Fabricator and Installer Qualifications: Company specializing in sheet metal work with five years of documented experience.

1.05 MOCK-UPS

A. Provide components for construction of a mock-up wall as indicated in Section 01 40 00 Quality Requirements and as indicated on the drawings.

B. Locate as indicated on drawings.

C. Provide all materials required for the mock-up wall.

D. Refer to Section 01 40 00 Quality Requirements for addtional information.

E. Mock-up may not remain as part of the Work.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

B. Prevent contact with materials that could cause discoloration or staining.

PART 2 PRODUCTS

2.01 SHEET MATERIALS

A. Pre-Finished Aluminum: ASTM B209/B209M, 3005 alloy, H12 or H14 temper; 18 gauge, 0.040 inch thick; plain finish shop pre-coated with silicone modified polyester coating.
   1. Fluoropolymer Coating: High performance organic powder coating, AAMA 2604; multiple coat, thermally cured fluoropolymer finish system.
   2. Color: As indicated on drawings.

2.02 FABRICATION

A. Form sections true to shape, accurate in size, square, and free from distortion or defects.

B. Form pieces in longest possible lengths.

C. Hem exposed edges on underside 1/2 inch; miter and seam corners.

D. Form material with flat lock seams, except where otherwise indicated; at moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.

E. Fabricate corners from one piece with minimum 18-inch long legs; seam for rigidity, seal with sealant.

F. Fabricate flashings to allow toe to extend 2 inches over roofing gravel. Return and brake edges.

2.03 GUTTERS AND DOWNSPOUTS

A. Gutters: SMACNA (ASMM) Rectangular profile.

B. Downspouts: Rectangular profile.

C. Gutters and Downspouts: Size indicated.

D. Accessories: Profiled to suit gutters and downspouts.
   1. Anchorage Devices: In accordance with SMACNA (ASMM) requirements.
   2. Gutter Supports: Brackets.
   3. Downspout Supports: Brackets.

E. Seal metal joints.

2.04 FLASHING

A. Flashing Panels for Exterior Wall Penetrations: Premanufactured components and accessories as required to preserve integrity of building envelope; suitable for conduits and facade materials to be installed.

2.05 ACCESSORIES

A. Fasteners: Galvanized steel, with soft neoprene washers.

B. Primer Type: Zinc chromate.

C. Concealed Sealants: Non-curing butyl sealant.

D. Exposed Sealants: ASTM C920; elastomeric sealant, with minimum movement capability as recommended by manufacturer for substrates to be sealed; color to match adjacent material.

E. Asphalt Roof Cement: ASTM D4586/D4586M, Type I, asbestos-free.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.

B. Verify roofing termination and base flashings are in place, sealed, and secure.

3.02 PREPARATION

A. Install starter and edge strips, and cleats before starting installation.

B. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil, 0.015 inch.

3.03 INSTALLATION

A. Insert flashings into reglets to form tight fit; secure in place with lead wedges; pack remaining spaces with lead wool; seal flashings into reglets with sealant.

B. Secure flashings in place using concealed fasteners, and use exposed fasteners only where permitted..

C. Apply plastic cement compound between metal flashings and felt flashings.

D. Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.

E. Seal metal joints watertight.

F. Secure gutters and downspouts in place with concealed fasteners.

G. Slope gutters 1/4 inch per 10 feet, minimum.

END OF SECTION

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SECTION 07 71 23
MANUFACTURED GUTTERS AND DOWNSPOUTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Gutters and downspouts.

B. Downspout boots.

1.02 RELATED REQUIREMENTS

A. Section 07 62 00 - Sheet Metal Flashing and Trim.

1.03 REFERENCE STANDARDS

A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2026.

B. ASTM A48/A48M - Standard Specification for Gray Iron Castings; 2022.

C. ASTM A755/A755M - Standard Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products; 2018 (Reapproved 2024).

D. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

E. ASTM D2244 - Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates; 2025.

F. CDA A4050 - Copper in Architecture - Handbook; Current Edition.

G. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on prefabricated components.

C. Shop Drawings: Indicate locations, configurations, jointing methods, fastening methods, locations, and installation details.

D. Samples: Two sample assemblies, 12 inches long, illustrating component design, finish, color, and configuration.

E. Executed warranty.

1.05 DELIVERY, STORAGE, AND HANDLING

A. See Section 01 74 19 - Construction Waste Management and Disposal for packaging waste requirements.

B. Stack material to prevent twisting, bending, or abrasion and to provide ventilation. Slope to drain.

C. Prevent contact with materials that cause discoloration, staining, or damage.

1.06 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Manufacturer Warranty: Provide 5-year manufacturer warranty for material and workmanship. Complete forms in Owner's name and register with manufacturer.

C. Finish Warranty: Provide 5-year manufacturer warranty against excessive degradation of exterior PVDF finish. Include provision for replacing units with excessive fading or chalking. Complete forms in Owner's name and register with manufacturer.

1. Color Retention: No fading or color change exceeding 5 Hunter color difference units, calculated in accordance with ASTM D2244.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Gutters and Downspouts:
   1. Product as indicated on the drawings.
   2. Substitutions: See Section 01 60 00 - Product Requirements.

B. Comply with SMACNA (ASMM) for sizing components for rainfall intensity determined by storm occurrence of 1 in 5 years.

2.02 GUTTERS AND DOWNSPOUTS

A. Gutters: Profile as indicated in drawings.

B. Downspouts: Profile as indicated in construction documents.

C. Anchors and Supports: Profiled to suit gutters and downspouts.
   1. Anchoring Devices: Type recommended by manufacturer.
   2. Gutter Supports: Brackets.
   3. Downspout Supports: Brackets.

D. Fasteners: Galvanized steel, with soft neoprene washers.

2.03 DOWNSPOUT BOOTS

A. Description: Smooth interior without boxed corners or choke points; include integral lug slots and on-body cleanout and cover with neoprene gaskets.
   1. Configuration: Angular.
   2. Material: Cast iron; ASTM A48/A48M; casting thickness 3/8 inch, minimum.
   3. Finish: Manufacturer's standard factory-applied powder coat finish.
   4. Color: Match downspouts.
   5. Accessories: Manufacturer's standard stainless steel fasteners, stainless steel building wall anchors, and rubber coupling.

2.04 SHOP FABRICATION

A. Form gutters and downspouts of profiles and size indicated in construction documents.

B. Fabricate with required connection pieces.

C. Form sections square, true, and accurate in size, in maximum possible lengths, free of distortion or defects detrimental to appearance or performance. Allow for expansion at joints; comply with CDA A4050

D. Hem exposed edges of metal.

E. Fabricate gutter and downspout accessories; seal watertight.

2.05 FINISHES

A. Prefinished Aluminum Sheets: Factory-applied topcoat systems applied to aluminum flat sheet substrates prior to fabrication by coil coating; topcoat systems consist of primers and organic topcoats on exposed side and backing coats on unexposed side.
   1. Superior Performance Organic Coating System: Comply with AAMA 2605 for aluminum preparation, pretreatment, primer, and finish coat system; provide thermally cured 70-percent PVDF fluoropolymer systems; tested for weathering for 10 years with 5 delta units color change maximum.
      a. Clear Topcoat: Manufacturer's clear topcoat applied over finish coat system.
   2. Application: Gutters and downspouts.
      a. Drawing Detail: As indicated on drawings.
      b. Base Metal Thickness: 0.063 inch, minimum.
      c. Coating System: Superior-performance organic coating system.
      d. Color: As indicated on drawings.
   3. Comply with ASTM A755/A755M.

2.06 MATERIALS

A. Prefinished Aluminum Sheet: ASTM B209/B209M; 0.032 inch thick.
   1. Finish: Plain, shop precoated with modified silicone coating.
   2. Color: As indicated on drawings.

2.07 ACCESSORIES

A. Flashing: See Section 07 62 00.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify dimensions, tolerances, and interfaces with other work.

B. Verify surfaces are acceptable for product installation in accordance with manufacturer's written instructions.

3.02 PREPARATION

A. Paint concealed sheet metal surfaces and surfaces in contact with dissimilar metals with protective backing paint to minimum dry film thickness of 15 mils, 0.015 inch.

3.03 INSTALLATION

A. Install gutters, downspouts, and accessories in accordance with manufacturer's instructions.

B. Sheet Metal: Join lengths with seams sealed watertight. Flash and seal gutters to downspouts and accessories.

C. Slope gutters 1/4 inch per 10 feet, minimum.

END OF SECTION

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SECTION 07 84 00
FIRESTOPPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Firestopping systems.

B. Firestopping of joints and penetrations in fire-resistance-rated and smoke-resistant assemblies, whether indicated on drawings or not, and other openings indicated.

1.02 REFERENCE STANDARDS

A. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2026.

B. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2024.

C. ASTM E2837 - Standard Test Method for Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed between Rated Wall Assemblies and Nonrated Horizontal Assemblies; 2023a, with Editorial Revision (2024).

D. ITS (DIR) - Directory of Listed Products; Current Edition.

E. FM (AG) - FM Approval Guide; Current Edition.

F. UL 1479 - Standard for Fire Tests of Penetration Firestops; Current Edition, Including All Revisions.

G. UL (DIR) - Online Certifications Directory; Current Edition.

H. UL (FRD) - Fire Resistance Directory; Current Edition.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number.

C. Product Data: Provide data on product characteristics, performance ratings, and limitations.

D. Manufacturer's qualification statement.

1.04 QUALITY ASSURANCE

A. Fire Testing: Provide firestopping assemblies of designs that provide the scheduled fire ratings when tested in accordance with methods indicated.
   1. Listing in UL (FRD), FM (AG), or ITS (DIR) will be considered as constituting an acceptable test report.
   2. Valid evaluation report published by ICC Evaluation Service, Inc. (ICC-ES) at www.icc-es.org will be considered as constituting an acceptable test report.
   3. Submission of actual test reports is required for assemblies for which none of the above substantiation exists.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum ten years documented experience.

1.05 FIELD CONDITIONS

A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation; maintain minimum temperature before, during, and for three days after installation of materials.

B. Provide ventilation in areas where solvent-cured materials are being installed.

PART 2 PRODUCTS

2.01 MATERIALS

A. Firestopping Materials: Any materials meeting requirements.

B. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Provide type of materials as required for tested firestopping assembly.

C. Fire Ratings: Refer to drawings for required systems and ratings.

2.02 FIRESTOPPING ASSEMBLY REQUIREMENTS

A. Head-of-Wall (HW) Joint System Firestopping at Joints Between Fire-Rated Wall Assemblies and Non-Rated Horizontal Assemblies: Use system that has been tested according to ASTM E2837 to have fire resistance F Rating equal to required fire rating of wall assembly.
   1. Movement: Provide systems that have been tested to show movement capability as indicated.

B. Through Penetration Firestopping: Use system that has been tested according to ASTM E814 to have fire resistance F Rating equal to required fire rating of penetrated assembly.
   1. Listing by FM (AG), ITS (DIR), UL (DIR), or UL (FRD) in their certification directories will be considered evidence of successful testing.

2.03 FIRESTOPPING SYSTEMS

A. Firestopping: Any material meeting requirements.
   1. Fire Ratings: Use system that is listed by FM (AG), ITS (DIR), or UL (FRD) and tested in accordance with ASTM E814, ASTM E119, or UL 1479 with F Rating equal to fire rating of penetrated assembly and minimum T Rating Equal to F Rating and in compliance with other specified requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify openings are ready to receive the work of this section.

3.02 PREPARATION

A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other materials that could adversely affect bond of firestopping material.

B. Remove incompatible materials that could adversely affect bond.

3.03 INSTALLATION

A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.

B. Do not cover installed firestopping until inspected by authorities having jurisdiction.

C. Install labeling required by code.

3.04 CLEANING

A. Clean adjacent surfaces of firestopping materials.

3.05 PROTECTION

A. Protect adjacent surfaces from damage by material installation.

END OF SECTION

SECTION 07 92 00
JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Nonsag gunnable joint sealants.

B. Self-leveling pourable joint sealants.

C. Joint backings and accessories.

1.02 REFERENCE STANDARDS

A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2015 (Reapproved 2022).

B. ASTM C794 - Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants; 2018 (Reapproved 2022).

C. ASTM C834 - Standard Specification for Latex Sealants; 2017 (Reapproved 2023).

D. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018 (Reapproved 2024).

E. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems; 2023.

F. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2025.

G. ASTM C1521 - Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints; 2019 (Reapproved 2025).

H. SCAQMD 1168 - Adhesive and Sealant Applications; 1989, with Amendment (2022).

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Submit manufacturer's technical datasheets for each product to be used; include the following:
   1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
   2. List of backing materials approved for use with the specific product.
   3. Backing material recommended by sealant manufacturer.
   4. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
   5. Substrates the product should not be used on.
   6. Substrates for which use of primer is required.
   7. Substrates for which laboratory adhesion and/or compatibility testing is required.
   8. Installation instructions, including precautions, limitations, and recommended backing materials and tools.
   9. Sample product warranty.

C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.

D. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.

E. Preconstruction Laboratory Test Reports: Submit at least four weeks prior to start of installation.

F. Installation Plan: Submit at least four weeks prior to start of installation.

G. Preinstallation Field Adhesion Test Plan: Submit at least two weeks prior to start of installation.

H. Field Quality Control Plan: Submit at least two weeks prior to start of installation.

I. Preinstallation Field Adhesion Test Reports: Submit filled out Preinstallation Field Adhesion Test Reports log within 10 days after completion of tests; include bagged test samples and photographic records.

J. Installation Log: Submit filled-out log for each length or instance of sealant installed.

K. Field Quality Control Log: Submit filled-out log for each length or instance of sealant installed, within 10 days after completion of inspections/tests; include bagged test samples and photographic records, if any.

L. Executed warranty.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum 10 years documented experience.

B. Installer Qualifications: Company specializing in performing the work of this section and with at least three years of documented experience.

C. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

D. Preconstruction Laboratory Testing: Arrange for sealant manufacturer(s) to test each combination of sealant, substrate, backing, and accessories.
   1. Adhesion Testing: In accordance with ASTM C794.
   2. Compatibility Testing: In accordance with ASTM C1087.
   3. Allow sufficient time for testing to avoid delaying the work.
   4. Deliver sufficient samples to manufacturer for testing.
   5. Report manufacturer's recommended corrective measures, if any, including primers or techniques not indicated in product data submittals.

E. Installation Plan: Include schedule of sealed joints, including the following:
   1. Method to be used to protect adjacent surfaces from sealant droppings and smears, with acknowledgment that some surfaces cannot be cleaned to like-new condition and therefore prevention is imperative.
   2. Approximate date of installation, for evaluation of thermal movement influence.
   3. Installation Log Form: Include the following data fields, with known information filled out.
      a. Sealant used.
      b. Primer to be used, or indicate no primer is used.
      c. Date of installation.
      d. Name of installer.
      e. Actual joint width; provide space to indicate maximum and minimum width.
      f. Actual joint depth to face of backing material at centerline of joint.
      g. Air temperature.

F. Preinstallation Field Adhesion Test Plan: Include destructive field adhesion testing of one sample of each combination of sealant type and substrate, except interior acrylic latex sealants, and include the following for each tested sample.
   1. Identification of testing agency.
   2. Preinstallation Field Adhesion Test Log Form: Include the following data fields, with known information filled out.
      a. Test date.
      b. Copy of test method documents.
      c. Age of sealant upon date of testing.
      d. Test results, modeled after the sample form in the test method document.
      e. Indicate use of photographic record of test.

G. Field Quality Control Plan:
   1. Visual inspection of entire length of sealant joints.

2. Nondestructive field adhesion testing of sealant joints, except interior acrylic latex sealants.
    a. For each different sealant and substrate combination, allow for one test every 12 inches in the first 10 linear feet of joint and one test every 24 inches thereafter.
    b. If any failures occur in the first 10 linear feet, continue testing at 12 inches intervals at no extra cost to Owner.
3. Destructive field adhesion testing of sealant joints, except interior acrylic latex sealant.
    a. For each different sealant and substrate combination, allow for one test every 100 feet in the first 1,000 linear feet, and one test per 1,000 linear feet thereafter, or once per floor on each elevation.
    b. If any failures occur in the first 1,000 linear feet, continue testing at frequency of one test per 500 linear feet at no extra cost to Owner.
4. Field testing agency's qualifications.
5. Field Quality Control Log Form: Show same data fields as on Preinstallation Field Adhesion Test Log, with known information filled out and lines for multiple tests per sealant/substrate combinations; include visual inspection and specified field testing; allow for possibility that more tests than minimum specified may be necessary.

H. Field Adhesion Test Procedures:
1. Allow sealants to fully cure as recommended by manufacturer before testing.
2. Have a copy of the test method document available during tests.
3. Record the type of failure that occurred, other information required by test method, and the information required on the Field Quality Control Log.
4. When performing destructive tests, also inspect the opened joint for proper installation characteristics recommended by manufacturer, and report any deficiencies.
5. Deliver the samples removed during destructive tests in separate sealed plastic bags, identified with project, location, test date, and test results, to Owner.
6. If any combination of sealant type and substrate does not show evidence of minimum adhesion or shows cohesion failure before minimum adhesion, report results to Architect.

I. Nondestructive Field Adhesion Test: Test for adhesion in accordance with ASTM C1521, using Nondestructive Spot Method.

J. Destructive Field Adhesion Test: Test for adhesion in accordance with ASTM C1521, using Destructive Tail Procedure.
1. Sample: At least 18 inches long.
2. Minimum Elongation Without Adhesive Failure: Consider the tail at rest, not under any elongation stress; multiply the stated movement capability of the sealant in percent by two; then multiply 1 inch by that percentage; if adhesion failure occurs before the 1-inch mark is that distance from the substrate, the test has failed.
3. If either adhesive or cohesive failure occurs before minimum elongation, take necessary measures to correct conditions and retest; record each modification to products or installation procedures.

1.05 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Manufacturer Warranty: Provide 2-year manufacturer warranty for installed sealants and accessories that fail to achieve a watertight seal, exhibit loss of adhesion or cohesion, or do not cure. Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.01 JOINT SEALANT APPLICATIONS

A. Scope:
1. Exterior Joints:
    a. Seal open joints except open joints indicated on drawings as not sealed.
2. Interior Joints:

a. Do not seal interior joints indicated on drawings as not sealed.
b. Seal the following joints:
1) Joints between door frames and window frames and adjacent construction.

3. Do Not Seal:
a. Intentional weep holes in masonry.
b. Joints indicated to be covered with expansion joint cover assemblies.
c. Joints where sealant is specified to be furnished and installed by manufacturer of product to be sealed.
d. Joints where sealant installation is specified in other sections.
e. Joints between suspended ceilings and walls.

B. Exterior Joints: Use nonsag polyurethane sealant, unless otherwise indicated.

C. Interior Wet Areas: Bathrooms, restrooms, and kitchens; fixtures in wet areas include plumbing fixtures, countertops, cabinets, and other similar items.

2.02 JOINT SEALANTS - GENERAL

A. Sealants and Primers: Provide products having lower volatile organic compound (VOC) content than indicated in SCAQMD 1168.

B. Colors: As indicated on drawings.

2.03 NONSAG JOINT SEALANTS

A. Type Exterior Conventional Polyurethane - Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus 50 percent, minimum.
2. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
3. Color: To be selected by Architect from manufacturer's full range.
4. Service Temperature Range: Minus 40 to 180 degrees F.

B. Type Interior Nonwet Areas - Acrylic Emulsion Latex: Water-based; ASTM C834, single component, nonstaining, nonbleeding, nonsagging; not intended for exterior use.
1. Color: To be selected by Architect from manufacturer's full range.
2. Grade: ASTM C834; Grade 0 Degrees F (Minus 18 Degrees C).

2.04 ACCESSORIES

A. Sealant Backing Materials, General: Materials placed in joint before applying sealants; assists sealant performance and service life by developing optimum sealant profile and preventing three-sided adhesion; type and size recommended by sealant manufacturer for compatibility with sealant, substrate, and application.

B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.

C. Masking Tape: Self-adhesive, nonabsorbent, nonstaining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.

D. Joint Cleaner: Noncorrosive and nonstaining type, type recommended by sealant manufacturer; compatible with joint forming materials.

E. Primers: Type recommended by sealant manufacturer to suit application; nonstaining.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that joints are ready to receive work.

B. Verify that backing materials are compatible with sealants.

C. Verify that backer rods are of the correct size.

D. Preinstallation Adhesion Testing: Install a sample for each test location indicated in the test plan.
   1. Test each sample as specified in PART 1 under QUALITY ASSURANCE article.
   2. Notify Architect of date and time that tests will be performed, at least seven days in advance.
   3. Record each test on Preinstallation Adhesion Test Log as indicated.
   4. If any sample fails, review products and installation procedures, consult manufacturer, or take other measures that are necessary to ensure adhesion; retest in a different location; if unable to obtain satisfactory adhesion, report to Architect.
   5. After completion of tests, remove remaining sample material and prepare joints for new sealant installation.

3.02 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

3.03 INSTALLATION

A. Install this work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Provide joint sealant installations complying with ASTM C1193.

C. Install bond breaker backing tape where backer rod cannot be used.

D. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.

E. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.

F. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

3.04 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements for additional requirements.

B. Perform field quality control inspection/testing as specified in PART 1 under QUALITY ASSURANCE article.

C. Non-Destructive Adhesion Testing: If there are any failures in first 100 linear feet, notify Architect immediately.

D. Destructive Adhesion Testing: If there are any failures in first 1,000 linear feet, notify Architect immediately.

E. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.

F. Repair destructive test location damage immediately after evaluation and recording of results.

END OF SECTION

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SECTION 08 11 13
HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Non-fire-rated hollow metal doors and frames.

B. Hollow metal frames for wood doors.

C. Fire-rated hollow metal doors and frames.

D. Thermally insulated hollow metal doors with frames.

E. Tornado-resistant hollow metal doors and frames.

F. Hollow metal borrowed lites glazing frames.

1.02 RELATED REQUIREMENTS

A. Section 08 71 00 - Door Hardware.

B. Section 08 80 00 - Glazing: Glass for doors and borrowed lites.

C. Section 09 91 13 - Exterior Painting: Field painting.

D. Section 09 91 23 - Interior Painting: Field painting.

1.03 ABBREVIATIONS AND ACRONYMS

A. ANSI: American National Standards Institute.

B. ASCE: American Society of Civil Engineers.

C. HMMA: Hollow Metal Manufacturers Association.

D. NAAMM: National Association of Architectural Metal Manufacturers.

E. NFPA: National Fire Protection Association.

F. SDI: Steel Door Institute.

G. UL: Underwriters Laboratories.

1.04 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors; 2026.

C. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames; 2024.

D. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2023.

E. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2025.

F. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

G. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2026.

H. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2025.

I. ASTM C143/C143M - Standard Test Method for Slump of Concrete; 2026b.

J. ASTM C476 - Standard Specification for Grout for Masonry; 2023.

K. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).

L. BHMA A156.115 - Hardware Preparation in Steel Doors and Frames; 2016.

M. FEMA P-361 - Safe Rooms for Tornadoes and Hurricanes: Guidance for Community and Residential Safe Rooms; 2024.

N. ICC 500 - ICC/NSSA Standard for the Design and Construction of Storm Shelters; 2020.

O. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

P. ITS (DIR) - Directory of Listed Products; Current Edition.

Q. NAAMM HMMA 830 - Hardware Selection for Hollow Metal Doors and Frames; 2002.

R. NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames; 2024.

S. NAAMM HMMA 840 - Guide Specifications for Receipt, Storage and Installation of Hollow Metal Doors and Frames; 2024.

T. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames; 2014.

U. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2025, with Amendment (2024).

V. NFPA 105 - Standard for Smoke Door Assemblies and Other Opening Protectives; 2025.

W. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2022.

X. SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames; 2026.

Y. UL (DIR) - Online Certifications Directory; Current Edition.

Z. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

AA. UL 1784 - Standard for Air Leakage Tests of Door Assemblies and Other Opening Protectives; Current Edition, Including All Revisions.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced standards/guidelines.

C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and any indicated finish requirements. Include the following:
   1. Elevations of each door design.
   2. Details of doors, including vertical and horizontal edge details and metal thicknesses.
   3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
   4. Locations of reinforcement and preparations for hardware.
   5. Details of anchorages, joints, field splices, and connections.
   6. Details of accessories.
   7. Details of moldings, removable stops, and glazing.
   8. Details of conduit and preparations for power, signal, and control systems.

1.06 QUALITY ASSURANCE

A. Source Limitations: Obtain hollow metal doors and frames through one source from a single manufacturer wherever possible.

B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than 10 years documented experience.

C. Maintain at project site copies of reference standards relating to installation of products specified.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.

B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

1.08 PROJECT CONDITIONS

A. Field Measurements: Confirm actual dimensions of each opening via Project Site measurements, prior to commencement of ffabrication.

1.09 COORDINATION

A. Coordinate installation of all anchorages for hollow metal frames. Furnish setting drawings, templates and directions for all installing anchorages, including sleeves, concrete inserts, anchor bolts and items with integral anchors. Deliver such items to project site in time for scheduled installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Hollow Metal Doors and Frames:
   1. Ceco Door, an Assa Abloy Group company: www.assaabloydss.com/#sle.
   2. Curries, an Assa Abloy Group company: www.assaabloydss.com/#sle.
   3. Substitutions: See Section 01 60 00 - Product Requirements.

B. Tornado-Resistant Hollow Metal Doors and Frames:
   1. Krieger Specialty Products: www.kriegerproducts.com/#sle.
   2. Premier Steel Doors and Frames: www.trustpremier.com/#sle.
   3. Republic Doors, an Allegion brand: www.republicdoor.com/#sle.

2.02 PERFORMANCE REQUIREMENTS

A. Requirements for Hollow Metal Doors and Frames:
   1. Steel Sheet: Comply with one or more of the following requirements; galvannealed steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, commercial steel (CS) Type B, for each.
   2. Accessibility: Comply with ICC A117.1 and ADA Standards.
   3. Door Edge Profile: Manufacturers standard for application indicated.
   4. Hardware Preparations, Selections and Locations: Comply with NAAMM HMMA 830 and NAAMM HMMA 831 or BHMA A156.115 and ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
   5. Zinc Coating for Typical Interior and/or Exterior Locations: Provide metal components zinc-coated (galvanized) and/or zinc-iron alloy-coated (galvannealed) by the hot-dip process in accordance with ASTM A653/A653M, with manufacturer's standard coating thickness, unless noted otherwise for specific hollow metal doors and frames.
      a. Based on SDI Standards: Provide at least A40/ZF120 (galvannealed) when necessary, coating not required for typical interior door applications, and at least A60/ZF180 (galvannealed) for corrosive locations.

B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.03 HOLLOW METAL DOORS

A. Door Finish: Factory primed and field finished.

B. Exterior Doors: Thermally insulated.
   1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
      a. Level .
      b. Physical Performance ; in accordance with ANSI/SDI A250.4.
      c. Model 1 - Full Flush.
      d. Door Face Metal Thickness: , minimum.
      e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.
      f. Thermal properties to rate at a fully operable minimum U-Factor 0.374 and R-Value 2.53, including insulated door, Mercury thermal break frame and threshold.
      g. Top and Bottom Edges: Reinforce top and bottom of each door with continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet. Doors with an inverted top channel shall include a steel closure channel, screw attached, with the web of the channel flush with the face sheets of the door. Plastic or composite channel fillers will not be acceptable.
      h. Hinge Reinforcement: Minimum 7 gauge (3/16"), plate 1-1/4" x 9".
      i. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6, Current Edition, with reinforcing plates from same material as door face sheets.
   2. Door Thickness: 1-3/4 inches, nominal.
   3. Top Closures: Flush with top of faces and edges.
   4. Door Face Sheets: Flush.

C. Interior Doors, Non-Fire-Rated:
   1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
      a. Level 2 - Heavy-duty.
      b. Physical Performance Level B, 500,000 cycles; in accordance with ANSI/SDI A250.4.
      c. Model 1 - Full Flush.
      d. Door Face Metal Thickness: 18 gauge, 0.042 inch, minimum.
      e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.
   2. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements.
   3. Door Thickness: 1-3/4 inches, nominal.
   4. Door Face Sheets: Flush.
   5. Top and Bottom Edges: Reinforce tops and bottoms of each door with continuous steel channel not less than16 gauge, extending the full width of the door and welded to the face sheet.
   6. Hinge Reinforcement: Minimum 7 gauge (3/16"), plate 1-1/4" x 9" or minimum 14 gauge continuous channel with pierced holes, drilled and tapped.
   7. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6, Current Edition, with reinforcing plates from same material as door face sheets.

D. Fire-Rated Doors:
   1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
      a. Level 2 - Heavy-duty.
      b. Physical Performance Level B, 500,000 cycles; in accordance with ANSI/SDI A250.4.
      c. Model 1 - Full Flush.
      d. Door Face Metal Thickness: 18 gauge, 0.042 inch, minimum.
   2. Fire Rating: As indicated on drawings, tested in accordance with UL 10C and NFPA 252 ("positive pressure fire tests").
   3. Temperature-Rise Rating (TRR) Across Door Thickness: 450 degrees F.
   4. Provide units listed and labeled by UL (DIR) or ITS (DIR).
      a. Attach fire rating label to each fire rated unit.

5. Smoke and Draft Control Doors: Self-closing or automatic closing doors in accordance with NFPA 80 and NFPA 105, with fire-resistance-rated wall construction rated the same or greater than the fire-rated doors, and the following;
    a. Maximum Air Leakage: 3.0 cfm/sq ft of door opening at 0.10 inch w.g. pressure, when tested in accordance with UL 1784 at both ambient and elevated temperatures.
    b. Gasketing: Provide gasketing or edge sealing as necessary to achieve leakage limit.
    c. Label: Include the "S" label on fire-rating label of door.
6. Door Core Material: Manufacturers standard core material/construction in compliance with requirements.
7. Door Thickness: 1-3/4 inches, nominal.
8. Door Face Sheets: Flush.

E. Tornado-Resistant Doors:
1. Design and size door and frame components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M.
    a. Design Wind Loads: Comply with requirements of applicable code.
    b. Wind-Borne Debris Resistance: Door and frame components shall have UL (DIR) approval for Large and Small Missile impact and pressure cycling at design wind loads.
2. Tornado Shelter Application: Comply with ICC 500 standard.
    a. Commercial: Designed and tested to comply with FEMA P-361 community shelter door assembly guidelines.
3. Provide fire rated assemblies as indicated and as required by applicable code requirements.
4. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
    a. Level .
    b. Physical Performance ; in accordance with ANSI/SDI A250.4.
    c. Model 1 - Full Flush.
    d. Door Face Metal Thickness: 14 gauge, 0.067 inch, minimum.
    e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.
5. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements.
6. Door Thickness: 1-3/4 inches, nominal.
7. Door Face Sheets: Flush.

2.04 HOLLOW METAL FRAMES

A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.

B. Frame Finish: Factory primed and field finished.

C. Exterior Door Frames: Knock-down type.
1. Galvanizing: Components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with A40/ZF120 coating.
2. Frame Metal Thickness: 14 gauge, 0.067 inch, minimum.
3. Weatherstripping: Separate, see Section 08 71 00.

D. Interior Door Frames, Non-Fire Rated: Full profile/continuously welded type.
1. Frame Metal Thickness: 16 gauge, 0.053 inch, minimum.

E. Door Frames, Fire-Rated: Knock-down type.
1. Fire Rating: Same as door, labeled.
2. Frame Metal Thickness: 16 gauge, 0.053 inch, minimum.

F. Tornado-Resistant Door Frames: With same tornado resistance as door; face welded or full profile/continuously welded construction, ground smooth, fully prepared and reinforced for hardware installation.

G. Frames for Wood Doors: Comply with frame requirements in accordance with corresponding door.

H. Borrowed Lites Glazing Frames: Construction and face dimensions to match door frames, and as indicated on drawings.

I. Provide mortar guard boxes for hardware cut-outs in frames to be installed in masonry or to be grouted.

J. Frames in Masonry Walls: Size to suit masonry coursing with head member 4 inches high to fill opening without cutting masonry units.

K. Frames Wider than 48 inches: Reinforce with steel channel fitted tightly into frame head, flush with top.

2.05 FINISHES

A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.

2.06 ACCESSORIES

A. Door Window Frames: Door window frames with glazing securely fastened within door opening.
   1. Size: As indicated on drawings.
   2. Frame Material: 18 gauge, 0.0478 inch, galvanized steel.

B. Glazing: As specified in Section 08 80 00, factory installed.

C. Removable Stops: Formed sheet steel, shape as indicated on drawings, mitered or butted corners; prepared for countersink style tamper proof screws.

D. Grout for Frames: Mortar grout complying with ASTM C476 with maximum slump of 4 inches as measured in accordance with ASTM C143/C143M for hand troweling in place; plaster grout and thinner pumpable grout are prohibited.

E. Silencers: Resilient rubber, fitted into drilled hole; provide three on strike side of single door, three on center mullion of pairs, and two on head of pairs without center mullions.

F. Temporary Frame Spreaders: Provide for factory- or shop-assembled frames.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Verify that finished walls are in plane to ensure proper door alignment.

3.02 PREPARATION

A. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.

3.03 INSTALLATION

A. Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.

B. Install fire rated units in accordance with NFPA 80.

C. Coordinate frame anchor placement with wall construction.

D. Grout frames in masonry construction, using hand trowel methods; brace frames so that pressure of grout before setting will not deform frames.

E. Install door hardware as specified in Section 08 71 00.

F. Coordinate installation of electrical connections to electrical hardware items.

3.04 TOLERANCES

A. Clearances Between Door and Frame: Comply with related requirements of specified frame standards or custom guidelines indicated in accordance with SDI 117 or NAAMM HMMA 861.

B. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.05 ADJUSTING

A. Adjust for smooth and balanced door movement.

END OF SECTION

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SECTION 08 14 16
FLUSH WOOD DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Flush wood doors; flush and flush glazed configuration; fire-rated and non-rated.

1.02 RELATED REQUIREMENTS

A. Section 08 11 13 - Hollow Metal Doors and Frames.

1.03 REFERENCE STANDARDS

A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2026.

C. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Indicate door core materials and construction; veneer species, type and characteristics.

C. Shop Drawings: Show doors and frames, elevations, sizes, types, swings, undercuts, beveling, blocking for hardware, factory machining, factory finishing, cutouts for glazing and other details.

D. Samples: Submit two samples of door veneer, 3 by 3 inches in size illustrating wood grain, stain color, and sheen.

E. Manufacturer's Installation Instructions: Indicate special installation instructions.

F. Warranty, executed in Owner's name.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section, with not less than three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Package, deliver and store doors in accordance with specified quality standard.

B. Accept doors on site in manufacturer's packaging, and inspect for damage.

C. Protect doors with resilient packaging sealed with heat shrunk plastic; do not store in damp or wet areas or areas where sunlight might bleach veneer; seal top and bottom edges with tinted sealer if stored more than one week, and break seal on site to permit ventilation.

1.07 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Manufacturer Warranty: Provide manufacturer's warranty on interior doors for the life of the installation. Complete forms in Owner's name and register with manufacturer.

1. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Wood Veneer Faced Doors:

1. As indicated on the drawings.
2. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 DOORS AND PANELS

A. Doors: See drawings for locations and additional requirements.
   1. Quality Standard: Custom Grade, Heavy Duty performance, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
   2. Wood Veneer Faced Doors: 5-ply unless otherwise indicated.

B. Interior Doors: 1-3/4 inches thick unless otherwise indicated; flush construction.
   1. Provide solid core doors at each location.
   2. Fire Rated Doors: Tested to ratings indicated on drawings in accordance with UL 10C - Positive Pressure; Underwriters Laboratories Inc (UL) or Intertek/Warnock Hersey (WHI) labeled without any visible seals when door is open.
   3. Wood veneer facing with factory transparent finish as indicated on drawings.

2.03 DOOR AND PANEL CORES

A. Non-Rated Solid Core and 20 Minute Rated Doors: Type particleboard core (PC), plies and faces as indicated.

B. Fire-Rated Doors: Mineral core type, with fire resistant composite core (FD), plies and faces as indicated above; with core blocking as required to provide adequate anchorage of hardware without through-bolting.

2.04 DOOR FACINGS

A. Veneer Facing for Transparent Finish: Species as indicated on the drawings, veneer grade in accordance with quality standard indicated, plain sliced (flat cut), with book match between leaves of veneer, running match of spliced veneer leaves assembled on door or panel face.
   1. Vertical Edges: Same species as face veneer.
   2. "Pair Match" each pair of doors; "Set Match" pairs of doors within 10 feet of each other when doors are closed.

2.05 DOOR CONSTRUCTION

A. Fabricate doors in accordance with door quality standard specified.

B. Cores Constructed with stiles and rails:
   1. Provide solid blocks at lock edge for hardware reinforcement.
   2. Provide solid blocking for other throughbolted hardware.

C. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.

D. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.

E. Provide edge clearances in accordance with the quality standard specified.

2.06 FINISHES - WOOD VENEER DOORS

A. Finish work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:

B. Factory finish doors in accordance with approved sample.

C. Seal door top edge with color sealer to match door facing.

2.07 ACCESSORIES

A. Hollow Metal Door Frames: See Section 08 11 13.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.02 INSTALLATION

A. Install doors in accordance with manufacturer's instructions and specified quality standard.

B. Factory-Finished Doors: Do not field cut or trim; if fit or clearance is not correct, replace door.

C. Use machine tools to cut or drill for hardware.

D. Coordinate installation of doors with installation of frames and hardware.

3.03 TOLERANCES

A. Comply with specified quality standard for fit and clearance tolerances.

B. Comply with specified quality standard for telegraphing, warp, and squareness.

3.04 ADJUSTING

A. Adjust doors for smooth and balanced door movement.

B. Adjust closers for full closure.

END OF SECTION

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SECTION 08 31 00
ACCESS DOORS AND PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wall- and ceiling-mounted access units.

1.02 REFERENCE STANDARDS

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide sizes, types, finishes, hardware, scheduled locations, and details of adjoining work.

C. Manufacturer's Installation Instructions: Indicate installation requirements.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years documented experience.

PART 2 PRODUCTS

2.01 ACCESS DOORS AND PANELS ASSEMBLIES

A. Wall-Mounted Units:
   1. Location: As indicated on drawings.
   2. Panel Material: Steel, hot-dipped zinc or zinc-aluminum-alloy coated.
   3. Size: As indicated on the drawings.
   4. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.
   5. Wall Mounting Criteria: Provide surface-mounted face frame and door surface flush with frame surface.
   6. Gypsum Board Mounting Criteria: Provide drywall bead frame with door surface flush with wall surface.

B. Ceiling-Mounted Units:
   1. Location: As indicated on drawings.
   2. Size - Other Ceilings: As indicated on the drawings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that rough openings are correctly sized and located.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to proceeding with this work.

B. Prepare surfaces using methods recommended by manufacturer for applicable substrates in accordance with project conditions.

3.03 INSTALLATION

A. Install units in accordance with manufacturer's instructions.

B. Install frames plumb and level in openings, and secure units rigidly in place.

C. Position units to provide convenient access to concealed equipment when necessary.

END OF SECTION

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SECTION 08 36 13
SECTIONAL DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Overhead sectional doors, electrically operated.

B. Operating hardware and supports.

C. Electrical controls.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

B. ASTM C1036 - Standard Specification for Flat Glass; 2025.

C. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2025.

D. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2026.

E. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).

F. DASMA 102 - American National Standard Specifications for Sectional Doors; 2018.

G. ITS (DIR) - Directory of Listed Products; Current Edition.

H. NEMA ICS 2 - Controllers, Contactors and Overload Relays Rated 600 Volts; 2000 (Reaffirmed 2020).

I. NEMA MG 00001 - Motors and Generators; 2024.

J. NEMA EN 10250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2024.

K. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

L. UL (DIR) - Online Certifications Directory; Current Edition.

M. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Indicate opening dimensions and required tolerances, connection details, anchorage spacing, hardware locations, and installation details.

C. Product Data: Show component construction, anchorage method, and hardware.

D. Manufacturer's Installation Instructions: Include any special procedures required by project conditions.

E. Operation Data: Include normal operation, troubleshooting, and adjusting.

F. Maintenance Data: Include data for motor and transmission, shaft and gearing, lubrication frequency, spare part sources.

G. Specimen warranty.

H. Warranty: Submit Manufacturer's Warranty while ensuring all forms have been completed in Owner's name and registered with Manufacturer.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum ten years of documented experience.

B. Installer Qualifications: Company specializing in performing work of type specified and with at least ten years documented experience.

C. Comply with applicable code for motor and motor control requirements.

D. Products Requiring Electrical Connection: Listed and classified by ITS (DIR), UL (DIR), or testing firm acceptable to authorities having jurisdiction, as suitable for purpose specified.

1.06 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for warranty requirements.

B. Extended Correction Period: Correct defective work within a 2-year period commencing on Date of Substantial Completion.

C. Manufacturer Warranty: Provide 5-year manufacturer warranty for electric operating equipment. Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Sectional Doors:
   1. Basis of Design: Wayne-Dalton, a Division of Overhead Door Corporation: www.wayne-dalton.com/#sle.
      a. Include 1/2-inch thick insulted tempered glazing..
   2. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 PERFORMANCE REQUIREMENTS

A. Performance: Withstand positive and negative wind loads equal to 1.5 times design wind loads specified by local code without damage or permanent set, when tested in accordance with ASTM E330/E330M, using 10 second duration of maximum load.

B. Air Leakage Rate: Less than 0.40 cfm/sq ft when tested in accordance with ASTM E283/E283M at test pressure difference of 1.57 psf.

C. Thermal Transmittance: U-factor of 0.31 Btu/hr sq ft degrees F, maximum, in accordance with DASMA 102.

2.03 STEEL DOORS

A. Doors: Flush steel, insulated; standard lift operating style with track and hardware; complying with DASMA 102, Commercial application.
   1. Door Nominal Thickness: 2 inches thick.
   2. Exterior Finish:
      a. Factory finished with acrylic baked enamel; color as indicated on the drawings.
   3. Interior Finish:
      a. Factory finished with acrylic baked enamel; color as indicated on the drawings.
   4. Glazed Lites: Full panel width, number of rows as indicated on the drawings; set in place with resilient glazing channel.
      a. Glazing: Annealed float glass; insulated glass units; clear; 1/2 inch nominal overall thickness.
   5. Electric Operation: Electric control station.

2.04 COMPONENTS

A. Track: Rolled galvanized steel, 0.120 inch minimum thickness; 3 inch wide, continuous one piece per side; galvanized steel mounting brackets 1/4 inch thick.
   1. High lift, hold 24-inches minimum from ceiling structure

B. Hinge and Roller Assemblies: Heavy duty hinges and adjustable roller holders of galvanized steel; floating hardened steel bearing rollers, located at top and bottom of each panel, each side.
   1. 3-inch rollers, including ten 5/16-inch steel ball bearings, full floating within hardened steel races.

C. Lift Mechanism: Torsion spring on cross head shaft, with braided galvanized steel lifting cables.
   1. For Manual Operation: Requiring maximum exertion of 25 lbs force to open.
   2. 100K cycle.

D. Sill Weatherstripping: One-piece resilient hollow rubber strip, one piece; fitted to bottom of door panel, full length contact.

E. Jamb Weatherstripping: Roll formed steel section full height of jamb, fitted with resilient weatherstripping, placed in moderate contact with door panels.

F. Head Weatherstripping: EPDM rubber seal, one piece full length.

G. Panel Joint Weatherstripping: Neoprene foam seal, one piece full length.

H. Lock: Inside center mounted, adjustable keeper, spring activated latch bar with feature to retain in locked or retracted position; interior and exterior handle.

2.05 MATERIALS

A. Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G60/Z180 coating, plain surface.

B. Float Glass: Provide float glass glazing, unless noted otherwise.
   1. Annealed Type: ASTM C1036, Type I, transparent flat, Class 1 clear, Quality Q3 (glazing select).
   2. Heat-Strengthened and Fully Tempered Types: ASTM C1048.

C. Insulation: Foamed-in-place polyurethane, bonded to facing.

2.06 ELECTRIC OPERATION

A. Operator, Controls, Actuators, and Safeties: Comply with UL 325; provide products listed by ITS (DIR), UL (DIR), or testing agency acceptable to authorities having jurisdiction.
   1. Provide interlock switches on motor operated units.
   2. All wiring, including low voltage, shall be set within concuit and concealed within masonry.

B. Electric Operators:
   1. Basis of Design: Liftmaster J, Jackshaft Operator.
      a. Manually operable in case of power faliure.
   2. Mounting: Side mounted on cross head shaft.
   3. Motor Enclosure:
      a. Exterior Doors: NEMA MG 00001, Type 4; open drip proof.
   4. Motor Rating: 1 hp; continuous duty.
   5. Motor Voltage: Coordinate with electrical drawings.
   6. Motor Controller: NEMA ICS 2, full voltage, reversing magnetic motor starter.
   7. Controller Enclosure: NEMA EN 10250, Type 1.
   8. Opening Speed: 12 inches per second.
   9. Brake: Adjustable friction clutch type, activated by motor controller.
   10. Manual override in case of power failure.
   11. See Section 26 05 83 for electrical connections.

C. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated; enclose terminal lugs in terminal box sized to comply with NFPA 70.

D. Control Station: Provide standard three button (Open-Close-Stop) momentary-contact control device for each operator complying with UL 325.
   1. Disconnect Switch: Factory mount disconnect switch within control panel.

2. 24 volt circuit.
3. Recess mounted, at interior door jamb.
4. Entrapment Protection Devices: Provide sensing devices and safety mechanisms complying with UL 325.
    a. Primary Device: Provide Double set of photoelectric eye sensors located at bottom of door jamb, approximately (24) twenty four inches above finish floor, final location shall be field determined by Owner Representative, based on apparatus configuration .
5. Radio Control Antenna Detector, Long Distance Antenna: Reference Electrical Drawings and Specifications for additional requirements. Provides enhanced range through radio communications and reduced interference, ensuring that door opens and closes reliably at all times.
    a. Hand Held Transmitter: Digital control, resettable two (2) per door operator.
    b. Contact, as required to signal door shall be completely open.
    c. Adjustable timer that closes door, as required to secure the station after a predetermined amount of time.
6. Red, Green Warning Lights, power off of operator, one per each exit door opening. (Liftmaster RGL24LY) final location shall be field determined by Owner Representative, based on apparatus configuration, this particular Project.

E. Safety Edge: Located at bottom of sectional door panel, full width; electro-mechanical sensitized type, wired to stop and reverse door direction upon striking object; hollow neoprene covered to provide weatherstrip seal.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that wall openings are ready to receive work and opening dimensions and tolerances are within specified limits.

B. Verify that electric power is available and of the correct characteristics.

3.02 PREPARATION

A. Prepare opening to permit correct installation of door unit to perimeter air and vapor barrier seal.

B. Apply primer to wood frame.

3.03 INSTALLATION

A. Install door unit assembly in accordance with manufacturer's instructions.

B. Anchor assembly to wall construction and building framing without distortion or stress.

C. Securely brace door tracks suspended from structure. Secure tracks to structural members only.

D. Fit and align door assembly including hardware.

E. Coordinate installation of electrical service. Complete power and control wiring from disconnect to unit components.

F. Install perimeter trim.

3.04 TOLERANCES

A. Maximum Variation from Plumb: 1/16 inch.

B. Maximum Variation from Level: 1/16 inch.

C. Longitudinal or Diagonal Warp: Plus or minus 1/8 inch from 10 ft straight edge.

D. Maintain dimensional tolerances and alignment with adjacent work.

3.05 ADJUSTING

A. Adjust door assembly for smooth operation and full contact with weatherstripping.

B. Have manufacturer's field representative present to confirm proper operation and identify adjustments to door assembly for specified operation.

3.06 CLEANING

A. Clean doors and frames and glazing.

B. Remove temporary labels and visible markings.

3.07 PROTECTION

A. Protect installed products from damage until Date of Substantial Completion.

B. Do not permit construction traffic through overhead door openings after adjustment and cleaning.

END OF SECTION

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SECTION 08 43 13
ALUMINUM-FRAMED STOREFRONTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Aluminum-framed storefront, with vision glass.

B. Aluminum doors and frames.

C. Weatherstripping.

1.02 RELATED REQUIREMENTS

A. Section 08 80 00 - Glazing: Glass and glazing accessories.

1.03 REFERENCE STANDARDS

A. AAMA CW-10 - Care and Handling of Architectural Aluminum from Shop to Site; 2026.

B. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum; 2025.

C. AAMA 611 - Specification for Anodized Architectural Aluminum; 2026.

D. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections; 2009.

E. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.

F. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

G. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2024.

H. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

I. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

J. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

K. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2026.

L. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).

M. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2023).

N. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic); 2019.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with installation of other components that comprise the exterior enclosure.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, door hardware, and internal drainage details.

C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related work, expansion and contraction joint location and details, and field welding required.

D. Samples: Submit two samples 3 x 3 inches in size illustrating finished aluminum surface, glass, glazing materials.

E. Hardware Schedule: Complete itemization of each item of hardware to be provided for each door, cross-referenced to door identification numbers in Contract Documents.

F. Specimen warranty.

1.06 MOCK-UPS

A. Provide components for construction of a mock-up wall as indicated in Section 01 40 00 Quality Requirements and as indicated on the drawings.

B. Locate as indicated on drawings.

C. Provide all materials required for the mock-up wall.Refer to Section 01 40 00 Quality Requirements for addtional information.Mock-up may not remain as part of the Work.

D. Refer to Section 01 40 00 Quality Requirements for addtional information.

E. Mock-up may not remain as part of work.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Handle products of this section in accordance with AAMA CW-10.

B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.08 FIELD CONDITIONS

A. Do not install sealants when ambient temperature is less than 40 degrees F. Maintain this minimum temperature during and 48 hours after installation.

1.09 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Correct defective Work within a five year period after Date of Substantial Completion.

C. Provide five year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units.

D. Provide five year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Aluminum-Framed Storefronts:
   1. Manko Window Systems, Inc: www.mankowindows.com/#sle.
   2. Oldcastle BuildingEnvelope: www.oldcastlebe.com/#sle.
   3. Basis of Design: YKK AP America, Inc; YES 35 TU (thermally broken storefront system and 35D (medium style door): www.ykkap.com/commercial/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 BASIS OF DESIGN -- SWINGING DOORS

A. Medium Stile, Insulating Glazing, Thermally-Broken:
   1. Thickness: 1-3/4 inches.

2.03 ALUMINUM-FRAMED STOREFRONT

A. Aluminum-Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
   1. Glazing Rabbet: For 1 inch insulating glazing.
   2. Glazing Position: Centered (front to back).
   3. Finish: .
      a. Factory finish all surfaces that will be exposed in completed assemblies.

b. Touch-up surfaces cut during fabrication so that no natural aluminum is visible in completed assemblies, including joint edges.
c. Coat concealed metal surfaces that will be in contact with cementitious materials or dissimilar metals with bituminous paint.

4. Finish Color: As indicated on drawings.
5. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors and hardware; fasteners and attachments concealed from view; reinforced as required for imposed loads.
6. Construction: Eliminate noises caused by wind and thermal movement, prevent vibration harmonics, and prevent "stack effect" in internal spaces.
7. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
8. Expansion/Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F over a 12 hour period without causing detrimental effect to system components, anchorages, and other building elements.
9. Movement: Allow for movement between storefront and adjacent construction, without damage to components or deterioration of seals.
10. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.
11. Maintain continuous air barrier and/or vapor retarder seal throughout assembly, primarily in line with inside pane of glazing and inner sheet of infill panel, and heel bead of glazing compound.
12. Preparation for Window Treatments: Provide reinforced interior horizontal head rail.

B. Performance Requirements
1. Wind Loads: Design and size components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M, using loads 1.5 times the design wind loads and 10 second duration of maximum load.
a. Design Wind Loads: Comply with requirements of ASCE 7.
b. Member Deflection: Limit member deflection to flexure limit of glass in any direction, with full recovery of glazing materials.
2. Water Penetration Resistance on Manufactured Assembly: No uncontrolled water on interior face, when tested in accordance with ASTM E331 at pressure differential of 8 psf.
3. Air Leakage: 0.06 cfm/sq ft maximum leakage of storefront wall area when tested in accordance with ASTM E283/E283M at 1.57 psf pressure difference.
4. Condensation Resistance Factor of Framing: 50, minimum, measured in accordance with AAMA 1503.

2.04 COMPONENTS

A. Aluminum Framing Members: Tubular aluminum sections, thermally broken with interior section insulated from exterior, drainage holes and internal weep drainage system.
1. Framing members for interior applications need not be thermally broken.
2. Glazing Stops: Flush.
3. Cross-Section: As indicated on drawings.
4. Structurally Reinforced Members: Extruded aluminum with internal reinforcement of structural steel member.

B. Glazing: See Section 08 80 00.

C. Swing Doors: Glazed aluminum.
1. Thickness: 2 inches.
2. Top Rail: 4 inches wide.
3. Vertical Stiles: 4-1/2 inches wide.
4. Bottom Rail: 10 inches wide.

5. Glazing Stops: Square.
6. Finish: Same as storefront.

2.05 MATERIALS

A. Extruded Aluminum: ASTM B221 (ASTM B221M).

B. Sheet Aluminum: ASTM B209/B209M.

C. Structural Steel Sections: ASTM A36/A36M; galvanized in accordance with requirements of ASTM A123/A123M.

D. Structural Supporting Anchors Attached to Structural Steel: Design for bolted attachment.

E. Fasteners: Stainless steel.

F. Exposed Flashings: Aluminum sheet, 20 gauge, 0.032 inch minimum thickness; finish to match framing members.

G. Concealed Flashings: Sheet aluminum, 26 gauge, 0.017 inch minimum thickness.

H. Sill Flashing Sealant: Elastomeric, silicone or polyurethane, compatible with flashing material.

I. Sealant for Setting Thresholds: Non-curing butyl type.

J. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.

K. Shop and Touch-Up Primer for Steel Components: Zinc oxide, alkyd, linseed oil primer appropriate for use over hand cleaned steel.

L. Touch-Up Primer for Galvanized Steel Surfaces: SSPC-Paint 20, zinc rich.

2.06 FINISHES

A. Class I Color Anodized Finish: AAMA 611 AA-M12C22A44 Electrolytically deposited colored anodic coating not less than 0.7 mils thick.

B. Color: As indicated on drawings.

2.07 HARDWARE

A. For each door, include weatherstripping, sill sweep strip, and threshold.

B. Other Door Hardware: Storefront manufacturer's standard type to suit application.
   1. Finish on Hand-Contacted Items: Polished chrome.
   2. For each door, include butt hinges, pivots, push handle, pull handle, exit device, narrow stile handle latch, and closer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify dimensions, tolerances, and method of attachment with other work.

B. Verify that storefront wall openings and adjoining water-resistive and/or air barrier seal materials are ready to receive work of this section.

3.02 INSTALLATION

A. Install wall system in accordance with manufacturer's instructions.

B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

C. Provide alignment attachments and shims to permanently fasten system to building structure.

D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.

E. Provide thermal isolation where components penetrate or disrupt building insulation.

F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.

G. Where fasteners penetrate sill flashings, make watertight by seating and sealing fastener heads to sill flashing.

H. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

I. Set thresholds in bed of sealant and secure.

J. Install hardware using templates provided.

K. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.03 TOLERANCES

A. Maximum Variation from Plumb: 0.06 inch per 3 feet non-cumulative or 0.06 inch per 10 feet, whichever is less.

B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.

3.04 FIELD QUALITY CONTROL

3.05 ADJUSTING

A. Adjust operating hardware and sash for smooth operation.

3.06 CLEANING

A. Remove protective material from pre-finished aluminum surfaces.

B. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths, and take care to remove dirt from corners and to wipe surfaces clean.

C. Upon completion of installation, thoroughly clean aluminum surfaces in accordance with AAMA 609 & 610.

3.07 PROTECTION

A. Protect installed products from damage until Date of Substantial Completion.

END OF SECTION

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SECTION 08 56 53
SECURITY WINDOWS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Security transaction windows with pass-through device.

1.02 REFERENCE STANDARDS

A. AAMA 611 - Specification for Anodized Architectural Aluminum; 2026.

B. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

C. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

D. SSPC-Paint 33 - Coal Tar Mastic Coating, Cold-Applied; 2023.

E. UL 752 - Standard for Bullet-Resisting Equipment; Current Edition, Including All Revisions.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Furnish anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, to be embedded into concrete or masonry, with setting diagrams and installation, to applicable installer in time for installation.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's published data showing materials, construction details, dimensions of components, and finishes.

C. Shop Drawings: Drawings prepared specifically for this project, showing plans, elevations, sections, details of construction, anchorage to other work, hardware, and glazing.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Firm with at least 5 years experience in the manufacture of windows of the type specified and able to provide test reports showing that their standard manufactured products meet the specified requirements; custom designed products not acceptable.

B. Testing Agency Qualifications: Independent testing agency able to show experience in conducting tests of the type specified and:

1.06 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Provide manufacturer's warranty agreeing to repair or replace windows and window components that fail within three years after Date of Substantial Completion due to, but not limited to, the following:
   1. Structural failure, failure of welds, and deterioration of metals and finishes beyond that expected under detention use and normal weathering.
   2. Failure of glazing due to excessive deflection of supporting members under wind load.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Security Transaction Windows with Pass-Through Device:
   1. Armortex.
   2. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 ASSEMBLIES

A. Security and Windows:

1. Dimensions, profiles, features, and performance specified and indicated on drawings are required; do not deviate unless specifically approved by Architect under substitution procedures; see Section 01 60 00.
2. Design to fit openings indicated on drawings; design to accommodate deviation of actual construction from dimensions indicated on drawings.
3. Fabricate frames and sash with corners mitered or coped full depth with concealed welded joints.
4. Design anchorages to provide performance equivalent to that required for window unit; provide anchorages at least equivalent to those by which the tested units were anchored to the test frame.
5. Separate dissimilar metals to prevent corrosion by galvanic action by painting contact surfaces with primer or with sealant or tape recommended by manufacturer for the purpose.
6. Weld components before finishing and in concealed locations, to greatest extent possible; minimize distortion and discoloration of finish; remove residue of welding; grind exposed welds smooth and finish to match.
7. Label units to indicate which side is which, such as inside/outside or secure/non-secure; use labels that are removable after installation but durable enough not to be lost during delivery, storage, handling, and installation.

2.03 SECURITY TRANSACTION WINDOWS WITH PASS-THROUGH DEVICE

A. Security Transaction Windows with Pass-Though Device:
   1. Location: Built within interior wall, as indicated on drawings.
   2. Type of Use: Walk-up.
   3. Ballistic Resistance: Tested to meet UL 752, Level 1.
   4. Window Type: Fixed.
      a. Overall Window Frame Size: As indicated on drawings.
      b. Frame Material: Aluminum.
         1) Finish: Natural anodized.
   5. Glazing: Single (monolithic), clear, and ballistic resistant.
   6. Pass-Through Device: Stainless Steel Deal Tray.
   7. Communication: Standard talk-through portal.

2.04 ASSEMBLY COMPONENTS

A. Aluminum Framing: ASTM B221 (ASTM B221M) extrusions of alloy and temper selected by manufacturer for strength, corrosion resistance, and finish required; not less that 1/8 inch thick at any location of frame and sash members.

B. Frame Anchors: Mild steel plates, shapes, or bars, concealed in completed construction; provide anchorage devices as necessary to securely fasten windows to adjacent construction; use security fasteners for exposed anchors.
   1. Provide minimum of two anchors per side of window plus one additional anchor for each 18 inches or fraction thereof more than 36 inches in height or width.

C. Glazing Seals: Factory installed; molded EPDM or neoprene compressible gaskets and compression strips.

D. Deal Trays: Formed stainless steel, recessed into counter or sill for mounting under glazing frame.
   1. Style: Plain curved recess welded into counter or sill.
   2. Clear Opening Height: 1-1/2 inches.
   3. Tray Dimensions: 12 by 8 inches, wide by deep.

E. Bituminous Paint: Cold-applied asbestos-free asphalt mastic, complying with SSPC-Paint 33; 30 mils, 0.030 inch minimum thickness per coat.

2.05 FINISHES

A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that window openings are ready for installation of windows.

B. Notify Architect if conditions are not suitable for installation of windows; do not proceed until conditions are satisfactory.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions and drawing details.

B. Install windows in correct orientation (inside/outside or secure/non-secure).

C. Anchor windows securely in manner so as to achieve performance specified.

D. Separate metal members from concrete and masonry using bituminous paint.

E. Set sill members and sill flashing in continuous bead of sealant.

3.03 ADJUSTING

A. Adjust operating components for smooth operation while also providing tight fit at contact points and a secure enclosure; lubricate operating hardware.

3.04 CLEANING

A. Clean exposed surfaces promptly after installation without damaging finishes.

B. Remove and replace defective work.

3.05 CLOSEOUT ACTIVITIES

A. Demonstrate operation and maintenance to designated Owner personnel.

END OF SECTION

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SECTION 087100

DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes commercial door hardware for the following:

1. Swinging doors.
2. Sliding doors.
3. Other doors to the extent indicated.

B. Door hardware includes, but is not necessarily limited to, the following:

1. Mechanical door hardware.
2. Electromechanical door hardware.
3. Cylinders specified for doors in other sections.

C. Related Sections:

1. Division 01 Section "General Conditions”.
2. Division 06 Section “Rough Carpentry”.
3. Division 06 Section “Finish Carpentry”.
4. Division 08 Section “Operations and Maintenance”.
5. Division 08 Section “Hollow Metal Doors and Frames”.
6. Division 08 Section “Flush Wood Doors”.
7. Division 08 Section “Wood Sliding Sound Control Door Assemblies.
8. Division 08 Section “Aluminum-Framed Entrances and Storefronts”.
9. Division 26 Section "Electrical”

D. Codes and References: Comply with the version adopted by the Authority Having Jurisdiction.

1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
2. ANSI/SDI A250.13 - Testing and Rating of Severe Windstorm Resistant Components for Swing Door Assemblies.
3. ASTM E1886 - Test Method for Performance of Exterior Windows, Curtain Walls, Doors and Shutters Impacted by Missiles and Exposed to Cyclic Pressure Differentials.
4. ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure difference.
5. ASTM E1996 - Standard specification for performance of exterior windows, curtain walls, doors and storm shutters impacted by Windborne Debris in Hurricanes.
6. ICC 500-2014/2020, ICC/NSSA Standard for the Design and Construction of Storm Shelters.
7. ICC/IBC - International Building Code.
8. NFPA 70 - National Electrical Code.
9. NFPA 80 - Fire Doors and Windows.
10. NFPA 101 - Life Safety Code.
11. NFPA 105 - Installation of Smoke Door Assemblies.
12. TAS-201-94 - Impact Test Procedures.

13. TAS-202-94 - Criteria for Testing Impact and Non-Impact Resistant Building Envelope Components using Uniform Static Air Pressure.
14. TAS-203-94 - Criteria for Testing Products Subject to Cyclic Wind Pressure Loading.
15. Local and State Building Codes with applicable amendments.

E. Standards: All hardware specified herein shall comply with the following industry standards as applicable. Any undated reference to a standard shall be interpreted as referring to the latest edition of that standard:

1. ANSI/BHMA Certified Product Standards - A156 Series.
2. UL10C - Positive Pressure Fire Tests of Door Assemblies.
3. ANSI/UL 294 - Access Control System Units.
4. UL 305 - Panic Hardware.
5. ANSI/UL 437- Key Locks.

1.2 SUBMITTALS

A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.

B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing, fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
3. Content: Include the following information:
    a. Type, style, function, size, label, hand, and finish of each door hardware item.
    b. Manufacturer of each item.
    c. Fastenings and other pertinent information.
    d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
    e. Explanation of abbreviations, symbols, and codes contained in schedule.
    f. Mounting locations for door hardware.
    g. Door and frame sizes and materials.
    h. Warranty information for each product.
4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

C. Shop Drawings: Details of electrified access control hardware indicating the following:

1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access

control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:

a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.

b. Complete (risers, point-to-point) access control system block wiring diagrams.

c. Wiring instructions for each electronic component scheduled herein.

2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.

D. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.

E. Informational Submittals:

1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.

1.3 CLOSEOUT SUBMITTALS

A. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Procedures.

1. Maintenance manual must be provided for tornado/hurricane storm shelter impact protective systems.

B. Project Record Documents: Provide record documentation of as-built door hardware sets in digital format (.pdf, .docx, .xlsx, .csv) and as required in Division 01, Project Record Documents.

1.4 QUALITY ASSURANCE

A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.

B. Certified Products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD).

C. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

D. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.

E. Storm Shelter Impact Protective Assembly Installer Qualifications: Installers are to be factory trained for shop and field installation prior to project bid, and are responsible for commissioning, servicing, and warranting the installed equipment specified for the project. A pre-installation site inspection of the frame and floor conditions shall be conducted by the factory trained installer prior to any Storm Shelter Impact Protective assembly hardware applied to the opening.

F. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.

1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.

G. Storm Shelter Openings: Provide complete door systems for hurricane or tornado resistant storm shelters and other areas of refuge complying and tested according to ICC 500 (2014/2020), ICC/NSSA Standard for the Design and Construction of Storm Shelters.

H. Each unit to bear third party permanent label indicating compliance with the referenced testing standards.

I. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:

1. Function of building, purpose of each area and degree of security required.
2. Plans for existing and future key system expansion.
3. Requirements for key control storage and software.
4. Installation of permanent keys, cylinder cores and software.
5. Address and requirements for delivery of keys.

J. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.

1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
3. Review sequence of operation narratives for each unique access controlled opening.
4. Review and finalize construction schedule and verify availability of materials.
5. Review the required inspecting, testing, commissioning, and demonstration procedures

K. At completion of installation, provide written documentation that components were applied according to manufacturer's instructions and recommendations and according to approved schedule.

1.5 DELIVERY, STORAGE AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.

B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.6 COORDINATION

A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.

B. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.7 WARRANTY

A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:

1. Structural failures including excessive deflection, cracking, or breakage.
2. Faulty operation of the hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
4. Electrical component defects and failures within the systems operation.

C. Warranty Period: Unless otherwise indicated, warranty shall be one year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers listed in this document are to be considered as the basis of design.

B. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 MATERIALS

A. Hardware shall not have any visible manufacturer names on exposed materials, except cylinders, when the door is in a closed position.

2.3 BUTT HINGES

A. Hinges: ANSI/BHMA A156.1 butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.

1. Quantity: Provide the following hinge quantity:
   a. Two Hinges: For doors with heights up to 60 inches.
   b. Three Hinges: For doors with heights 61 to 90 inches.
   c. Four Hinges: For doors with heights 91 to 120 inches.
   d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.
2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
   a. Widths up to 3’0”: 4-1/2” standard or heavy weight as specified.
   b. Sizes from 3’1” to 4’0”: 5” standard or heavy weight as specified.
3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:

a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.

b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.

4. Hinge Options: Comply with the following:

a. Non-removable Pins: With the exception of electric through wire hinges, provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for all out-swinging lockable doors.

5. Manufacturers:

a. McKinney (MK) - TA/T4A Series, 5-knuckle.

B. Hinges at Storm Shelter Assemblies: At a minimum, provide heavy weight hinges with stainless steel screws used in accordance with and specified as part of a Severe Storm Shelter Opening meeting ICC 500 and FEMA 361.

1. Quantity: Provide the following hinge quantity:

a. Three Hinges: For shutters with heights 36 to 60 inches, and doors at height of 80 inches.

b. Four Hinges: For shutters with heights > 60 inches to 80 inches, and doors with heights greater than 84 inches.

2. Quantity: Provide the following hinge quantity:

a. Three Hinges: For shutters with heights 36 to 60 inches, and doors at height of 80 inches.

b. Four Hinges: For shutters with heights > 60 inches to 80 inches, and doors with heights greater than 84 inches.

c. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:

d. Widths up to 3’0”: 4-1/2” standard or heavy weight as specified.

e. Sizes from 3’1” to 4’0”: 5” standard or heavy weight as specified.

3. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:

a. Widths up to 3’0”: 4-1/2” standard or heavy weight as specified.

b. Sizes from 3’1” to 4’0”: 5” standard or heavy weight as specified.

4. Hinge Weight and Base Material: At a minimum, provide heavy weight hinges with stainless steel screws used in accordance with and specified as part of a certified Storm Shelter Opening meeting ICC 500.

5. Manufacturers:

a. McKinney (MK) - SP3386/SP3786.

b. No Substitution.

2.4 CONTINUOUS HINGES

A. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 continuous geared hinge. with minimum 0.120-inch thick extruded 6063-T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.

1. Where specified, provide modular continuous geared hinges that ship in two or three pieces and form a single continuous hinge upon installation.

2. Manufacturers:.

a. Pemko (PE).

B. Pin and Barrel Continuous Hinges: ANSI/BHMA A156.26 Grade 1-600 pin and barrel continuous hinges with minimum 14 gauge Type 304 stainless steel hinge leaves, concealed stainless pin, and twin self-lubricated nylon bearings at each knuckle separation. Factory trim hinges to suit door height and prepare for electrical cut-outs.

1. Manufacturers:

a. Markar Products; ASSA ABLOY Architectural Door Accessories (MR).

b. Pemko (PE).

2.5 POWER TRANSFER DEVICES

A. Electrified Quick Connect Transfer Hinges: Provide electrified transfer hinges with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets with a 1-year warranty. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.

1. Manufacturers:

a. McKinney (MK) - QC (# wires) Option.

B. Electrified Quick Connect Continuous Geared Transfer Hinges: Provide electrified transfer continuous geared hinges with a removable service panel cutout accessible without de-mounting door from the frame. Furnish with Molex™ standardized plug connectors with sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.

1. Manufacturers:

a. Pemko (PE) - SER-QC (# wires) Option.

C. Electrified Quick Connect Stainless Steel Continuous Transfer Hinges: Provide electrified transfer stainless steel continuous hinges with electrical transfer access prep accessible without de-mounting door from the frame. Furnish with Molex™ standardized plug connectors with sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.

1. Manufacturers:

a. Markar Products; ASSA ABLOY Architectural Door Accessories (MR) - MP-ETAP-EL (# wires) Option.

D. Electric Door Wire Harnesses: Provide electric/data transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number and type of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.

1. Provide one each of the following tools as part of the base bid contract:

a. McKinney (MK) - Electrical Connecting Kit: QC-R001.

b. McKinney (MK) - Connector Hand Tool: QC-R003.

2. Manufacturers:

a. McKinney (MK) - QC-C Series.

2.6 DOOR OPERATING TRIM

A. Flush Bolts and Surface Bolts: Provide products conforming to ANSI/BHMA A156.3 and A156.16, Grade 1.

1. Flush bolts to be furnished with top rod of sufficient length to allow bolt retraction device location approximately six feet from the floor.
2. Furnish dust proof strikes for bottom bolts.
3. Surface bolts to be minimum 8” in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable.
4. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.
5. Manufacturers:
   a. Rockwood (RO).
   b. Trimco (TC).

B. Door Push Plates and Pulls: ANSI/BHMA A156.6 door pushes and pull units of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.

1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.
3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.
4. Pulls shall be provided with a 10” clearance from the finished floor on the push side to accommodate wheelchair accessibility.
5. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets. When through-bolt fasteners are in the same location as a push plate, countersink the fasteners flush with the door face allowing the push plate to sit flat against the door.
6. Manufacturers:
   a. Rockwood (RO).
   b. Trimco (TC).

2.7 CYLINDERS AND KEYING

A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.

B. Cylinder Types: Original manufacturer cylinders able to supply the following cylinder formats and types:

1. Threaded mortise cylinders with rings and cams to suit hardware application.
2. Rim cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
3. Bored or cylindrical lock cylinders with tailpieces as required to suit locks.
4. Tubular deadlocks and other auxiliary locks.
5. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
6. Keyway: Manufacturer’s Standard.

C. Keying System: Each type of lock and cylinders to be factory keyed.

1. Supplier shall conduct a "Keying Conference" to define and document keying system instructions and requirements.
2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
3. New System: Key locks to a new key system as directed by the Owner.

D. Key Quantity: Provide the following minimum number of keys:
1. Change Keys per Cylinder: Two (2)
2. Master Keys (per Master Key Level/Group): Five (5).
3. Construction Keys (where required): Ten (10).

E. Construction Keying: Provide construction master keyed cylinders.

F. Key Registration List (Bitting List):
1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
2. Provide transcript list in writing or electronic file as directed by the Owner.

2.8 KEY CONTROL

A. Key Control Cabinet: Provide a key control system including envelopes, labels, and tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet. Key control cabinet shall have expansion capacity of 150% of the number of locks required for the project.
1. Manufacturers:
a. Lund Equipment (LU).
b. MMF Industries (MM).
c. Telkee (TK).

2.9 CYLINDRICAL LOCKS AND LATCHING DEVICES

A. Cylindrical Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.2, Series 4000, Operational Grade 1 Certified Products Directory (CPD) listed cylindrical locksets. Listed manufacturers shall meet all functions and features as specified herein.
1. Provide locksets with functions and features as follows:
a. Meets ANSI/BHMA A156.41 for single motion egress.
b. Where required by code, provide knurling or abrasive coating on all levers leading to hazardous areas.
c. Meets UL and CUL Standard 10C Positive Pressure, Fire Test of Door Assemblies with levers that meet A117.1 Accessibility Code.
d. Meets UL Certification Directory ZHLL.R21744 for products used in windstorm rated assemblies.
e. Exceeds ANSI/BHMA A156.2 requirements by 2.6 times for 3,100 in-lb. abusive locked lever torque with no entry while maintaining egress.
f. Exceeds ANSI/BHMA A156.2 requirements by 8 times for 1,600 lbs. offset lever pull with no entry for protection against attacks.
g. Exceeds ANSI/BHMA A156.3 requirements by 2 times for latch retraction with 100 lb. preload while maintaining operation in warped doors.
h. Exceeds ANSI/BHMA A156.3 requirements by 20 times for no access with minimum 100 vertical impacts for protection against vandalism attempts.

i. Independent return springs allow lock to exceed ANSI/BHMA A156.2 Grade 1 cycle requirements without lever sag.

j. Status indicators inside, outside, or on both sides of doors as specified with high visibility red/green or red/white icons to display locked or unlocked state in the rose.

k. Ten-year limited warranty for mechanical functions.

2. Electromechanical locksets shall have the following functions and features:

a. Universal Molex plug-in connectors that have standardized color-coded wiring and are field configurable in fail safe or fail secure and operate from 12vdc to 24vdc regulated.

b. EcoFlex or equivalent technology that reduces energy consumption up to 92% as certified by GreenCircle.

c. Options to be available for request-to-exit or enter signaling.

d. Two-year limited warranty on electrified functions.

3. Manufacturers:

a. Corbin Russwin Hardware (RU) - CLX3300 Series.

b. Sargent Manufacturing (SA) - 10X Line.

2.10 MULTI-POINT LOCKS AND LATCHING DEVICES

A. Multi-Point Locksets, Storm Shelter: Provide ANSI/BHMA A156.37, Series 1000, Operational Grade 1 and Security Grade 1 Certified Products Directory (CPD) listed multi-point locksets. Listed manufacturers shall meet all functions and features as specified herein.

1. Provide locksets with functions and features as follows:

a. Where required by code, provide knurling or abrasive coating on all levers leading to hazardous areas.

b. Meets UL and CUL Standard 10C Positive Pressure, Fire Test of Door Assemblies with levers that meet A117.1 Accessibility Code.

c. Meets Florida Building Code FL2998 and UL Certification Directory ZHEM.R21744 for latching hardware for hurricane requirements.

d. Approved for usage as part of a complete ICC 500 (2014/2020) and FEMA P-361 (2015/2021) door, frame, and hardware assemblies for storm shelter components.

e. Lever torque to retract all bolts less than 28 in.lb.

f. Cycle tested to 1,000,000 cycles.

g. Seven-year limited warranty for mechanical functions.

2. Manufacturers:

a. Corbin Russwin Hardware (RU) - FE6600 Series.

b. Sargent Manufacturing (SA) - FM7300 Series.

2.11 LOCK AND LATCH STRIKES

A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:

1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.

2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.

3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.

B. Standards: Comply with the following:
1. Strikes for Mortise Locks and Latches: BHMA A156.13.
2. Strikes for Bored Locks and Latches: BHMA A156.2.
3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
4. Dustproof Strikes: BHMA A156.16.

2.12 CONVENTIONAL EXIT DEVICES

A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:
1. Exit devices shall have a five-year warranty.
2. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
3. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer’s catalog and template book for specific requirements.
4. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.
5. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.
6. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.
    a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
    b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.
7. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.
8. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2” wide stiles.
9. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
10. Rail Sizing: Provide exit device rails factory sized for proper door width application.
11. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.
12. Hurricane and Storm Shelter Compliance: Devices to be U.L. listed for windstorm assemblies where applicable. Provide the appropriate hurricane or storm shelter products that have been independently third party tested, certified, and labeled to meet state and local windstorm building codes applicable to project.

B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 Certified Products Directory (CPD) listed exit devices. Listed manufacturers shall meet all functions and features as specified herein.

1. Electromechanical exit devices shall have the following functions and features:

a. Universal Molex plug-in connectors that have standardized color-coded wiring and are field configurable in fail safe or fail secure and operate from 12vdc to 24vdc regulated.

b. EcoFlex or equivalent technology that reduces energy consumption up to 92% as certified by GreenCircle.

c. Options to be available for request-to-exit or enter signaling, latchbolt and touchbar monitoring.

d. Field configurable electrified trim to fail-safe or fail-secure that operates from 12-24VDC.

e. Five-year limited warranty for electromechanical features.

2. Manufacturers:

a. Corbin Russwin Hardware (RU) - ED4000 / ED5000 Series.

b. Sargent Manufacturing (SA) - 80 Series.

2.13 SURFACE DOOR CLOSERS

A. All door closers specified herein shall meet or exceed the following criteria:

1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers.

2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.

3. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the Americans with Disabilities Act, provide units complying with ANSI ICC/A117.1.

4. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.

5. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.

6. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.

7. Storm Shelter Compliance: Door closers to be U.L. listed for windstorm assemblies where applicable. Provide the appropriate storm shelter products that have been independently third party tested, certified, and labeled to meet state and local windstorm building codes applicable to project.

B. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units standard.

1. Heavy duty surface mounted door closers shall have a 30-year warranty.

2. Manufacturers:

a. Corbin Russwin Hardware (RU) - DC6000 Series.

b. Norton Rixson (NO) - 7500 Series.

c. Sargent Manufacturing (SA) - 351 Series.

2.14 ARCHITECTURAL TRIM AND ACCESSORIES

A. Door, Frame and Wall Protective Trim: ANSI/BHMA A156.6, protective products as specified in the hardware sets. Door protection plates shall be not more than 2" less than door width on stop side and 1” less door width on the pull side or on stop side of pairs of doors. Listed manufacturers shall meet all functions and features as specified herein.

1. Provide protective trim with functions and features as follows:

a. Meets ADA requirements for smooth bottom door surfaces.

b. UL Classified options for use on fire-rated doors up to 3 hours.

c. Fabricated from stainless steel, brass, bronze, aluminum, or high-impact plastic.

d. Available in a variety of sizes, finishes, and profiles to suit aesthetic and functional requirements.

e. Designed to protect doors, frames, and adjacent walls from damage due to impact, abrasion, or traffic.

f. Fasteners included; adhesive-backed options available for select models.

g. Ten-year limited warranty.

2. Manufacturers:

a. Rockwood (RO).

b. Trimco (TC).

2.15 DOOR STOPS AND HOLDERS

A. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.

1. Manufacturers:

a. Rockwood (RO).

b. Trimco (TC).

2.16 ARCHITECTURAL SEALS

A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.

B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.

1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.

C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.

1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NFPA 252, Standard Methods of Fire Tests of Door Assemblies.

D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.

E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

F. Manufacturers:

1. Pemko (PE).
2. Reese Enterprises, Inc. (RE).

2.17 ELECTRONIC ACCESSORIES

A. Door Position Switches: Door position magnetic reed contact switches specifically designed for use in commercial door applications. On recessed models the contact and magnetic housing snap-lock into a 1" diameter hole. Surface mounted models include wide gap distance design complete with armored flex cabling. Provide SPDT, N/O switches with optional Rare Earth Magnet installation on steel doors with flush top channels.

1. Manufacturers:
   a. Alarm Controls (AK) - CP1-1026 Series.
   b. Securitron (SU) - DPS Series.

B. Intelligent Switching Power Supplies: Provide the least number of power supplies at the appropriate amperage level sufficient to exceed the required total draw for the specified electrified hardware and access control equipment.

1. Power supplies shall meet all functions and features as specified herein.
   a. UL listed dual voltage 12 or 24 VDC field selectable continuous output.
   b. Dedicated fast charger to prolong battery life with low battery cutoff to protect batteries from deep discharge.
   c. Enhanced surge immunity for input/output protection
   d. Separate, dedicated battery charging circuit to keep locks cooler.
   e. Dual-color LED visual notification to prevent applying incorrect voltages to the power supply.
   f. Instant auto-switch to battery on AC loss.
   g. Expandable up to 16 outputs in the standard enclosure
   h. Integrated fire alarm interface to allow main output shutdown or disconnect on a per output basis when using an R8 output module.
   i. Network ready and remotely manage locks and connected devices when using an M8 managed output module on network models.
   j. Lifetime replacement, no-fault, no questions asked warranty.
2. Manufacturers:
   a. Securitron (SU) - AQL Series.

2.18 FABRICATION

A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.19 FINISHES

A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.

B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware

C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.

B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.

1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.

B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:

1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."

2. DHI TDH-007-20: Installation Guide for Doors and Hardware.

3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."

4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

D. Push Plates and Door Pulls: When through-bolt fasteners are in the same location as a push plate, countersink the fasteners flush with the door face allowing the push plate to sit flat against the door.

E. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

F. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

A. Field Inspection (Punch Report): Reference Division 01 Sections “Closeout Procedures”. Produce project punch report for each installed door opening indicating compliance with approved submittals and verification hardware is properly installed, operating and adjusted. Include list of items to be completed and corrected, indicating the reasons or deficiencies causing the Work to be incomplete or rejected.

1. Organization of List: Include separate Door Opening and Deficiencies and Corrective Action Lists organized by Mark, Opening Remarks and Comments, and related Opening Images and Video Recordings.

3.5 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.6 CLEANING AND PROTECTION

A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.

B. Clean adjacent surfaces soiled by door hardware installation.

C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SETS

A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

1. Quantities listed are for each pair of doors, or for each single door.
2. The supplier is responsible for handing and sizing all products.
3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.
4. At existing openings with new hardware the supplier shall field inspect existing conditions prior to the submittal stage to verify the specified hardware will work as required. Provide alternate solutions and proposals as needed.

B. Hardware sets are house-specific. House 2 sets have a ‘2’ prefix and House 4 have a “4” prefiix

C. Manufacturer’s Abbreviations:

1. MK - McKinney
2. MR - Markar
3. PE - Pemko
4. RO - Rockwood

5. SA - SARGENT
6. AD - Adams Rite
7. HS - HES
8. RU - Corbin Russwin
9. NO - Norton Rixson
10. OT - Other
11. SU - Securitron

Hardware Sets

Set: 4-1.00

3	Hinge, Full Mortise	TA2714-MCK 4-1/2" x 4-1/2"	US26D	MK
1	Privacy Lock w/ Occ. Ind.	CLX3320 NVSL	626	RU
1	Surface Closer	7500 (reg. arm)	689	NO
1	Mop Plate	K1050 4" high 4BE CSK	US32D	RO
1	Kick Plate	K1050 8" high 4BE CSK	US32D	RO
1	Wall Stop	403	US26D	RO
1	H & J Smoke/Sound Seal	S88BL		PE

Set: 4-1.01

3	Hinge, Full Mortise	TA2714-MCK 4-1/2" x 4-1/2"	US26D	MK
1	Privacy Lock w/ Occ. Ind.	CLX3320 NVSL	626	RU
1	Surface Closer w/ Stop arm	CPS7500	689	NO
2	Kick Plate	K1050 8" high 4BE CSK	US32D	RO
1	H & J Smoke/Sound Seal	S88BL		PE

Set: 4-1.02

3	Hinge, Full Mortise	TA2714-MCK 4-1/2" x 4-1/2"	US26D	MK
1	Privacy Lock w/ Occ. Ind.	CLX3320 NVSL	626	RU
1	Surface Closer	7500 (reg. arm)	689	NO
1	Kick Plate	K1050 8" high 4BE CSK	US32D	RO
1	Wall Stop	403	US26D	RO
1	H & J Smoke/Sound Seal	S88BL		PE

Set: 4-1.03

3	Hinge, Full Mortise	TA2714-MCK 4-1/2" x 4-1/2"	US26D	MK

1	Privacy Lock w/ Occ. Ind.	CLX3320 NVSL	626	RU
1	Surface Closer w/ Stop arm	CPS7500	689	NO
1	Kick Plate	K1050 8" high 4BE CSK	US32D	RO
1	H & J Smoke/Sound Seal	S88BL		PE

Set: 4-1.04

3	Hinge, Full Mortise	TA2314 4-1/2" x 4-1/2"	US32D	MK
1	Privacy Lock w/ Occ. Ind.	CLX3320 NVSL	626	RU
1	Mop Plate	K1050 4" high 4BE CSK	US32D	RO
1	Kick Plate	K1050 8" high 4BE CSK	US32D	RO
1	Wall Stop	403	US26D	RO
1	H & J Smoke/Sound Seal	S88BL		PE

Set: 4-2.00

3	Hinge, Full Mortise	TA2714-MCK 4-1/2" x 4-1/2"	US26D	MK
1	Passage Latch	CLX3310 NZD	626	RU
1	Kick Plate	K1050 8" high 4BE CSK	US32D	RO
1	Wall Stop	403	US26D	RO
1	H & J Smoke/Sound Seal	S88BL		PE

Set: 4-2.01

3	Hinge, Full Mortise	TA2714-MCK 4-1/2" x 4-1/2"	US26D	MK
1	Passage Latch	CLX3310 NZD	626	RU
1	Surface Closer	7500 (reg. arm)	689	NO
1	Kick Plate	K1050 8" high 4BE CSK	US32D	RO
1	Wall Stop	403	US26D	RO
1	H & J Smoke/Sound Seal	S88BL		PE

Set: 4-3.00

4	Hinge, Hvy Wt	SP3786 5" x 4-1/2"	US26D	MK
1	Multi-Point Lock	FE6618 NSA	626	RU
1	Surface Closer	7500 TBGN	689	NO
1	Kick Plate	K1050 WS 8" high VBEV CSK	US32D	RO
1	H & J Gasketing	S773BL		PE
1	Drip Cap	346C	Alum	PE
1	Threshold	2715A		PE

Notes: Door will come out with 3/8 undercut. Provide hardware as required for ICC-500 Storm Shelter

Set: 4-4.00

1	Continuous Hinge	CFM_SLF-HD1-M	Alum	PE
1	Rim Exit Device, Exit Only	ED5200 EO	630	RU
1	Pull	RM201	US32D	RO
1	Surface Closer w/ Stop arm	CPS7500	689	NO
1	Sweep w/ Drip Cap	345ANB	Alum	PE
1	Threshold	252x3AFG	Alum	PE

Notes: Weather-stripping by door vendor

Set: 4-4.01

3	Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1	Rim Exit Device, Passage	ED5200 N910ET	630	RU
1	Surface Closer w/ H.O.	P7500H (par arm)	689	NO
1	Kick Plate	K1050 8" high 4BE CSK	US32D	RO
1	Wall Stop	403	US26D	RO
1	H & J Smoke/Sound Seal	S88BL		PE

Set: 4-5.00

3	Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1	Push Plate	70F (8" x 16")	US32D	RO
1	Pull Plate	110x70C	US32D	RO
1	Surface Closer	P7500 (par. arm)	689	NO
1	Kick Plate	K1050 8" high 4BE CSK	US32D	RO
1	Wall Stop	403	US26D	RO
1	H & J Smoke/Sound Seal	S88BL		PE

Set: 4-6.00

3	Hinge, Full Mortise	TA2714-MCK 4-1/2" x 4-1/2"	US26D	MK
1	Storeroom Lock	CLX3357 NZD	626	RU
1	Surface Closer	7500 (reg. arm)	689	NO
1	Kick Plate	K1050 8" high 4BE CSK	US32D	RO
1	Wall Stop	403	US26D	RO
1	H & J Smoke/Sound Seal	S88BL		PE

Set: 4-6.01

6	Hinge, Full Mortise	TA2714-MCK 4-1/2" x 4-1/2"	US26D	MK
1	Manual Flushbolt Set	555	US26D	RO
1	Dust Proof Strike	570	US26D	RO
1	Storeroom Lock	CLX3357 NZD M16	626	RU
1	Surface Overhead Holder/Stop	9-x36	630	NO
1	Surface Closer w/ Stop arm	CPS7500	689	NO
2	Kick Plate	K1050 8" high 4BE CSK	US32D	RO
2	Wall Stop	403	US26D	RO
2	Silencer	608		RO

Set: 4-6.02

3	Hinge, Full Mortise	TA2714-MCK 4-1/2" x 4-1/2"	US26D	MK
1	Storeroom Lock	CLX3357 NZD	626	RU
1	Surface Closer	P7500 (par. arm)	689	NO
1	Kick Plate	K1050 8" high 4BE CSK	US32D	RO
1	Wall Stop	403	US26D	RO
3	Silencer	608		RO

Set: 4-AC1.00

1	Elec. Continuous Hinge	CFM_SLF-HD1-M SER12	Alum	PE
1	Elec. Exit Device (Rim, NL)	ED5200 K157ET M92 MELR	630	RU
1	Pull	RM201	US32D	RO
1	Surface Closer w/ Stop arm	CPS7500	689	NO
1	Sweep w/ Drip Cap	345ANB	Alum	PE
1	Threshold	252x3AFG	Alum	PE
1	Wiring Diagram	By Security Contractor		SA
1	ElectroLynx Harness	QC-C006 (hinge to exit)		MK
1	ElectroLynx Harness	QC-C3000P (hinge/magnet/strike to power)		MK
1	Door Contact	DPS-M/W-BK		SU
1	Card Reader	By Security Contractor		OT
1	Power Supply w/ Enclosure	AQL_-E_ Series		SU

Notes: Electrically operated opening: Door normally closed and locked. Entry by mechanical key or by presenting a valid card to card reader. Presenting valid card to card reader will temporarily retract the latchbolt of the exit device allowing the door to be pulled open. Upon loss of power, device is locked.

Weather-stripping by door vendor

Set: 4-AC1.01

1	Elect. Continuous Hinge	FM300 EL12 ETAP	630	MR
1	Elec. Exit Device (Rim, NL)	ED5200 K157ET M92 MELR	630	RU
1	Pull	RM201	US32D	RO
1	Surface Closer w/ Stop arm	CPS7500	689	NO
1	Kick Plate	K1050 8" high 4BE CSK	US32D	RO
1	Drip Cap	346C	Alum	PE
1	Head Gasketing	2891AS	Alum	PE
1	Jamb Gasketing Set	290AS	Alum	PE
1	Sweep w/ Drip Cap	345ANB	Alum	PE
1	Threshold	252x3AFG	Alum	PE
1	Wiring Diagram	By Security Contractor		SA
1	ElectroLynx Harness	QC-C006 (hinge to exit)		MK
1	ElectroLynx Harness	QC-C3000P (hinge/magnet/strike to power)		MK
1	Door Contact	DPS-M/W-BK		SU
1	Card Reader	By Security Contractor		OT
1	Power Supply w/ Enclosure	AQL_-E_ Series		SU

Notes: Electrically operated opening: Door normally closed and locked. Entry by mechanical key or by presenting a valid card to card reader. Presenting valid card to card reader will temporarily retract the latchbolt of the exit device allowing the door to be pulled open. Upon loss of power, device is locked.

Weather-stripping by door vendor

Set: 4-AC1.02

3	Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1	Elec. Exit Device (Rim, NL)	ED5200 K157ET M92 MELR	630	RU
1	Pull	RM201	US32D	RO
1	Surface Closer w/ Stop arm	CPS7500	689	NO
1	Kick Plate	K1050 8" high 4BE CSK	US32D	RO
1	H & J Smoke/Sound Seal	S88BL		PE
1	Sweep	18061CNB	Alum	PE
1	Wiring Diagram	By Security Contractor		SA
1	ElectroLynx Harness	QC-C006 (hinge to exit)		MK

1 ElectroLynx Harness	QC-C3000P (hinge/magnet/strike to power)		MK
1 Door Contact	DPS-M/W-BK		SU
1 Card Reader	By Security Contractor		OT
1 Power Supply w/ Enclosure	AQL_-E_ Series		SU

Notes: Electrically operated opening: Door normally closed and locked. Entry by mechanical key or by presenting a valid card to card reader. Presenting valid card to card reader will temporarily retract the latchbolt of the exit device allowing the door to be pulled open. Upon loss of power, device is locked.

Set: 4-AC1.03

2 Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Elec. Hinge, Full Mortise, Hvy Wt	T4A3786 QC12 4-1/2" x 4-1/2"	US26D	MK
1 Elec. Exit Device (Rim, NL)	ED5200A N959ET M92 MELR	630	RU
1 Surface Closer w/ Stop arm	CPS7500	689	NO
1 Kick Plate	K1050 8" high 4BE CSK	US32D	RO
1 H & J Smoke/Sound Seal	S88BL		PE
1 Sweep	18061CNB	Alum	PE
1 Wiring Diagram	By Security Contractor		SA
1 ElectroLynx Harness	QC-C006 (hinge to exit)		MK
1 ElectroLynx Harness	QC-C3000P (hinge/magnet/strike to power)		MK
1 Door Contact	DPS-M/W-BK		SU
1 Card Reader	By Security Contractor		OT
1 Power Supply w/ Enclosure	AQL_-E_ Series		SU

Notes: Electrically operated opening: Door normally closed and locked. Entry by mechanical key or by presenting a valid card to card reader. Presenting valid card to card reader will temporarily retract the latchbolt of the exit device allowing the door to be pulled open. Upon loss of power, device is locked.

Set: 4-b/o

1 Hardware by others	OT

END OF SECTION 087100

SECTION 08 80 00
GLAZING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Insulating glass units.

B. Light diffusing insulating glass units.

C. Glazing units.

D. Glass coatings.

E. Glazing compounds.

1.02 RELATED REQUIREMENTS

A. Section 08 11 13 - Hollow Metal Doors and Frames: Glazed lites in doors and borrowed lites.

B. Section 08 43 13 - Aluminum-Framed Storefronts: Glazing provided as part of storefront assembly.

C. Section 08 44 13 - Glazed Aluminum Curtain Walls: Glazing provided as part of wall assembly.

D. Section 08 51 13 - Aluminum Windows: Glazing provided by window manufacturer.

1.03 REFERENCE STANDARDS

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.

B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2026.

C. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.

D. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005 (Reapproved 2026).

E. ASTM C1036 - Standard Specification for Flat Glass; 2025.

F. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2025.

G. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2025.

H. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings; 2024.

I. GANA (GM) - GANA Glazing Manual; 2022.

J. GANA (SM) - GANA Sealant Manual; 2008.

K. NFRC 100 - Procedure for Determining Fenestration Product U-Factors; 2026.

L. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence; 2023.

M. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems; 2026.

1.04 COODINATION

A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data on Insulating Glass Unit, Glazing Unit, and Plastic Film Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.

C. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.

D. Samples: Submit two samples 12 by 12 inch in size of glass units.

E. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years of documented experience.
   1. Provide certified glass products through ANSI accredited certifications that include plant audits and independent laboratory performance testing.
      a. Insulating Glass Certification Council (IGCC).
      b. Safety Glazing Certification Council (SGCC).

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years documented experience.

1.07 MOCK-UPS

A. Provide components for construction of a mock-up wall as indicated in Section 01 40 00 Quality Requirements and as indicated on the drawings.

B. Locate as indicated on drawings.

C. Provide all materials required for the mock-up wall.

D. Refer to Section 01 40 00 Quality Requirements for addtional information.

E. Mock-ups may not remain as part of the Work.

1.08 FIELD CONDITIONS

A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.
   1. Do not install glazing when ambient temperature is less than 40 degrees F.

B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.09 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Manufacturer's Special Warranty for Insulating Glass: Manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.
   1. Warranty Period: 5 years from date of Substantial Completion.

C. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.
   1. Warranty Period: 10 years from date of Substantial Completion.

D. Manufacturer's Special Warranty for Laminated Glass: Manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written

instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.

1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Source Limitations for Glass: Obtain from single source from single manufacturer for each glass type.

B. Source Limitations for Glazing Accessories: Obtain from single source from single manufacturer for each product and installation method.

2.02 PERFORMANCE REQUIREMENTS - EXTERIOR GLAZING ASSEMBLIES

A. Provide type and thickness of exterior glazing assemblies to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of glass.
   1. Design Pressure: Calculated in accordance with ASCE 7.
   2. Comply with ASTM E1300 for design load resistance of glass type, thickness, dimensions, and maximum lateral deflection of supported glass.
   3. Provide glass edge support system sufficiently stiff to limit the lateral deflection of supported glass edges to less than 1/175 of their lengths under specified design load.
   4. Glass thicknesses listed are minimum.

B. Weather-Resistive Barrier Seals: Provide completed assemblies that maintain continuity of building enclosure water-resistive barrier, vapor retarder, and/or air barrier.
   1. In conjunction with weather barrier related materials described in other sections, as follows:
   2. To utilize inner pane of multiple pane insulating glass units for continuity of vapor retarder and/or air barrier seal.
   3. To maintain a continuous vapor retarder and/or air barrier throughout glazed assembly from glass pane to heel bead of glazing sealant.

C. Thermal and Optical Performance: Provide exterior glazing products with performance properties as indicated. Performance properties are in accordance with manufacturer's published data as determined with the following procedures and/or test methods:
   1. Center of Glass U-Value: Comply with NFRC 100 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 7 computer program.
   2. Center of Glass Solar Heat Gain Coefficient (SHGC): Comply with NFRC 200 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 7 computer program.
   3. Solar Optical Properties: Comply with NFRC 300 test method.

2.03 GLASS MATERIALS

A. Float Glass: Provide float glass based glazing unless otherwise indicated.
   1. Annealed Type: ASTM C1036, Type I - Transparent Flat, Class 1 - Clear, Quality - Q3.
   2. Kind HS - Heat-Strengthened Type: Complies with ASTM C1048.
   3. Kind FT - Fully Tempered Type: Complies with ASTM C1048.
   4. Fully Tempered Safety Glass: Complies with ANSI Z97.1 or 16 CFR 1201 criteria for safety glazing used in hazardous locations.
   5. Thicknesses: As indicated; provide greater thickness as required for exterior glazing wind load design.

2.04 BASIS OF DESIGN - INSULATING GLASS UNITS

A. Basis of Design - Insulating Glass Units: Vision glazing, with low-e coating.
   1. Applications: Exterior insulating glass glazing unless otherwise indicated.
   2. Space between lites filled with argon.
   3. Total Thickness: 1 inch.

4. Glazing Method: Dry glazing method, gasket glazing.
5. Spacer Color: Black.
6. Edge Seal:
    a. Dual-Sealed System: Provide polyisobutylene sealant as primary seal applied between spacer and glass panes, and silicone, polysulfide, or polyurethane sealant as secondary seal applied around perimeter.
7. Color: Black.
8. Purge interpane space with dry air, hermetically sealed.
9. Capillary Tubes: Provide tubes from air space for insulating glass units without inert type gas that have a change of altitude greater than 2500 feet between point of fabrication and point of installation to permit pressure equalization of air space.
    a. Capillary Tubes: Tubes to remain open and be of length and material type in accordance with insulating glass fabricator's requirements.
10. Outboard Lite: Annealed float glass, 1/4 inch thick, minimum.
    a. Low-E Coating: Vitro Architectural Glass (formerly PPG Glass) Solarban 60 on #2 surface.

2.05 GLAZING UNITS

A. Type G1 - Monolithic Interior Vision Glazing:
1. Applications: Interior glazing unless otherwise indicated.
2. Glass Type: Annealed float glass.
3. Tint: Clear.
4. Thickness: 1/4 inch, nominal.

B. Type G2 - Monolithic Safety Glazing: Non-fire-rated.
1. Applications:
    a. Glazed lites in doors, except fire doors.
    b. Glazed sidelights to doors, except in fire-rated walls and partitions.
    c. Other locations required by applicable federal, state, and local codes and regulations.
    d. Other locations indicated on drawings.
2. Glass Type: Fully tempered safety glass as specified.
3. Tint: Clear.
4. Thickness: 1/4 inch, nominal.

C. Type G3 - Monolithic Safety Glazing: Non-fire-rated.
1. Applications:
    a. Locations indicated on the drawings.
    b. Glass Type: Fully tempered safety glass as specified.
    c. Tint: Clear.
    d. Thickness: 1/2 inch, nominal.

D. Type G5 - Insulating Glass Units: Vision glass, double glazed.
1. Applications: Exterior glazing unless otherwise indicated.
2. Space between lites filled with air.
3. Outboard Lite: Annealed float glass, 1/4 inch thick, minimum.
    a. Tint: Clear
    b. Coating: Low-E (passive type) Vitro Solarban 60, on #2 surface.
4. Inboard Lite: Annealed float glass, 1/4 inch thick, minimum.
    a. Tint: Clear.
5. Total Thickness: 1 inch.
6. Warm edge spacer.
7. Thermal Transmittance (U-Value), Winter - Center of Glass: 0.29, nominal.
8. Visible Light Transmittance (VLT): 79 percent, nominal.
9. Visible Light Reflectance: 11% exterior.
10. Solar Heat Gain Coefficient (SHGC): 0.39, nominal.

11. Glazing Method: Dry glazing method, gasket glazing.

E. Type G6 - Insulating Glass Units: Safety glazing.
   1. Applications:
      a. Glazed lites in exterior doors.
      b. Glazed sidelights and panels next to doors.
      c. Other locations required by applicable federal, state, and local codes and regulations.
      d. Other locations indicated on drawings.
   2. Space between lites filled with argon.
   3. Glass Type: Same as Type G5 except use fully tempered float glass for both outboard and inboard lites.
   4. Tint: Match Type G5.
   5. Total Thickness: 1 inch.
   6. Warm-edge spacer.
   7. Thermal Transmittance (U-Value), Winter - Center of Glass: 0.29, nominal.
   8. Visible Light Transmittance (VLT): 79 percent, nominal.
   9. Visible Light Reflectance: 11% exterior.
   10. Solar Heat Gain Coefficient (SHGC): 0.39, nominal.
   11. Glazing Method: Dry glazing method, gasket glazing.

2.06 ACCESSORIES

A. Setting Blocks: Silicone, with 80 to 90 Shore A durometer hardness; ASTM C864 Option II. Length of 0.1 inch for each square foot of glazing or minimum 4 inch by width of glazing rabbet space minus 1/16 inch by height to suit glazing method and pane weight and area.

B. Glazing Splines: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option II; color black.

PART 3 EXECUTION

3.01 VERIFICATION OF CONDITIONS

A. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.

B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.

C. Proceed with glazing system installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Clean contact surfaces with appropriate solvent and wipe dry within maximum of 24 hours before glazing. Remove coatings that are not tightly bonded to substrates.

B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.

C. Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.

3.03 INSTALLATION, GENERAL

A. Install glazing in compliance with written instructions of glass, gaskets, and other glazing material manufacturers, unless more stringent requirements are indicated, including those in glazing referenced standards.

B. Install glazing sealants in accordance with ASTM C1193, GANA (SM), and manufacturer's instructions.

C. Do not exceed edge pressures around perimeter of glass lites as stipulated by glass manufacturer.

D. Set glass lites of system with uniform pattern, draw, bow, and similar characteristics.

E. Set glass lites in proper orientation so that coatings face exterior or interior as indicated.

F. Prevent glass from contact with any contaminating substances that may be the result of construction operations such as, and not limited to the following; weld splatter, fire-safing, plastering, mortar droppings, and paint.

3.04 INSTALLATION - DRY GLAZING METHOD (GASKET GLAZING)

A. Application - Exterior and/or Interior Glazed: Set glazing infills from either the exterior or the interior of the building.

B. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.

C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.

D. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

3.05 CLEANING

A. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.

B. Remove nonpermanent labels immediately after glazing installation is complete.

C. Clean glass and adjacent surfaces after sealants are fully cured.

D. Clean glass on both exposed surfaces not more than 4 days prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

3.06 PROTECTION

A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.

B. Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.

END OF SECTION

SECTION 08 83 00
MIRRORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Glass mirrors.
   1. Tempered safety glass.

1.02 REFERENCE STANDARDS

A. ASTM C1036 - Standard Specification for Flat Glass; 2025.

B. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2025.

C. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror; 2024.

1.03 QUALITY ASSURANCE

A. Fabricate, store, transport, receive, install, and clean mirrors in accordance with manufacturer's recommendations.

1.04 FIELD CONDITIONS

A. Do not install mirrors when ambient temperature is less than 50 degrees F.

B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.05 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Provide five year manufacturer warranty for reflective coating on mirrors and replacement of same.

PART 2 PRODUCTS

2.01 MATERIALS

A. Mirror Design Criteria: Select materials and/or provide supports as required to limit mirror material deflection to 1/200, or to the flexure limit of glass, with full recovery of glazing materials, whichever is less.

B. Mirror Glass: ASTM C1036, Type 1 - Transparent Flat, Class 1 - Clear, Quality - Q1 (high-quality mirrors); silvering, protective coating, and quality requirements in compliance with ASTM C1503.
   1. Thickness: 1/4 inch.
   2. Edges: Polished, square.
   3. Tempered.
   4. Size: As indicated on drawings.

2.02 ACCESSORIES

A. Glazing Clips: Manufacturer's standard type.

B. Mirror Attachment Accessories: Stainless steel J-profile channels.

C. Mirror Adhesive: Silicone pre-polymer based, chemically compatible with mirror coating and wall substrate.
   1. Application Temperature: Minus 35 to 140 degrees F at contact surfaces.
   2. Volatile Organic Content (VOC): Less than 7 percent by weight.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that openings for mirrored glazing are correctly sized and within tolerance.

B. Verify that surfaces of mirror frames or recesses are clean, free of obstructions, and ready for installation of mirrors.

3.02 PREPARATION

A. Clean contact surfaces with solvent and wipe dry.

B. Seal porous mirror frames or recesses with substrate compatible primer or sealer. Prime surfaces scheduled to receive sealant.

C. Prepare installation in accordance with ASTM C1193 for solvent release sealants, and install sealant in accordance with manufacturer's instructions.

3.03 INSTALLATION

A. Install mirrors in accordance with manufacturer's recommendations.

B. Set mirrors plumb and level, and free of optical distortion.

C. Set mirrors with edge clearance free of surrounding construction including countertops or backsplashes.

D. Frameless Mirrors: Set mirrors with 1-inch stainless steel J channels, and anchor rigidly to wall construction with mirror adhesive.

3.04 CLEANING

A. Remove wet glazing materials from finish surfaces.

B. Remove labels after work is complete.

C. Clean mirrors and adjacent surfaces.

END OF SECTION

SECTION 09 05 61
COMMON WORK RESULTS FOR FLOORING PREPARATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section applies to floors identified in Contract Documents that are receiving the following types of floor coverings:
   1. Resilient tile and sheet.
   2. Carpet tile.
   3. Thin-set ceramic tile and stone tile.

B. Removal of existing floor coverings.

C. Preparation of new and existing concrete floor slabs for installation of floor coverings.

D. Testing of concrete floor slabs for moisture and alkalinity (pH).

E. Remediation of concrete floor slabs due to unsatisfactory moisture or alkalinity (pH) conditions.
   1. Contractor shall perform all specified remediation of concrete floor slabs. If such remediation is indicated by testing agency's report and is due to a condition not under Contractor's control or could not have been predicted by examination prior to entering into the contract, a contract modification will be issued.

F. Patching compound.

G. Remedial floor coatings.

H. Remedial floor treatment.

1.02 REFERENCE STANDARDS

A. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 50 mm [2 in.] Cube Specimens); 2026a.

B. ASTM C472 - Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters, and Gypsum Concrete; 2020.

C. ASTM D4259 - Standard Practice for Preparation of Concrete by Abrasion Prior to Coating Application; 2024.

D. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2026.

E. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2023.

F. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2019a.

G. RFCI (RWP) - Recommended Work Practices for Removal of Resilient Floor Coverings; 2018.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordinate scheduling of cleaning and testing, so that preliminary cleaning has been completed for at least 24 hours prior to testing.

1.04 SUBMITTALS

A. Visual Observation Report: For existing floor coverings to be removed.

B. Floor Covering and Adhesive Manufacturers' Product Literature: For each specific combination of substrate, floor covering, and adhesive to be used; showing:
   1. Moisture and alkalinity (pH) limits and test methods.
   2. Manufacturer's required bond/compatibility test procedure.

C. Testing Agency's Report:
   1. Description of areas tested; include floor plans and photographs if helpful.
   2. Summary of conditions encountered.

3. Moisture and alkalinity (pH) test reports.
4. Copies of specified test methods.
5. Recommendations for remediation of unsatisfactory surfaces.
6. Submit report to Architect.
7. Submit report not more than two business days after conclusion of testing.

D. Adhesive Bond and Compatibility Test Report.

E. Copy of RFCI (RWP).

1.05 QUALITY ASSURANCE

A. Moisture and alkalinity (pH) testing shall be performed by an independent testing agency employed and paid by Contractor.

B. Testing Agency Qualifications: Independent testing agency experienced in the types of testing specified.
1. Submit evidence of experience consisting of at least 3 test reports of the type required, with project Owner's project contact information.

C. Contractor's Responsibility Relating to Independent Agency Testing:
1. Provide access for and cooperate with testing agency.
2. Confirm date of start of testing at least 10 days prior to actual start.
3. Allow at least 4 business days on site for testing agency activities.
4. Achieve and maintain specified ambient conditions.
5. Notify Architect when specified ambient conditions have been achieved and when testing will start.

1.06 FIELD CONDITIONS

A. Maintain ambient temperature in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 65 degrees F or more than 85 degrees F.

B. Maintain relative humidity in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 40 percent and not more than 60 percent.

PART 2 PRODUCTS

2.01 MATERIALS

A. Patching Compound: Floor covering manufacturer's recommended product, suitable for conditions, and compatible with adhesive and floor covering. In the absence of any recommendation from flooring manufacturer, provide a product with the following characteristics:
1. Cementitious moisture-, mildew-, and alkali-resistant compound, compatible with floor, floor covering, and floor covering adhesive, and capable of being feathered to nothing at edges.
2. Compressive Strength: 3000 psi, minimum, after 28 days, when tested in accordance with ASTM C109/C109M or ASTM C472, whichever is appropriate.
3. Products:
   a. ARDEX Engineered Cements; ARDEX Feather Finish: www.ardexamericas.com/#sle.
   b. Substitutions: See Section 01 60 00 - Product Requirements.

B. Alternate Flooring Adhesive: Floor covering manufacturer's recommended product, suitable for the moisture and pH conditions present; low-VOC. In the absence of any recommendation from flooring manufacturer, provide a product recommended by adhesive manufacturer as suitable for substrate and floor covering and for conditions present.

C. Remedial Floor Treatment: Penetrating, spray-applied, silicate-based product intended by its manufacturer to resist water vapor transmission to degree sufficient to meet flooring manufacturer's emission limits, resistant to the level of alkalinity (pH) found, and suitable for adhesion of flooring without further treatment.

PART 3 EXECUTION

3.01 CONCRETE SLAB PREPARATION

A. Perform following operations in the order indicated:
   1. Existing concrete slabs (on-grade and elevated) with existing floor coverings:
      a. Visual observation of existing floor covering, for adhesion, water damage, alkaline deposits, and other defects.
      b. Removal of existing floor covering.
   2. Existing concrete slabs with coatings or penetrating sealers/hardeners/dustproofers:
      a. Remove existing coatings and curing agents from surface according to recommendations of remedial coating manufacturer.
      b. Prepare surface according to recommendations of remedial coating manufacturer and according to ASTM D4259.
   3. Preliminary cleaning.
   4. Moisture vapor emission tests; 3 tests in the first 1000 square feet and one test in each additional 1000 square feet, unless otherwise indicated or required by flooring manufacturer.
   5. Internal relative humidity tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
   6. Alkalinity (pH) tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
   7. Specified remediation, if required.
   8. Patching, smoothing, and leveling, as required.
   9. Other preparation specified.
   10. Adhesive bond and compatibility test.
   11. Protection.

3.02 REMOVAL OF EXISTING FLOOR COVERINGS

A. Comply with local, State, and federal regulations and recommendations of RFCI (RWP), as applicable to floor covering being removed.

B. Dispose of removed materials in accordance with local, State, and federal regulations and as specified.

3.03 PRELIMINARY CLEANING

A. Clean floors of dust, solvents, paint, wax, oil, grease, asphalt, residual adhesive, adhesive removers, film-forming curing compounds, sealing compounds, alkaline salts, excessive laitance, mold, mildew, and other materials that might prevent adhesive bond.

B. Do not use solvents or other chemicals for cleaning.

3.04 MOISTURE VAPOR EMISSION TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.

C. Test in accordance with ASTM F1869 and as follows.

D. Plastic sheet test and mat bond test may not be substituted for the specified ASTM test method, as those methods do not quantify the moisture content sufficiently.

E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if test values exceed 3 pounds per 1000 square feet per 24 hours.

F. Report: Report the information required by the test method.

3.05 INTERNAL RELATIVE HUMIDITY TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.

C. Test in accordance with ASTM F2170 Procedure A and as follows.

D. Testing with electrical impedance or resistance apparatus may not be substituted for the specified ASTM test method, as the values determined are not comparable to the ASTM test values and do not quantify the moisture content sufficiently.

E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if any test value exceeds 75 percent relative humidity.

F. Report: Report the information required by the test method.

3.06 ALKALINITY TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. The following procedure is the equivalent of that described in ASTM F710, repeated here for the Contractor's convenience.

1. Use a wide range alkalinity (pH) test paper, its associated chart, and distilled or deionized water.
2. Place several drops of water on a clean surface of concrete, forming a puddle approximately 1 inch in diameter. Allow the puddle to set for approximately 60 seconds, then dip the alkalinity (pH) test paper into the water, remove it, and compare immediately to chart to determine alkalinity (pH) reading.
3. Use of a digital pH meter with probe is acceptable; follow meter manufacturer's instructions.

C. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if alkalinity (pH) test value is over 10.

3.07 PREPARATION

A. See individual floor covering section(s) for additional requirements.

B. Comply with recommendations of testing agency.

C. Comply with requirements and recommendations of floor covering manufacturer.

D. Fill and smooth surface cracks, grooves, depressions, control joints and other non-moving joints, and other irregularities with patching compound.

E. Do not fill expansion joints, isolation joints, or other moving joints.

3.08 ADHESIVE BOND AND COMPATIBILITY TESTING

A. Comply with requirements and recommendations of floor covering manufacturer.

3.09 APPLICATION OF REMEDIAL FLOOR TREATMENT

A. Comply with requirements and recommendations of treatment manufacturer.

3.10 PROTECTION

A. Cover prepared floors with building paper or other durable covering.

END OF SECTION

SECTION 09 21 16
GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Performance criteria for gypsum board assemblies.

B. Metal channel ceiling framing.

C. Acoustic insulation.

D. Cementitious backing board.

E. Gypsum wallboard.

F. Joint treatment and accessories.

1.02 REFERENCE STANDARDS

A. AISI S220 - North American Standard for Cold-Formed Steel Nonstructural Framing; 2020.

B. AISI S240 - North American Standard for Cold-Formed Steel Structural Framing; 2020.

C. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units; 2023.

D. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 2023.

E. ASTM A1003/A1003M - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members; 2025.

F. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2017 (Reapproved 2022).

G. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2024.

H. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2020.

I. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2025.

J. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2022.

K. ASTM C1325 - Standard Specification for Fiber-Mat Reinforced Cementitious Backer Units; 2025.

L. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2024.

M. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2021.

N. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.

O. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2023.

P. ASTM E413 - Classification for Rating Sound Insulation; 2022.

Q. GA-216 - Application and Finishing of Gypsum Panel Products; 2024.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate the installation of gypsum board assemblies with size, location, and installation of service utilities.

B. Sequencing: Install service utilities in an orderly and expeditious manner.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data:
   1. Provide data on metal framing, gypsum board, accessories, and joint finishing system.
   2. Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.

C. Test Reports: For stud framing products that do not comply with AISI S220 or ASTM C754, provide independent laboratory reports showing maximum stud heights at required spacings and deflections.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store gypsum products and accessories indoors and keep above freezing. Elevate boards above floor, on nonwicking supports, in accordance with manufacturer's recommendations.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

A. Provide completed assemblies complying with ASTM C840 and GA-216.

B. Fire-Resistance-Rated Assemblies: Provide completed assemblies complying with applicable code.

2.02 METAL FRAMING MATERIALS

A. Steel Sheet: ASTM A1003/A1003M, subject to the ductility limitations indicated in AISI S220 or equivalent.
   1. Structural Grade: As required to meet design criteria.
   2. Corrosion Protection Coating Designation: G40, or equivalent in accordance with AISI S220.

B. Non-structural Framing Accessories:
   1. Ceiling Hangers: Type and size as specified in ASTM C754 for spacing required.
   2. Drywall Corner Clips: Drywall clips help support drywall to reduce wood blocking on top plates, end walls, and corners.

C. Grid Suspension Systems: Steel grid system of main tees and support bars connected to structure using hanging wire.

2.03 BOARD MATERIALS

A. Manufacturers - Gypsum-Based Board:
   1. American Gypsum Company: www.americangypsum.com/#sle.
   2. CertainTeed Corporation: www.certainteed.com/#sle.
   3. Georgia-Pacific Gypsum: www.gpgypsum.com/#sle.
   4. Gold Bond Building Products, LLC provided by National Gypsum Company: www.goldbondbuilding.com/#sle.
   5. USG Corporation: www.usg.com/#sle.

B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
   1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
   2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
      a. Mold resistant board is required at all locations.
   3. At Assemblies Indicated with Fire-Resistance Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
   4. Thickness:

C. Backing Board For Wet Areas: One of the following products:
   1. Application: Surfaces behind tile in wet areas, including tub and shower surrounds and shower ceilings.
   2. Application: Horizontal surfaces behind tile in wet areas including countertops and throughout toilet rooms.
   3. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
   4. ANSI Cement-Based Board: Non-gypsum-based; aggregated Portland cement panels with glass fiber mesh embedded in front and back surfaces complying with ANSI A118.9 or ASTM C1325.
      a. Thickness: 5/8 inch.

D. Backing Board For Non-Wet Areas: Water-resistant gypsum backing board as defined in ASTM C1396/C1396M; sizes to minimum joints in place; ends square cut.
   1. Application: Vertical surfaces behind thinset tile, except in wet areas.
   2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
   3. At Assemblies Indicated with Fire-Resistance Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
   4. Type: Regular and Type X, in locations indicated.
   5. Type X Thickness: 5/8 inch.
   6. Regular Board Thickness: 1/2 inch.
   7. Edges: Tapered.

2.04 GYPSUM BOARD ACCESSORIES

A. Acoustic Insulation: ASTM C665; preformed mineral-fiber, friction fit type, unfaced; thickness 2 inches.

B. Fire and Sound Attenuating Insulation: Sprayed cellulose fire-rated material for cavities in wall assemblies.
   1. Surface Burning Characteristics: Provide assemblies with Class I rating, when tested in accordance with ASTM E84.
   2. Sound Transmission Class (STC): 56, calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.

C. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
   1. Fiberglass Tape: 2 inch wide, coated glass fiber tape for joints and corners, except as otherwise indicated.
   2. Joint Compound: Setting type, field-mixed.

D. Finishing Compound: Surface coat and primer, takes the place of skim coating.

E. Screws for Fastening of Gypsum Panel Products to Cold-Formed Steel Studs Less than 0.033 inches in Thickness and Wood Members: ASTM C1002; self-piercing tapping screws, corrosion-resistant.

F. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

3.02 FRAMING INSTALLATION

A. Suspended Ceilings and Soffits: Space framing and furring members as indicated.
   1. Level ceiling system to a tolerance of 1/1200.
   2. Laterally brace entire suspension system.

3.03 ACOUSTIC ACCESSORIES INSTALLATION

A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

B. Acoustic Sealant: Install in accordance with manufacturer's instructions.

3.04 BOARD INSTALLATION

A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Fire-Resistance-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.

C. Exposed Gypsum Board in Interior Wet Areas: Seal joints, cut edges, and holes with water-resistant sealant.

D. Cementitious Backing Board: Install over steel framing members and plywood substrate where indicated, in accordance with ANSI A108.11 and manufacturer's instructions.

E. Installation on Wood Framing: For rated assemblies, comply with requirements of listing authority. For nonrated assemblies, install as follows:
   1. Single-Layer Applications: Screw attachment.
   2. Double-Layer Application: Install base layer using screws or nails. Install face layer using adhesive.

3.05 INSTALLATION OF TRIM AND ACCESSORIES

A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.

B. Corner Beads: Install at external corners, using longest practical lengths.

C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.

D. Decorative Trim: Install at locations shown on drawings and in accordance with manufacturer's instructions.

E. Moisture Guard Trim: Install on bottom edge of gypsum board according to manufacturer's instructions and in locations indicated on drawings.

3.06 JOINT TREATMENT

A. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
   1. Level 5 (at locations indicated on the drawings): Walls and ceilings to receive semi-gloss or gloss paint finish and other areas specifically indicated.
   2. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
   3. Level 1: Fire-resistance-rated wall areas above finished ceilings, whether or not accessible in the completed construction.

B. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
   1. Feather coats of joint compound so that camber is maximum 1/32 inch.

C. Fill and finish joints and corners of cementitious backing board as recommended by manufacturer.

3.07 TOLERANCES

A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

3.08 PROTECTION

A. Protect installed gypsum board assemblies from subsequent construction operations.

END OF SECTION

SECTION 09 30 00
TILING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Tile for wall applications.

B. Cementitious backer board as tile substrate.

C. Non-ceramic trim.

1.02 REFERENCE STANDARDS

A. ANSI A108/A118/A136 - American National Standard Specifications for the Installation of Ceramic Tile; 2026.

B. ANSI A108.1a - Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar; 2026.

C. ANSI A108.1b - Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set, Modified Dry-Set, or Improved Modified Dry-Set Cement Mortar; 2023.

D. ANSI A108.1c - Contractor's Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar or Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set, Modified Dry-Set, or Improved Modified Dry-Set Cement Mortar; 2023.

E. ANSI A108.2 - American National Standard General Requirements: Materials, Environmental and Workmanship; 2019.

F. ANSI A108.4 - American National Standard Specifications for Installation of Ceramic Tile with Organic Adhesive or Water Cleanable Tile-Setting Epoxy Adhesive; 2023.

G. ANSI A108.5 - Setting of Ceramic Tile with Dry-Set Cement Mortar, Modified Dry-Set Cement Mortar, EGP (Exterior Glue Plywood) Modified Dry-Set Cement Mortar, or Improved Modified Dry-Set Cement Mortar; 2023.

H. ANSI A108.6 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile-Setting and -Grout Epoxy; 2023.

I. ANSI A108.8 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant Furan Resin Mortar and Grout; 1999 (Reaffirmed 2024).

J. ANSI A108.9 - American National Standard Specifications for Installation of Ceramic Tile with Modified Epoxy Emulsion Mortar/Grout; 2023.

K. ANSI A108.10 - Installation of Grout in Tilework; 2026.

L. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units; 2023.

M. ANSI A108.12 - Installation of Ceramic Tile with EGP (Exterior Glue Plywood) Modified Dry-Set Mortar; 2023.

N. ANSI A108.13 - American National Standard for Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone; 2005 (Reaffirmed 2021).

O. ANSI A108.19 - Interior Installation of Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs by the Thin-Bed Method Bonded with Modified Dry-Set Cement Mortar or Improved Modified Dry-Set Cement Mortar; 2025.

P. ANSI A108.20 - Exterior Installation of Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs; 2025.

Q. ANSI A118.3 - American National Standard Specifications for Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy and Water Cleanable Tile-Setting Epoxy Adhesive; 2021 (Reaffirmed 2025).

R. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 2023.

S. ANSI A118.10 - American National Standard Specifications for Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation; 2023.

T. ANSI A118.15 - American National Standard Specifications for Improved Modified Dry-Set Cement Mortar; 2023.

U. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2026.

V. TCNA (HB-GP) - Handbook for Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs Installation; 2025-2026.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by affected installers.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.

C. Samples: Mount tile and apply grout on two plywood panels, minimum 18 by 18 inches in size illustrating pattern, color variations, and grout joint size variations.

1.05 QUALITY ASSURANCE

A. Maintain one copy of ANSI A108/A118/A136, TCNA (HB), and TCNA (HB-GP) on-site.

B. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, with minimum five years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

1.07 FIELD CONDITIONS

A. Do not install solvent-based products in an unventilated environment.

B. Maintain ambient and substrate temperature above 50 degrees F and below 100 degrees F during installation and curing of setting materials.

PART 2 PRODUCTS

2.01 TILE

A. Manufacturers: All products by the same manufacturer.
   1. Basis of design manufacturers and products are indicated on the drawings.
   2. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 TRIM AND ACCESSORIES

A. Non-Ceramic Trim: Satin natural anodized extruded aluminum, style and dimensions to suit application, set with tile mortar or adhesive.
   1. Products:
      a. Schluter-Systems: Product(s) as indicated on the drawings..
      b. Substitutions: See Section 01 60 00 - Product Requirements.

2.03 SETTING MATERIALS

A. Provide setting and grout materials from same manufacturer.

B. Improved Latex-Portland Cement Mortar Bond Coat: ANSI A118.15.
   1. Applications: Use this type of bond coat where Large and Heavy Tile (LHT) mortar is indicated.
   2. Products:
      a. Mapei Corporation; Granirapid System: www.mapei.com/#sle.

b. Substitutions: See Section 01 60 00 - Product Requirements.

2.04 GROUTS

A. Provide setting and grout materials from same manufacturer.

B. Epoxy Grout: ANSI A118.3 chemical resistant and water-cleanable epoxy grout.
   1. Color(s): As indicated on drawings.
   2. Products:
      a. Mapei Corporation; Kerapoxy CQ: www.mapei.com/#sle.

2.05 MAINTENANCE MATERIALS

A. Tile Sealant: Gunnable, silicone, siliconized acrylic, or urethane sealant; moisture and mildew resistant type.
   1. Applications: Between tile and plumbing fixtures.
   2. Color(s): As selected by Architect from manufacturer's full line.
   3. Products:
      a. Mapei Corporation; Mapesil T Plus: www.mapei.com/#sle.
      b. Substitutions: See Section 01 60 00 - Product Requirements.

2.06 ACCESSORY MATERIALS

A. Waterproofing Membrane: Specifically designed for bonding to cementitious substrate under thick mortar bed or thin-set tile; complying with ANSI A118.10.
   1. Fluid or Trowel Applied Type:
      a. Material: Synthetic rubber or Acrylic.
      b. Thickness: 25 mils, minimum, dry film thickness.
      c. Products:
         1) Mapei Corporation; Mapelastic AquaDefense: www.mapei.com/#sle.
         2) Substitutions: See Section 01 60 00 - Product Requirements.

B. Backer Board: Cementitious type complying with ANSI A118.9; high density, glass fiber reinforced, 7/16 inch thick; 2 inch wide coated glass fiber tape for joints and corners.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive tile.

3.02 PREPARATION

A. Protect surrounding work from damage.

B. Vacuum clean surfaces and damp clean.

C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.

D. Install backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of setting material to a feather edge.

E. Prepare substrate surfaces for adhesive installation in accordance with adhesive manufacturer's instructions.

3.03 INSTALLATION - GENERAL

A. Install tile, thresholds, and stair treads and grout in accordance with applicable requirements of ANSI A108.1a through ANSI A108.20, manufacturer's instructions, and TCNA (HB) or TCNA (HB-GP) recommendations, as applicable.

B. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.

C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.

D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.

E. Form internal angles square and external angles bullnosed.

F. Install non-ceramic trim in accordance with manufacturer's instructions.

G. Sound tile after setting. Replace hollow sounding units.

H. Keep control and expansion joints free of mortar, grout, and adhesive.

I. Prior to grouting, allow installation to completely cure; minimum of 48 hours.

J. Grout tile joints unless otherwise indicated. Use standard grout unless otherwise indicated.

K. At changes in plane and tile-to-tile control joints, use tile sealant instead of grout, with either bond breaker tape or backer rod as appropriate to prevent three-sided bonding.

3.04 INSTALLATION - WALL TILE

A. On exterior walls install in accordance with TCNA (HB) Method W244, thin-set over cementitious backer units, with waterproofing membrane.

B. Over cementitious backer units on studs, install in accordance with TCNA (HB) Method W244, using membrane at toilet rooms.

3.05 CLEANING

A. Clean tile and grout surfaces.

3.06 PROTECTION

A. Do not permit traffic over finished floor surface for 4 days after installation.

END OF SECTION

SECTION 09 51 00
ACOUSTICAL CEILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Suspended metal grid ceiling system.

B. Acoustical units.

1.02 REFERENCE STANDARDS

A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

B. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

C. ASTM C635/C635M - Standard Specification for Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2022.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.

B. Do not install acoustical units until after interior wet work is dry and indoor relative humidity has been stabilized and controlled by the buidling HVAC systems.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Indicate grid layout and related dimensioning.

C. Product Data: Provide data on suspension system components and acoustical units.

D. Samples: Submit two samples 6 by 6 inch in size illustrating material and finish of acoustical units.

E. Samples: Submit two samples each, 12 inches long, of suspension system main runner, cross runner, and perimeter molding.

F. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

1.05 QUALITY ASSURANCE

A. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

B. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.06 FIELD CONDITIONS

A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acoustic Tiles/Panels:
   1. Armstrong World Industries, Inc; Product(s) as indicated on the drawings: www.armstrongceilings.com/#sle.
   2. Substitutions: See Section 01 60 00 - Product Requirements.

B. Suspension Systems:

1. Armstrong World Industries, Inc; ; Product as indicated in the interior finish schedule, utilizing the IBC approved Berc clip. 2 inch perimeter angle WILL NOT be accepted: www.armstrongceilings.com/#sle.
2. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 SUSPENSION SYSTEM(S)

A. Metal Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with perimeter moldings, hold down clips, stabilizer bars, clips, and splices as required.
   1. Materials:
      a. Steel Grid: ASTM A653/A653M, G30 coating, unless otherwise indicated.
      b. Aluminum Grid: Aluminum sheet, ASTM B209/B209M. (Kitchen)

B. Exposed Suspension System: Hot-dipped galvanized steel grid with steel cap.
   1. Structural Classification: Intermediate-duty, when tested in accordance with ASTM C635/C635M.
   2. Profile: Tee; 9/16 & 15/16 inch face width in locations as indicated on the drawings.
   3. Finish: Baked enamel.
   4. Color: White.

C. Exposed Suspension System: Aluminum grid and cap; factory-applied closed-cell foam gaskets.
   1. Application(s): Kitchen.
   2. Structural Classification: Intermediate-duty, when tested in accordance with ASTM C635/C635M.
   3. Profile: Tee; 15/16 inch face width.
   4. Finish: Baked enamel.

2.03 ACCESSORIES

A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.

B. Hanger Wire: 12 gauge, 0.08 inch galvanized steel wire.

C. Perimeter Moldings: Same metal and finish as grid.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that layout of hangers will not interfere with other work.

3.02 PREPARATION

A. Install after major above-ceiling work is complete.

B. Coordinate the location of hangers with other work.

3.03 INSTALLATION - SUSPENSION SYSTEM

A. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.

B. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
   1. Use longest practical lengths.

C. Suspension System, Non-Seismic: Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.

D. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.

E. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.

F. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.

G. Do not eccentrically load system or induce rotation of runners.

3.04 INSTALLATION - ACOUSTICAL UNITS

A. Install acoustical units in accordance with manufacturer's instructions.

B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.

C. Fit border trim neatly against abutting surfaces.

D. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.

E. Cutting Acoustical Units:
   1. Make field cut edges of same profile as factory edges.

3.05 TOLERANCES

A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.

B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

3.06 CLEANING

A. Clean surfaces.

B. Replace damaged or abraded components.

END OF SECTION

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SECTION 09 65 00
RESILIENT FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Resilient tile flooring.

B. Resilient base.

C. Installation accessories.

1.02 RELATED REQUIREMENTS

A. Section 09 05 61 - Common Work Results for Flooring Preparation: Removal of existing floor coverings, cleaning, and preparation.

1.03 REFERENCE STANDARDS

A. ASTM F1861 - Standard Specification for Resilient Wall Base; 2021 (Reapproved 2025).

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.

C. Verification Samples: Submit two samples, 18 by 18 inch in size illustrating color and pattern for each resilient flooring product specified.

D. Concrete Subfloor Test Report: Submit a copy of the moisture and alkalinity (pH) test reports.

E. Certification: Prior to installation of flooring, submit written certification by flooring manufacturer and adhesive manufacturer that condition of subfloor is acceptable.

F. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, color, quantity and run numbers.

B. Store all materials off of the floor in an acclimatized, weather-tight space.

C. Maintain temperature in storage area between 55 degrees F and 90 degrees F.

1.06 FIELD CONDITIONS

A. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

PART 2 PRODUCTS

2.01 TILE FLOORING

A. Luxury Vinyl Tile
   1. Manufacturers, products, colors and installation patterns: As indicated on the drawings
   2. Substitutions: Not permitted.

2.02 RESILIENT BASE

A. Resilient Base: ASTM F1861, Type TV, vinyl, thermoplastic; style as scheduled.
   1. Manufacturers:
      a. Johnsonite, a Tarkett Company: www.johnsonite.com/#sle.
      b. Substitutions: See Section 01 60 00 - Product Requirements.
   2. Height: 4 inches.
   3. Thickness: 0.125 inch.
   4. Finish: Satin.

5. Length: Roll.
6. Color: As indicated on drawings.

2.03 ACCESSORIES

A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.

B. Primers, Adhesives, and Seam Sealer: Waterproof; types recommended by flooring manufacturer.

C. Adhesive for Vinyl Flooring: As recommended by the flooring material manufacturer.

D. Moldings, Transition and Edge Strips: Products as indicated on the drawings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.

C. Cementitious Subfloor Surfaces: Verify that substrates are ready for resilient flooring installation by testing for moisture and alkalinity (pH).
   1. Test in accordance with Section 09 05 61.
   2. Obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.

D. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.

B. Remove subfloor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with subfloor filler to achieve smooth, flat, hard surface.

C. Prohibit traffic until filler is fully cured.

D. Apply primer as required to prevent "bleed-through" or interference with adhesion by substances that cannot be removed.

3.03 INSTALLATION - GENERAL

A. Starting installation constitutes acceptance of subfloor conditions.

B. Install in accordance with manufacturer's written instructions.

C. Adhesive-Applied Installation:
   1. Fit joints and butt seams tightly.
   2. Set flooring in place, press with heavy roller to attain full adhesion.

3.04 INSTALLATION - TILE FLOORING

A. Mix tile from container to ensure shade variations are consistent when tile is placed, unless otherwise indicated in manufacturer's installation instructions.

3.05 INSTALLATION - RESILIENT BASE

A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.

B. Install base on solid backing. Bond tightly to wall and floor surfaces.

3.06 CLEANING

A. Remove excess adhesive from floor, base, and wall surfaces without damage.

B. Clean in accordance with manufacturer's written instructions.

3.07 PROTECTION

A. Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION

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SECTION 09 67 00
FLUID-APPLIED FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fluid-applied flooring.

1.02 REFERENCE STANDARDS

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns and colors available.

C. Samples: Submit two samples, 6 by 6 inch in size illustrating color and pattern for each floor material for each color specified.

D. Concrete Subfloor Test Report: Submit a copy of the moisture and alkalinity (pH) test reports.

E. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention, and application rate for each coat.

F. Manufacturer's Qualification Statement.

G. Applicator's Qualification Statement.

H. Maintenance Data: Include maintenance procedures, recommended maintenance materials, procedures for stain removal, repairing surface, and suggested schedule for cleaning.

I. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.
   2. Extra Top Coat Materials: 2 gallons.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Store resin materials in a dry, secure area.

B. Store materials for three days prior to installation in area of installation to achieve temperature stability.

1.06 FIELD CONDITIONS

A. Maintain minimum temperature in storage area of 55 degrees F.

B. Store materials in area of installation for minimum period of 24 hours prior to installation.

C. Maintain ambient temperature required by manufacturer 72 hours prior to, during, and 24 hours after installation of materials.

PART 2 PRODUCTS

2.01 FLUID-APPLIED FLOORING SYSTEMS

A. Manufacturer and product as indicated on the drawings.
   1. Substitutions: See Section 01 60 00-Product Requirements.

2.02 ACCESSORIES

A. Subfloor Filler: Type recommended by fluid-applied flooring manufacturer.

B. Primer: Type recommended by fluid-applied flooring manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that subfloor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive flooring.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive flooring.

C. Verify that subfloor surfaces are dust-free and free of substances that could impair bonding of materials to subfloor surfaces.

D. Cementitious Subfloor Surfaces: Verify that substrates are ready for fluid-applied flooring installation by testing for moisture and alkalinity (pH).
   1. Obtain instructions if test results are not within limits recommended by fluid-applied flooring manufacturer.

E. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Remove subfloor ridges and bumps. Fill low spots, cracks, joints, holes, and other defects with subfloor filler.

B. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Grind irregularities above the surface level. Prohibit traffic until filler is cured.

C. Vacuum clean substrate.

D. Apply primer to surfaces required by flooring manufacturer.

3.03 INSTALLATION - FLOORING

A. Apply in accordance with manufacturer's instructions.

B. Apply each coat to minimum thickness required by manufacturer.

C. Finish to smooth level surface.

D. Install flooring in recessed type floor access covers.

3.04 PROTECTION

A. Prohibit traffic on floor finish for 48 hours after installation.

B. Barricade area to protect flooring until fully cured.

END OF SECTION

SECTION 09 68 13
TILE CARPETING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Carpet tile, fully adhered.

B. Walk-off carpet tile.

1.02 RELATED REQUIREMENTS

A. Section 09 05 61 - Common Work Results for Flooring Preparation: Removal of existing floor coverings, cleaning, and preparation.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.

C. Samples: Submit two carpet tiles illustrating color and pattern design for each carpet color selected.

D. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

E. Operation and Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in installing carpet tile with minimum three years documented experience and approved by carpet tile manufacturer.

1.05 FIELD CONDITIONS

A. Store materials in area of installation for minimum period of 24 hours prior to installation.

PART 2 PRODUCTS

2.01 MATERIALS

A. Tile Carpeting:
   1. Product: As indicated on the drawings.
      a. Manufactured in one dye lot.

B. Walk-off Tile Carpeting:
   1. Product: As indicated on the drawings.
      a. Manufactured in one dye lot.

2.02 ACCESSORIES

A. Subfloor Filler: White premix latex; type recommended by flooring material manufacturer.

B. Edge Strips: As indicated on the drawings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that subfloor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet tile.

B. Verify that subfloor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to subfloor surfaces.

C. Cementitious Subfloor Surfaces: Verify that substrates are ready for flooring installation by testing for moisture and alkalinity (pH).
   1. Test in accordance with Section 09 05 61.

2. Obtain instructions if test results are not within limits recommended by flooring material manufacturer and adhesive materials manufacturer.

D. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.

B. Remove subfloor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with subfloor filler.

C. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.

D. Vacuum clean substrate.

3.03 INSTALLATION

A. Starting installation constitutes acceptance of subfloor conditions.

B. Install carpet tile in accordance with manufacturer's instructions.

C. Blend carpet from different cartons to ensure minimal variation in color match.

D. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.

E. Lay carpet tile in square pattern, with pile direction parallel to next unit, set parallel to building lines.

F. Locate change of color or pattern between rooms under door centerline.

G. Fully adhere carpet tile to substrate.

H. Trim carpet tile neatly at walls and around interruptions.

I. Complete installation of edge strips, concealing exposed edges.

3.04 CLEANING

A. Remove excess adhesive without damage, from floor, base, and wall surfaces.

B. Clean and vacuum carpet surfaces.

END OF SECTION

SECTION 09 72 12
CUSTOM VINYL WALL APPLIQUES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Custom vinyl appliques to be applied in field on surfaces indicated on the drawings.

1.02 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on film, liner, and adhesive.

C. Shop Drawings: Indicate Indicate wall elevations with seaming layout..

D. Samples: Two samples, 6 by 6 inches in size, showing each type of material to be used.

E. Maintenance instructions for Owner's use in maintaing the installed products.

1.03 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with at least three years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Inspect roll materials at arrival on site, to verify acceptability.

B. Protect packaged adhesive from temperature cycling and cold temperatures.

C. Store roll goods in a manner accepatble to the manufacturer/fabricator.

1.05 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the product manufacturer.

B. Maintain these conditions 48 hours before, during, and after installation.

C. Provide lighting level of 80 ft candles measured mid-height at substrate surfaces for installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design: Quality Glass Tinting Inc., www.quality-glasstint.com.

B. Substitutions: See Section 01 60 00 - Product Requirements.

C. Source Limitations: Furnish products produced by single manufacturer and obtained from single supplier.

2.02 MATERIALS

A. Premium 2.4-mil Calendared gloss white vinyl digital media: Vinyl film media specifically engineered for use in graphic wrap and decal applications.

B. Characteristics:
   1. Corrugations
   2. Rivets
   3. Flat
   4. Slight to Moderate curves to stick indoors or outdoors
   5. Wrap around corners and poles
   6. Withstand any temperature or climate change without shrinking or curling
   7. No rip or wrinkle
   8. Contour cut
   9. Non-toxic

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of Conditions: Verify that substrate is clean and smooth and ready to receive the applique. .

3.02 PREPARATION

A. Surface Preparation:
   1. Prepare surfaces as required to provide long lasting installation.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Provide air bubble free installation.

3.04 PROTECTION

A. Protect installed custom vinyl wall appliques from subsequent construction operations.

END OF SECTION

SECTION 09 91 13
EXTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Scope: Finish exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.

D. Do Not Paint or Finish the Following Items:
   1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
   5. Non-metallic roofing and flashing.
   6. Marble, granite, slate, and other natural stones.
   7. Floors, unless specifically indicated.
   8. Ceramic and other types of tiles.
   9. Brick, glass unit masonry, architectural concrete, cast stone, integrally colored plaster and stucco.
   10. Exterior insulation and finish system (EIFS).
   11. Glass.
   12. Concealed pipes, ducts, and conduits.

1.02 RELATED REQUIREMENTS

A. Section 09 91 23 - Interior Painting.

1.03 DEFINITIONS

A. Comply with ASTM D16 for interpretation of terms used in this section.

1.04 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; Current Edition.

B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2024.

C. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide complete list of products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
   2. MPI product number (e.g. MPI #47).
   3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.

C. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
   1. Where sheen is specified, submit samples in only that sheen.

D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.
   2. Extra Paint and Finish Materials: 1 gallon of each color; from the same product run, store where directed.
   3. Label each container with color in addition to the manufacturer's label.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.

1.07 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 a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.08 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the paint product manufacturer's temperature ranges.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply exterior paint and finishes during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

D. Minimum Application Temperatures for Latex Paints: 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes used in any individual system from the same manufacturer; no exceptions.

B. Provide paints and finishes from the same manufacturer to the greatest extent possible.
   1. Substitution of MPI-approved products by a different manufacturer is preferred over substitution of unapproved products by the same manufacturer.

C. Paints:
   1. Base Manufacturer: Sherwin-Williams Company: www.sherwin-williams.com/#sle.

D. Primer Sealers: Same manufacturer as top coats.

E. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready-mixed, unless required to be a field-catalyzed paint.
   1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
   2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
   3. Supply each paint material in quantity required to complete entire project's work from a single production run.

4. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is described explicitly in manufacturer's product instructions.

B. Volatile Organic Compound (VOC) Content:
   1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
      a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
   2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

C. Flammability: Comply with applicable code for surface burning characteristics.

D. Manufacturer and products: As incidicated on the drawings.
   1. Substitutions: See Section 01 60 00-Product Requirements.

E. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.

F. Colors: As indicated in Color Schedule.

2.03 PRIMERS

A. Provide primers recommended by the manufacturer for each substrate and finish coat combination.

2.04 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin application of paints and finishes until substrates have been properly prepared.

B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

D. Test shop-applied primer for compatibility with subsequent cover materials.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.

D. Seal surfaces that might cause bleed through or staining of topcoat.

E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

3.03 APPLICATION

A. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

C. Apply each coat to uniform appearance.

D. Sand wood and metal surfaces lightly between coats to achieve required finish.

E. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

F. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.05 PROTECTION

A. Protect finishes until completion of project.

B. Touch-up damaged finishes after Substantial Completion.

END OF SECTION

SECTION 09 91 23
INTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Materials for backpriming woodwork.

D. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
   1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
   2. Prime surfaces to receive wall coverings.

E. Do Not Paint or Finish the Following Items:
   1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
   5. Stainless steel, anodized aluminum, bronze, terne-coated stainless steel, and lead items.
   6. Marble, granite, slate, and other natural stones.
   7. Floors, unless specifically indicated.
   8. Glass.
   9. Concealed pipes, ducts, and conduits.

1.02 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; Current Edition.

B. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2020 (Reapproved 2025).

C. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

D. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).

E. SSPC-SP 2 - Hand Tool Cleaning; 2024.

F. SSPC-SP 6 - Commercial Blast Cleaning; 2007.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide complete list of products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g., "alkyd enamel").
   2. MPI product number (e.g., MPI #47).
   3. Cross-reference to specified paint system products to be used in project; include description of each system.

C. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
   1. Where sheen is specified, submit samples in only that sheen.
   2. Where sheen is not specified, discuss sheen options with Architect before preparing samples, to eliminate sheens not required.

3. Allow 30 days for approval process, after receipt of complete samples by Architect.
4. Paint color submittals will not be considered until color submittals for major materials not to be painted, such as masonry, have been approved.

D. Manufacturer's Instructions: Indicate special surface preparation procedures.

E. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, material safety data sheets (MSDS), care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
1. See Section 01 60 00 - Product Requirements, for additional provisions.
2. Extra Paint and Finish Materials: 1 gal of each color; from the same product run, store where directed.
3. Label each container with color in addition to the manufacturer's label.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.

1.05 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 a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.06 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Provide lighting level of 80 fc measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes from the same manufacturer to the greatest extent possible.
1. Substitution of MPI-approved products by a different manufacturer is preferred over substitution of unapproved products by the same manufacturer.

B. Paints:
1. Base Manufacturer: Sherwin-Williams Company: www.sherwin-williams.com/#sle..

C. Primer Sealers: Same manufacturer as top coats.

D. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready-mixed, unless intended to be a field-catalyzed paint.
1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

3. Supply each paint material in quantity required to complete entire project's work from a single production run.
4. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

B. Volatile Organic Compound (VOC) Content:
1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

C. Flammability: Comply with applicable code for surface burning characteristics.

D. Manufacturer and products: As incidicated on the drawings.
1. Substitutions: See Section 01 60 00-Product Requirements.

E. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.

F. Colors: As indicated on drawings.

2.03 PRIMERS

A. Provide primers recommended by the manufacturer for each substrate and finish coat combination.

2.04 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin application of paints and finishes until substrates have been adequately prepared.

B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

D. Test shop-applied primer for compatibility with subsequent cover materials.

E. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces is below the following maximums:
1. Gypsum Wallboard: 12 percent.
2. Masonry, Concrete, and Concrete Masonry Units: 12 percent.
3. Interior Wood: 15 percent, measured in accordance with ASTM D4442.
4. Concrete Floors and Traffic Surfaces: 8 percent.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or repair existing paints or finishes that exhibit surface defects.

D. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

E. Seal surfaces that might cause bleed through or staining of topcoat.

F. Masonry:
   1. Remove efflorescence and chalk. Do not coat surfaces if moisture content, alkalinity of surfaces, or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.
   2. Prepare surface as recommended by top coat manufacturer.

G. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.

H. Galvanized Surfaces:
   1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
   2. Prepare surface according to SSPC-SP 2.

I. Ferrous Metal:
   1. Solvent clean according to SSPC-SP 1.
   2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.
   3. Remove rust, loose mill scale, and other foreign substances using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 Commercial Blast Cleaning. Protect from corrosion until coated.

J. Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.

3.03 APPLICATION

A. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

C. Apply each coat to uniform appearance in thicknesses specified by manufacturer.

D. Sand wood and metal surfaces lightly between coats to achieve required finish.

E. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

F. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.05 PROTECTION

A. Protect finishes until completion of project.

B. Touch-up damaged finishes after Substantial Completion.

END OF SECTION

SECTION 10 11 00
VISUAL DISPLAY UNITS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Glass markerboards.

1.02 REFERENCE STANDARDS

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.

B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2026.

C. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass; 2024, with Editorial Revision (2025).

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's data on glass markerboard, trim, and accessories.

C. Shop Drawings: Indicate wall elevations, dimensions, joint locations , special anchor details.

D. Samples: Two, 2 by 2 inches in size illustrating materials and finish, color and texture of glass markerboard and trim.

E. Manufacturer's printed installation instructions.

F. Maintenance Data: Include data on regular cleaning, stain removal .

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.05 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Provide five year warranty for markerboard to include warranty against discoloration due to cleaning and staining.

PART 2 PRODUCTS

2.01 VISUAL DISPLAY UNITS

A. Magnetic Glass Markerboards:
   1. Glass: Laminated, low iron, 1/4 inch thick, with bevel edges and radiused corners, laminated to steel backing sheet for use with magnets. Coated or treated for use as dry erase board or projection surface.
   2. Glass Finish: White back-coating.
   3. Steel Backing Sheet Thickness: 24 gauge, 0.0239 inch .
   4. Size: As indicated on drawings.
   5. Frame: Extruded aluminum, with concealed fasteners.
   6. Frame Finish: Anodized, natural.
   7. Mounting: Concealed Z clips.
   8. Accessories: Provide magnetic marker tray and magnetic marker holder.
   9. Products:
      a. Egan Visual Corporation; Egan Visual GlassBoards: www.egan.com/#sle.
      b. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 MATERIALS

A. Float Glass: Provide float-glass-based glazing unless otherwise indicated.

B. Laminated Glass: Float glass laminated in accordance with ASTM C1172.

1. Laminated Safety Glass: Comply with ANSI Z97.1 - Class B or 16 CFR 1201 - Category I impact test requirements.

C. Steel Sheet Backing: 28 gauge, 0.0149 inch, galvanized.

2.03 ACCESSORIES

A. Temporary Protective Cover: Sheet polyethylene, 8 mil thick.

B. Mounting Brackets: Concealed.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that internal wall blocking is ready to receive work and positioning dimensions are as indicated on shop drawings.

3.02 PREPARATION

A. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

A. Install boards in accordance with manufacturer's instructions.

B. Secure units level and plumb.

3.04 CLEANING

A. Clean board surfaces in accordance with manufacturer's instructions.

B. Cover with protective cover, taped to frame.

C. Remove temporary protective cover at Date of Substantial Completion.

END OF SECTION

SECTION 10 14 20
WALL GRAPHICS AND SIGNAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Dimensional letter signage.

B. Room identification signage.

C. Sheet vinyl signage.

1.02 REFERENCE STANDARDS

A. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.

B. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's product literature for each type of sign, indicating style, font, colors, locations, and overall dimensions of each sign.

C. Shop Drawings:
   1. Include dimensions, locations, elevations, materials, text and graphic layout, and attachment details.

D. Samples: Submit one sample of each type of sign of size similar to that required for project, indicating sign style, font, and method of attachment.

E. Selection Samples: Where materials, colors, and finishes are not specified, submit selection charts or chips.

F. Verification Samples: Submit samples showing colors and finishes specified.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Package signs as required to prevent damage before installation.

B. Store under cover and elevated above grade.

C. Store tape adhesive at a normal room temperature of 68 to 72 degrees F.

1.05 FIELD CONDITIONS

A. Do not install adhesives when ambient temperature is lower than recommended by manufacturer.

B. Maintain minimum ambient temperature during and after installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design: Products as indicated on the drawings.

B. Substitutions: See Section 01 60 00 Product Requirements.

2.02 DIMENSIONAL LETTERS

A. Metal Letters:
   1. Material: Aluminum sheet, flat.
   2. Thickness: As indicated on drawings.
   3. Letter Height: As indicated on drawings.
   4. Text and Typeface:
      a. Character Font: As indicated on the drawings.
      b. Character Case: As indicated on the drawings.
   5. Finish: Sand, Prime, Paint (baked on in booth).

a. Color: As indicated on the drawings.

6. Mounting: Projected mount with collars. Stainless steel mounting stud and aluminum collar.

2.03 ROOM IDENTIFICATION SIGNAGE

A. Room-Identification Sign with smooth, uniform surfaces; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:
   1. Laminated-Sheet Sign: Photopolymer face sheet with raised graphics laminated to acrylic backing sheet to produce composite sheet.
      a. Composite-Sheet Thickness: 0.25 inch.
      b. Subsurface Graphics: Reverse halftone or dot-screen image.
      c. Color(s): As selected by Architect from manufacturer's full range.
   2. Sign-Panel Perimeter: Finish edges smooth.
      a. Edge Condition: Square cut.
      b. Corner Condition in Elevation: Square.
   3. Mounting: Surface mounted to wall with two-face tape.
   4. Text and Typeface: Helvetica Font and Accessible raised characters and Braille. Finish raised characters to contrast with background color, and finish Braille to match background color.

B. Sign Materials:
   1. Acrylic Sheet: ASTM D 4802, category as standard with manufacturer for each sign, Type UVF (UV filtering).

2.04 VINYL SHEET SIGNAGE

A. Product as indicated on the drawings.
   1. Substitutions: Not permitted.

B. Material & Physical Properties:
   1. Film Type: High-performance, polymeric film.
   2. Thickness: 2.5 mil without liner and adhesive.
   3. Adhesive: Clear, permanent, solvent-based, pressure activated adhesive.
   4. Thermal printable.

C. Performance & Durability:
   1. Oudoor Lifespan: Minimum 6 years no cracking, peeling or discoloration.
   2. Temperature Resistance: Operational stability from -40°F to 176°F after full cure.
   3. Chemical Resistance: Resistant to occasional mild solvents, salt spray, and routine commercial cleaning agents.

D. Colors: As indicated on the drawings.

2.05 ACCESSORIES

A. Use concealed fasteners and anchors unless indicated on the drawings to be exposed.

B. Concealed Fasteners and Standoffs: Noncorroding metal; stainless steel.
   1. Concealed Studs: Concealed (blind), threaded studs welded or brazed to back of sign material or screwed into back of sign assembly unless otherwise indicated.

C. Tape Adhesive: Double-sided tape, permanent adhesive. Manufacturer's standard high-bond, foam-core tape, 0.045 inch thick, with adhesive on both sides.

2.06 GENERAL FINISH REQUIREMENTS

A. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are ready to receive work.

B. Notify Architect if conditions are not suitable for installation of signs; do not proceed until conditions are satisfactory.

3.02 INSTALLATION

A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.
   1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
   2. Install signs so they do not protrude or obstruct according to the accessibility standard.
   3. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.

3.03 ADJUSTING AND CLEANING

A. Remove and replace damaged or deformed signs and signs that do not comply with specified requirements. Replace signs with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.

B. Remove temporary protective coverings and strippable films as signs are installed.

C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish.

3.04 PROTECTION

A. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

B. Protect from damage until Substantial Completion; repair or replace damaged items.

END OF SECTION

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SECTION 10 26 01
WALL PROTECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Corner guards.

B. Stainless steel wall panels.

1.02 REFERENCE STANDARDS

A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Indicate physical dimensions, features, wall mounting brackets with mounted measurements, anchorage details, and rough-in measurements.

C. Samples: Submit samples illustrating component design, configurations, joinery, color and finish.

D. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

E. Maintenance Data: Manufacturer's instructions for care and cleaning of each type of product. Include information about both recommended and potentially detrimental cleaning materials and methods.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver wall and door protection items in original, undamaged protective packaging. Label items to designate installation locations.

B. Do not deliver products to project site until areas for storage and installation are fully enclosed, and interior temperature and humidity are in compliance with manufacturer's recommendations for each type of item.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Corner Guards:
   1. Inpro; Products as indicated on the drawings: www.inprocorp.com/#sle.
   2. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 PRODUCT TYPES

A. Corner Guards - Surface Mounted:
   1. Material: Polyethylene terephthalate (PET or PETG); PVC-free with full height extruded aluminum retainer.
   2. Performance: Resist lateral impact force of 100 lbs at any point without damage or permanent set.
   3. Surface Burning Characteristics: Provide assemblies with flame spread index of 25 or less and smoke developed index of 450 or less, when tested in accordance with ASTM E84.
   4. Width of Wings: 1.5 inches.
   5. Color: As indicated.
   6. Length: One piece.

B. Stainless Steel Wall Panels:
   1. Basis-Of-Design Product: Inpro Corporation, IPC Door and Wall Protection Systems PO Box 406 Muskego, WI 53150 USA; Telephone: 800.222.5556, Fax: 888.715.8407, Website: www.inprocorp.com.

2. Substitutions: See Section 01 60 00-Product Requirements.
3. Wall Panels
    a. Stainless Steel Wall Panels. Provide stainless steel wall panel systems that include panels, top cap, divider trim, inside and outside corner trim.
        1) Type 304.
    b. Panel thickness: 18-gauge
4. Panel trim:
    a. Top Cap, Divider, Inside and Outside Corner Trim
    b. Thickness - 24 gauge
    c. Type 304 (conforms to NSF Standard 51).
5. Attachment: Panels and trim adhered with adhesive and foam tape as recommended by Manufacturer.

2.03 FABRICATION

A. Fabricate components with tight joints, corners and seams.

B. Form end trim closure by capping and finishing smooth.

2.04 SOURCE QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Provide systems of each type from a single source and manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that rough openings, concealed blocking, and anchors are correctly sized and located.

B. Verify that substrate surfaces for adhered items are clean and smooth.
    1. Test painted or wall covering surfaces for adhesion in inconspicuous area, as recommended by manufacturer. Follow adhesive manufacturer's recommendations for remedial measures at locations and/or application conditions where adhesion test's results are unsatisfactory.

C. Start of installation constitutes acceptance of project conditions.

3.02 INSTALLATION

A. Install components in accordance with manufacturer's instructions, level and plumb, secured rigidly in position to supporting construction.

3.03 TOLERANCES

A. Maximum Variation From Required Height: 1/4 inch.

B. Maximum Variation From Level or Plane For Visible Length: 1/4 inch.

3.04 CLEANING

A. Clean excess adhesive, dust, dirt, and other contaminants.

END OF SECTION

SECTION 10 28 00
TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Commercial toilet accessories.

1.02 REFERENCE STANDARDS

A. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service; 2025.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

C. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.

D. ASTM B86 - Standard Specification for Zinc and Zinc-Aluminum (ZA) Alloy Foundry and Die Castings; 2023.

E. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium; 2017 (Reapproved 2022).

F. ASTM C1036 - Standard Specification for Flat Glass; 2025.

G. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror; 2024.

H. ASTM D4802 - Standard Specification for Poly(Methyl Methacrylate) Acrylic Plastic Sheet; 2016 (Reapproved 2024).

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with the placement of internal wall reinforcement and reinforcement of toilet partitions to receive anchor attachments.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.

C. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Commercial Toilet, Shower, and Bath Accessories:
   1. Bradley Corporation.
   2. Bobrick Washroom Equipment, Inc..
   3. Substitutions: Section 01 60 00 - Product Requirements.

2.02 MATERIALS

A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
   1. Grind welded joints smooth.
   2. Fabricate units made of metal sheet of seamless sheets with flat surfaces.

B. Keys: Provide 3 keys for each accessory to Owner; master key lockable accessories.

C. Stainless Steel Sheet: ASTM A666/A666M, Type 304.

D. Stainless Steel Tubing: ASTM A269/A269M, Grade TP304 or TP316.

E. Galvanized Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.

F. Zinc Alloy: Die cast, ASTM B86.

G. Acrylic Plastic Sheet: ASTM D4802.

H. Mirror Glass: Annealed float glass, ASTM C1036 Type I, Class 1, Quality Q2, with silvering, protective and physical characteristics complying with ASTM C1503.

I. Adhesive: Two component epoxy type, waterproof.

J. Fasteners, Screws, and Bolts: Hot dip galvanized; tamper-proof; security type.

K. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

2.03 FINISHES

A. Stainless Steel: Satin finish, unless otherwise noted.

B. Chrome/Nickel Plating: ASTM B456, SC 2, satin finish, unless otherwise noted.

C. Back paint components where contact is made with building finishes to prevent electrolysis.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify exact location of accessories for installation.

3.02 PREPARATION

A. Deliver inserts and rough-in frames to site for timely installation.

B. Provide templates and rough-in measurements as required.

3.03 INSTALLATION

A. Install accessories in accordance with manufacturers' instructions in locations indicated on drawings.

B. Install plumb and level, securely and rigidly anchored to substrate.

C. Mounting Heights: As indicated on the drawings and as required by accessibility regulations.

3.04 PROTECTION

A. Protect installed accessories from damage due to subsequent construction operations.

END OF SECTION

SECTION 10 41 12
FIRE DEPARTMENT KEY BOX

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Rapid Access Key Lock Box.

1.02 REFERENCE STANDARDS

A. NFPA 1, Chapter 18.

B. UL 1037, 1610, 1332, and 437.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate specific brand and model requirements with local authority having jurisdiction.
   2. Coordinate installation location with authorities having jurisdiction.
   3. Communicate rough opening dimensions and requirments with trades involved.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Indicate physical properties, dimensions, and mounting.

C. Samples: Manufacturer's standard finish colors.

D. Manufacturer's Installation Instructions.

E. Executed warranty.

F. Project Record Documents: Indicate actual locations of key storage box.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with minimum 5 years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. See Section 01 74 19 - Construction Waste Management and Disposal for packaging waste requirements.

B. Deliver key strorage box to project site in original packaging.

C. Store products in compliance with manufacturer's instructions.

D. Store products in either horizontal or vertical position, in compliance with manufacturer's instructions.

1.07 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Manufacturer Warranty: Provide manufacturer warranty to be free of defects in material and/or workmanship for as long as the Original User owns it. Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Knox Company, https://www.knoxbox.com/.
   1. 3200 Series Knox Box.
   2. Recessed mounting.

B. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 RAPID ACCESS KEY STORAGE BOXES

A. Fully recessed type, including lift off type door, with UL listed tamper switches.

B. 1/4" plate steel housing. 1/2" thick steel door with interior gasket seal.

C. 1/8" thick stainless steel dust cover with tamper seal mounting capability.

D. Exterior Dimensions: 4"H x 5"W x 3 7/8"D.

E. Recessed Mount Flange: 7"H x 7"W.

F. Lock: UL listed, double action rotating tumblers and hardened steel pins accessed by a biased cut key.

G. Finish: Knox Coat proprietary finishing process.

H. Color: Dark Bronze

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of Conditions: Verify wall is ready to receive key storage box.

3.02 INSTALLATION

A. Install in accordance with manufacturer's written instructions.

B. Install Manufacturer's recessed mounting kit as wall is constructed.

C. Install key storage box into recessed housing after other construction is completed.

3.03 ADJUSTING

A. Adjust door and lock for smooth operation.

END OF SECTION

SECTION 10 44 00
FIRE PROTECTION SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fire extinguishers.

B. Fire extinguisher cabinets.

1.02 REFERENCE STANDARDS

A. FM (AG) - FM Approval Guide; Current Edition.

B. NFPA 10 - Standard for Portable Fire Extinguishers; 2026.

C. UL (DIR) - Online Certifications Directory; Current Edition.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide extinguisher operational features.

C. Shop Drawings: Indicate locations of cabinets and cabinet physical dimensions.

D. Maintenance Data: Include test, refill or recharge schedules and re-certification requirements.

1.04 FIELD CONDITIONS

A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Fire Extinguisher Cabinets and Accessories:
   1. JL Industries, Inc.
   2. Larsen's Manufacturing Co: www.larsensmfg.com/#sle.
   3. Potter-Roemer: www.potterroemer.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 FIRE EXTINGUISHERS

A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
   1. Provide extinguishers labeled by UL (DIR) or FM (AG) for purpose specified and as indicated.

B. Multipurpose Dry Chemical Type Fire Extinguishers: Carbon steel tank, with pressure gauge.
   1. Class: A:B:C type.
   2. Size: 10 pound.
   3. Finish: Baked polyester powder coat, red color.
   4. Temperature range: Minus 40 degrees F to 120 degrees F.

2.03 FIRE EXTINGUISHER CABINETS

A. Basis of Design: Larsen's Manufacturing Co.Aluminium with clear satin anodized finish.
   1. Verticle duo with clear acrylic glazing and verticle red letters.
   2. Semi-recessed aluminum cabinets located within gypsum board and metal stud partitions. Notify Architect and Fire Marshall when metal stud framing is in place for locating cabinets. Model numbers shall be determined by wall thickness and locations determined by Fire Marshal.
   3. Surface-mounted aluminum cabinets located on masonry partitions.

B. Cabinet Construction: Non-fire rated.
   1. Formed aluminum; 0.128 inch thick base metal.

C. Door: 0.036 inch metal thickness, reinforced for flatness and rigidity with nylon catch. Hinge doors for 180 degree opening with two butt hinges.

D. Door Glazing: Acrylic plastic, clear, 1/8 inch thick, flat shape and set in resilient channel glazing gasket.

E. Cabinet Mounting Hardware: Appropriate to cabinet, with pre-drilled holes for placement of anchors.

F. Fabrication: Weld, fill, and grind components smooth.

G. Finish of Cabinet Exterior Trim and Door: Anodized to color as selected.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify rough openings for cabinet are correctly sized and located.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install cabinets plumb and level in wall openings, ____ inches from finished floor to inside bottom of cabinet.

C. Secure rigidly in place.

D. Place extinguishers in cabinets.

END OF SECTION

SECTION 10 50 31
TURNOUT GEAR LOCKERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Design, fabrication and installation of wall mounted turnout gear lockers.

1.02 RELATED SECTIONS

A. Section 10 5113: Welded Metal Lockers.

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's product data and installation instructions.

B. Shop Drawings: Submit manufacturer's shop drawings for each individual run of lockers.

C. Samples: Submit manufacturer's standard color samples.

D. Owner's Manual: Provide maintenance manual at closeout.

E. Warranty: Submit manufacturer's standard warranty.

1.04 QUALITY ASSURANCE

1.05 DELIVERY, STORAGE AND HANDLING

A. Delivery: Deliver materials to site in manufacturer's original, unopened containers with labels identifying product and manufacturer's name.

B. Storage: Store materials in a clean dry area.

C. Handling: Protect materials and finish during installation and handling to prevent damage.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. Basis of Design: GearGrid Corporation, 670 SW 15th Street, Forest Lake, MN 55025. Toll-free 888-643-6694. Phone 651-464-4468. Web site www.geargrid.com. Email sales@geargrid.com.

B. Substitutions: See Section 01 6000 - Product Requirements.

2.02 TURNOUT GEAR LOCKERS

A. Model: GEARGRID Wall Mounted Storage System and GEARGRID Tube Wall Storage System
   1. Locker Sizes:
      a. As indicated on the drawings.
   2. Construction: Cold-formed, welded joints. Fasteners only as required for knock-down shipping, securing units to mounting surface and on applicable accessories.
      a. Vertical Dividers:
         1) Outer Frames: 1.25" O.D. x 16-gauge wall thickness ASTM A513 steel tubing.
         2) Inner Grid:
            (a) 0.25" diameter ASTM 510 cold drawn steel wire resistance welded to a 3" square pattern.
            (b) Full length and width of inside vertical divider frame.
            (c) Run oriented horizontally and vertically creating a square or rectangular grid pattern only.
            (d) Welded at all intersections.
      b. Back Panel:
         1) Required on each locker.
         2) Grid: .25" diameter ASTM 510 cold drawn steel wire resistance welded to a 3" square pattern.
         3) Sandwiched between vertical dividers, preventing them from being removed after assembly is complete.

c. Shelves: (1) Upper, (1) Lower. 0.25” diameter ASTM 510 cold drawn steel wire resistance welded and cold formed.
d. Apparel Hooks:
1) (3) per locker opening, 0.192” diameter ASTM 510 cold drawn steel wire resistance welded, cold formed and powder coated.
2) Securely engage and snap onto side or back grid, to prevent unintentional disengagement of hook.

B. ACCESSORIES
1. Door:
a. Frame: 1.25” O.D. x 16-gauge wall thickness ASTM A513 steel tubing.
b. Inner Grid: .25” diameter ASTM 510 cold drawn steel wire resistance welded to a 3” square pattern.
1) Wires must be full length and width of inside vertical divider frame.
2) Welded at all intersections
c. Top Cover: .25” diameter ASTM 510 cold drawn steel wire resistance welded to a 3” square pattern.
1) Secured to vertical dividers via horizontal wires which extend into mounting holes pre-drilled in vertical dividers.
2) Sandwiched between vertical dividers, preventing them from being removed after assembly is complete.
d. Hinge: Single pin welded style with brass pivot bushing. Door and Vertical Divider hinge components must be welded and not mechanically fastened.
e. Placard Channel: 20-gauge steel to accept a 2” x 12” name placard, securely welded to inner grid panel
f. Latch/Hasp: Self-latching with padlock hasp.
1) Minimum .125 in. sheet steel welded to frame.
2) Lock by owner.
2. Hang Bar
a. Hang Bars:
1) Adjustable height
2) Tube: 1.25” O.D. x 16-gauge 304 stainless steel tubing.
3) Brackets: Attaches to dividers.
4) Heavy Hanger:
(a) .25” diameter 304 stainless steel wire cold-formed and resistance welded.
(1) Black vinyl coating on hook end.
(b) Gear Dryer Hanger:
(1) .25” diameter 304 stainless steel wire cold-formed and resistance welded. Includes formed loops to prop open sleeves on jackets to promote better circulation throughout the garment.
(2) Black vinyl coating on hook end.
(c) Glove Drying Hanger:
(1) .25” diameter 304 stainless steel wire cold-formed and resistance welded.
(2) Black vinyl coating on hook end.

C. Finish
1. General: All system components excluding assembly and mounting hardware and stainless-steel components are to receive the standard finish.
a. Standard Finish: Durable and UV-stable TGIC powder coating process. Thickness of applied finish shall be 3 – 4 mm for added protection.
1) Provide anti-corrosive Primer.
b. Color: Blue
c.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine area to receive lockers. Notify architect if area are not acceptable. Do not begin installation until unacceptable conditions have been corrected.

3.02 INSTALLATION

A. Install lockers in accordance with manufacturer’s instructions.

B. Use manufacturer’s hardware for assembly.

C. Anchor to mounting surface with proper hardware. Secure lockers with anchor devices to suit substrate materials.

D. Install lockers plumb and square.

E. Minimum Pullout Force: 100 pounds.

F. Install end panels, filler panels, and sloped tops.

G. Install fittings if not factory installed.

H. Replace components that do not operate smoothly.

3.03 CLEANING

A. Clean locker interiors and exterior surfaces.

END OF SECTION

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SECTION 10 56 17
WALL MOUNTED STANDARDS AND SHELVING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Steel shelf standards, brackets, and accessories.

B. Shelves.

1.02 REFERENCE STANDARDS

A. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's data sheets on each product to be used.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Store products under cover and elevated above grade.

B. Store products in manufacturer's unopened packaging until ready for installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Steel Shelf Standards and Brackets:
   1. Knape & Vogt Manufacturing Company; 87™/187™ Series: www.knapeandvogt.com/#sle.

2.02 COMPONENTS

A. Steel Shelf Standards, Brackets, and Accessories:
   1. Super-Duty Shelf Standards and Brackets: Single-slotted channel standards for brackets adjustable in 1 inch increments along entire length of standard, drilled and countersunk for screws.
      a. Product: KV 87/187.
      b. Load Capacity: Recommended by manufacturer for loading of 540 to 1,060 pounds per pair of standards.
      c. Face Width: 5/8 inch, single slotted.
      d. Material: 12 gauge, 0.1046 inch sheet steel.
      e. Lengths: As indicated on drawings.
      f. Finish: Electroplated, chrome-look.
      g. Brackets: 12 gauge, 0.1046 inch sheet steel, reinforced, locking into slots with molded nylon cam lock lever; size to suit shelves; same finish as standards.
      h. Bracket Quantity: Provide one bracket for each 12 inches of standard length.

B. Shelving:
   1. Laminate Faced Shelves: Particleboard or medium density fiberboard covered with high pressure decorative laminate on both sides.
      a. Edge Finish: Matching laminate, all four edges.
      b. Substrate Thickness: 3/4 inch, nominal.
      c. Length: As indicated on drawings.
      d. Laminate: NEMA LD 3 Type HGL.
      e. Laminate Color and Pattern: As indicated on drawings.

C. Fasteners: Screws as recommended by manufacturer for intended application or as otherwise required by project conditions. Finish of exposed to view fasteners to match finish of standards and other components.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Mount standards or brackets to solid backing capable of supporting intended loads.

C. Install brackets, shelving, and accessories.

3.04 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 10 75 00
FLAGPOLES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Aluminum Flagpoles.

1.02 RELATED REQUIREMENTS

A. Section 31 23 23 - Fill: Sand to fill foundation tube sleeve.

1.03 REFERENCE STANDARDS

A. AASHTO M 36 - Standard Specification for Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains; 2024.

B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2024.

C. ASTM B241/B241M - Standard Specification for Aluminum and Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube; 2022.

D. NAAMM FP 1001 - Guide Specifications for Design Loads of Metal Flagpoles; 2007.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on pole, accessories, and configurations.

C. Shop Drawings: Indicate detailed dimensions, base details, anchor requirements, and imposed loads.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Spiral wrap flagpole with protective covering and pack in protective shipping tubes or containers.

B. Protect flagpole and accessories from damage or moisture.

PART 2 PRODUCTS

2.01 FLAGPOLES

A. Flagpoles: Designed in accordance with NAAMM FP 1001
   1. Material: Aluminum.
   2. Design: Cone tapered.
   3. Mounting: Ground mounted type.
   4. Outside Butt Diameter: 6 inches.
   5. Outside Tip Diameter: 3.5 inches.
   6. Nominal Wall Thickness: 0.188 inches minimum or as required for specified wind speed.
   7. Nominal Height: 30 ft; measured from nominal ground elevation.
   8. Halyard: Internal type, cam cleat.

B. Performance Requirements:
   1. Wind Pressure Loading on Flagpole with Flag: Resistant without permanent deformation to 120 miles/hr wind speed with flag, in accordance with NAAMM FP 1001; the factor of safety used is 2.5.

2.02 POLE MATERIALS

A. Aluminum: ASTM B241/B241M , 6063 alloy , T6 temper.

2.03 ACCESSORIES

A. Finial Ball: Aluminum, 6 inch diameter. Gold anodized.

B. Truck Assembly: Cast aluminum; revolving, stainless steel ball bearings, non-fouling.

C. Flag: United States design, 5 ft by 8 ft size, polyester fabric, brass grommets, hemmed edges.

D. Halyard: 5/16 inch diameter nylon, braided, white.

2.04 MOUNTING COMPONENTS

A. Foundation Tube Sleeve: AASHTO M 36, corrugated 16 gauge, 0.0598 inch steel, galvanized, depth of 36 inches as indicated.

B. Pole Base Attachment: Tube; steel base with base cover.

C. Lightning Ground Rod: 48 inch long copper rod, 3/4 inch diameter.

D. Lightning Ground Cable: Copper No. 6 AWG, soft drawn.

2.05 FINISHING

A. Metal Surfaces in Contact With Concrete: Asphaltic paint.

B. Concealed Steel Surfaces: Galvanized to ASTM A123/A123M requirements.

C. Exposed to View Steel Surfaces: Galvanized to ASTM A123/A123M requirements.

D. Aluminum: Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.

E. Finial: Gold anodized finish.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that concrete foundation is ready to receive work and dimensions are as indicated on shop drawings.

3.02 PREPARATION

A. Coat metal sleeve surfaces below grade and surfaces in contact with dissimilar materials with asphaltic paint.

3.03 INSTALLATION

A. Install flagpole, base assembly, and fittings in accordance with manufacturer's instructions.

B. Fill foundation tube sleeve with sand sas recommended by Manufacturer.

C. Install foundation plate and centering wedges for flagpoles base set in concrete base and fasten.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1 inch.

END OF SECTION

SECTION 12 24 00
WINDOW SHADES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Interior manual roller shades.

1.02 REFERENCE STANDARDS

A. WCMA A100.1 - Standard for Safety of Window Covering Products; 2022.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets, including materials, finishes, fabrication details, dimensions, profiles, mounting requirements, and accessories.

C. Shop Drawings: Include shade schedule indicating size, location and keys to details, head, jamb and sill details, mounting dimension requirements for each product and condition, and operation direction.

D. Verification Samples: Minimum size 6 inches square, representing actual materials, color and pattern.

E. Manufacturer's Instructions: Include instructions for storage, handling, protection, examination, preparation, and installation of product.

F. Operation and Maintenance Data: List of all components with part numbers, sources of supply, and operation and maintenance instructions; include copy of shop drawings.

G. Warranty: Submit sample of manufacturer's warranty and documentation of final executed warranty completed in Owner's name and registered with manufacturer.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver shades in manufacturer's unopened packaging, labeled to identify each shade for each opening.

B. Handle and store shades in accordance with manufacturer's recommendations.

1.06 FIELD CONDITIONS

A. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.07 WARRANTY

A. Provide manufacturer's warranty from Date of Substantial Completion, covering the following:
   1. Shade Hardware: One year.
   2. Fabric: One year.
   3. Aluminum and Steel Coatings: One year.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Interior Manually Operated Roller Shades:
   1. SWFcontract, a division of Springs Window Fashions, LLC.: www.swfcontract.com/#sle.
   2. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 ROLLER SHADES

A. General:

1. Provide shade system components that are easy to remove or adjust without removal of mounted shade brackets.
2. Provide shade system that operates smoothly when shades are raised or lowered.

B. Roller Shades:
1. Description - Interior Roller Shades: Single roller, manually operated fabric window shade system complete with mounting brackets, roller tubes, hembars, hardware, and accessories.
   a. Drop Position: Regular roll.
   b. Roll Direction: Roll down, closed position is at window sill.
   c. Mounting: Window jamb mounted - inside, between jambs.
   d. Size: As indicated on drawings.
   e. Fabric: As indicated on the drawings
2. Brackets and Mounting Hardware: As recommended by manufacturer for mounting indicated and to accommodate shade fabric roll-up size and weight.
   a. Material: Stamped steel.
3. Roller Tubes: As required for type of shade operation.
   a. Material: Extruded aluminum, clear anodized finish.
   b. Size: As recommended by manufacturer; selected for suitability for installation conditions, span, and weight of shades.
   c. Take-Up Roller: Manufacturer's standard roller tube pretensioned for winding lift cable in bottom-up type shades.
4. Hembars: Designed to maintain bottom of shade straight and flat.
   a. Style: Full wrap fabric covered bottom bar, flat profile with heat sealed closed ends.
   b. Room-Darkening Shades: Provide a slot in bottom bar with wool-pile light seal.
5. Manual Operation for Interior Shades:
   a. Clutch Operator: Manufacturer's standard material and design, permanently lubricated.
   b. Drive Chain: Continuous loop, beaded ball chain with restraining device, 95 lb minimum breaking strength; comply with WCMA A100.1. Provide upper and lower limit stops.
   c. Shade Lift Assistance: Manufacturer's standard spring device contained in the idler end of roller tube to reduce force required to lift shades; as required based on shade weight.
   d. Chain Retainer:
      1) Chain tensioning device complying with WCMA A100.1.
      2) Manufacturer's standard clip.

2.03 SHADE FABRIC

A. Fabric: Nonflammable, color-fast, impervious to heat and moisture, and able to retain its shape under normal operation.
1. Manufacturers:
   a. Shade fabric as indicated on the drawings.
   b. Substitutions: See Section 01 60 00 - Product Requirements.

2.04 ROLLER SHADE FABRICATION

A. Field measure finished openings prior to ordering or fabrication.

B. Dimensional Tolerances: Fabricate shades to fit openings within specified tolerances.
1. Vertical Dimensions: Fill openings from head to sill with 1/2 inch space between bottom bar and window stool.
2. Horizontal Dimensions - Inside Mounting: Fill openings from jamb to jamb.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine finished openings for deficiencies that may preclude satisfactory installation.

B. Start of installation shall be considered acceptance of substrates.

3.02 PREPARATION

A. Prepare surfaces using methods recommended by manufacturer for achieving best result for substrate under the project conditions.

B. Coordinate with window installation and placement of concealed blocking to support shades.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions and approved shop drawings, using mounting devices as indicated.

B. Replace shades that exceed specified dimensional tolerances at no extra cost to Owner.

C. Adjust level, projection, and shade centering from mounting bracket. Verify there is no telescoping of shade fabric. Ensure smooth shade operation.

3.04 CLEANING

A. Clean soiled shades and exposed components as recommended by manufacturer.

B. Replace shades that cannot be cleaned to "like new" condition.

3.05 CLOSEOUT ACTIVITIES

A. Demonstration: Demonstrate operation and maintenance of window shade system to Owner's personnel.

3.06 PROTECTION

A. Protect installed products from subsequent construction operations.

B. Touch-up, repair, or replace damaged products before Substantial Completion.

END OF SECTION

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SECTION 12 35 30
RESIDENTIAL CASEWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Kitchen cabinets.

1.02 RELATED REQUIREMENTS

A. Section 12 36 00 - Countertops.

1.03 REFERENCE STANDARDS

A. ANSI A135.4 - Basic Hardboard; 2012 (Reaffirmed 2020).

B. ANSI A208.1 - American National Standard for Particleboard; 2022.

C. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood; 2024.

D. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

1.04 SUBMITTALS

A. Product Data: Provide component dimensions, configurations, construction details, and joint details.

B. Shop Drawings: Indicate casework locations, elevations, clearances required, rough-in and anchor placement dimensions and tolerances.

C. Cabinet Finish Sample: Submit two samples of each type of finish, 2 inches by 3 inches in size, illustrating color, texture, gloss, and wood species.

D. Cabinet Door Sample: Of sufficient size to show cabinet style and finish, with selected hardware.

E. Manufacturer's Qualification Statement.

F. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

A. Manufacturer: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

1.06 WARRANTY

A. Correct defective Work within a five year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.01 CABINETS

A. Manufacturers:
   1. Product as indicated on the drawings.
   2. Kraftmaid Cabinetry, Inc: www.kraftmaid.com/#sle.
   3. Substitutions: See Section 01 60 00 - Product Requirements.

B. Kitchen Cabinets: Premanufactured and factory-finished, complying with construction and testing requirements in KCMA A161.1.

C. Cabinet Box: Manufacturer's standard materials and construction as determined by selected product line.
   1. See finish schedule and drawing details for additional requirements.

D. Cabinet Door/Drawer Configuration: Full overlay.

E. Cabinet Doors:
   1. Solid wood, stained finish.
   2. Species: As indicated on the drawings.
   3. Stain Color: As indicated on the drawings.

F. Drawers:
   1. Solid wood sides with dovetail joints, plywood bottom panel.
   2. Drawer Front: To match cabinet doors in style, material, and finish.
   3. Interior Finish: Manufacturer's standard.

G. Shelves: Manufacturer's standard adjustable shelves and shelf supports.

H. Door and Drawer Pulls: As indicated on the finish schedule in the drawings.l

I. Cabinet Hardware: As selected from manufacturer's standard types, styles and finishes.
   1. Drawer and Cabinet Pulls: Amerock Blackrock 5-1/16”CTC.
   2. Hinges: Manufacturer's standard self-closing concealed hinges.
   3. Drawer Slides: Manufacturer's standard self-closing drawer slides.

J. Countertops: As specified in Section 12 36 00.

2.02 MATERIALS

A. Wood-Based Materials:
   1. Solid Wood: Air-dried to 4.5 percent moisture content, then tempered to 6 percent moisture content before use.

B. Solid Wood: Clear, dry, sound, plain sawn, selected for species grain and color, no defects.

C. Hardwood Plywood: Veneer core; HPVA HP-1 Grade as indicated; same species as exposed solid wood, clear, compatible grain and color, no defects. Band exposed edges with solid wood of same species as veneer.

D. Concealed Solid Wood or Plywood: Any species and without defects affecting strength or utility.

E. Particleboard: Composed of wood chips, medium density, with waterproof resin binders; of grade to suit application; sanded faces; complying with ANSI A208.1.

F. Hardboard: ANSI A135.4, Class 1, tempered.

G. Thermally Fused Laminate (TFL): Melamine resin, NEMA LD 3, Type VGL laminate panels.

2.03 FABRICATION

A. Shop assemble casework for delivery to site in units easily handled and to permit passage through building openings.

B. Fabricate corners and joints without gaps.

C. Fabricate each unit to be rigid and not dependent on adjacent units for rigidity.

D. Provide cutouts for plumbing fixtures and appliances. Prime paint contact surfaces of cut edges.

E. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify adequacy of support framing.

3.02 INSTALLATION

A. Install casework, components and accessories in accordance with manufacturer's instructions.

B. Use anchoring devices to suit conditions and substrate materials encountered.

C. Set casework items plumb and square, securely anchored to building structure.

D. Carefully scribe casework abutting other components, with maximum gaps of 1/16 inch.

3.03 ADJUSTING

A. Adjust doors, drawers, hardware, and other moving or operating parts to function smoothly.

3.04 CLEANING

A. Clean casework, countertops, shelves, and hardware.

3.05 PROTECTION

A. Do not permit finished casework to be exposed to continued construction activity.

END OF SECTION

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SECTION 12 36 00
COUNTERTOPS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Countertops for architectural cabinet work.

B. Countertops for manufactured casework.

1.02 RELATED REQUIREMENTS

A. Section 06 64 00 Plastic Paneling.

B. Section 12 32 00 - Manufactured Wood Casework.

C. Section 12 35 30 - Residential Casework.

1.03 PRICE AND PAYMENT PROCEDURES

A. See Section 01 23 00 - Alternates for alternate bid items affecting this section.

1.04 REFERENCE STANDARDS

A. ASTM B211/B211M - Standard Specification for Aluminum and Aluminum-Alloy Rolled or Cold Finished Bar, Rod, and Wire; 2023.

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.

C. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

D. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2026.

E. IAPMO Z124 - Plastic Plumbing Fixtures; 2022, with Editorial Revision.

F. ISFA 2-01 - Classification and Standards for Solid Surfacing Material; 2013.

G. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

H. PS 1 - Structural Plywood; 2022.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Specimen warranty.

C. Shop Drawings: Complete details of materials and installation ; combine with shop drawings of cabinets and casework specified in other sections.

D. Verification Samples: For each finish product specified, minimum size 6 inches square, representing actual product, color, and patterns.

E. Test Reports: Chemical resistance testing, showing compliance with specified requirements.

F. Installation Instructions: Manufacturer's installation instructions and recommendations.

G. Maintenance Data: Manufacturer's instructions and recommendations for maintenance and repair of countertop surfaces.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.07 FIELD CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.01 COUNTERTOPS

A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

B. Plastic Laminate Countertops: High-pressure decorative laminate (HPDL) sheet bonded to substrate.
   1. Laminate Sheet: NEMA LD 3, Grade HGS, 0.048 inch nominal thickness.
      a. Manufacturers:
         1) As indicated on the drawings.
      b. Surface Burning Characteristics: Flame spread index of 25, maximum; smoke developed index of 450, maximum; when tested in accordance with ASTM E84.
      c. NSF approved for food contact.
      d. Wear Resistance: In addition to specified grade, comply with NEMA LD 3 High Wear Grade requirements for wear resistance.
      e. Finish: Matte or suede, gloss rating of 5 to 20.
      f. Surface Color and Pattern: As indicated on drawings.
   2. Exposed Edge Treatment: Molded rubber edge with T-spline, sized to completely cover edge of panel.
      a. Color: As indicated on drawings.
   3. Back and End Splashes: Same material, same construction.

C. Solid Surfacing Countertops: Solid surfacing sheet or plastic resin casting over continuous substrate.
   1. Flat Sheet Thickness: 1/2 inch, minimum.
   2. Solid Surfacing Sheet and Plastic Resin Castings: Complying with ISFA 2-01 and NEMA LD 3; acrylic or polyester resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.
      a. Manufacturers:
         1) As indicated on the drawings.
         2) Substitutions: Not permitted.
      b. Sinks and Bowls: Integral castings; minimum 3/4 inch wall thickness; comply with IAPMO Z124.
      c. Finish on Exposed Surfaces: As indicated on the drawings.
   3. Other Components Thickness: 1/2 inch, minimum.
   4. Exposed Edge Treatment: Built up to minimum 1-1/4 inch thick; square edge; use marine edge at sinks.
   5. Back and End Splashes: Same sheet material, square top; minimum 4 inches high.
   6. Skirts: As indicated on drawings.

2.02 MATERIALS

A. Extruded Aluminum: ASTM B211/B211M, 6463 alloy, T5 temper.

B. Plywood for Supporting Substrate: PS 1 Exterior Grade, A-C veneer grade, minimum 5-ply; minimum 3/4 inch thick; join lengths using metal splines.

C. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.

2.03 ACCESSORIES

A. Fixed Top-Mounted Countertop Support Brackets:

2.04 FABRICATION

A. Fabricate tops and splashes in the largest sections practicable, with top surface of joints flush.
   1. Join lengths of tops using best method recommended by manufacturer.
   2. Fabricate to overhang fronts and ends of cabinets 1 inch except where top butts against cabinet or wall.
      a. Rout a 1/8 inch drip groove at underside of exposed overlapping edges, set back 1/2 inch from face of edge.
   3. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.

B. Provide back/end splash wherever counter edge abuts vertical surface unless otherwise indicated.
   1. Secure to countertop with concealed fasteners and with contact surfaces set in waterproof glue.
   2. Height: 4 inches, unless otherwise indicated.

C. Solid Surfacing: Fabricate tops and wall panels up to 144 inches long in one piece; join pieces with adhesive sealant in accordance with manufacturer's recommendations and instructions.
   1. Integral sinks: Shop-mount securely to countertop with adhesives, using flush configuration, as per manufacturer's instructions, and as detailed on drawings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

C. Verify that wall surfaces have been finished and mechanical and electrical services and outlets are installed in proper locations.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

A. Securely attach countertops to cabinets using concealed fasteners. Make flat surfaces level; shim where required.

B. Attach plastic laminate countertops using screws with minimum penetration into substrate board of 5/8 inch.

C. Seal joint between back/end splashes and vertical surfaces.

3.04 CLEANING

A. Clean countertops surfaces thoroughly.

3.05 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

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