

RE: Resolution authorizing staff to solicit bids for the construction of a new police facility.

Background:

This resolution will provide staff with the authority to advertise the attached bid for the construction of a new police facility located on city owned property along North Leeann Drive. The bid specifications were produced by the City's owner's representative, Navigate Building Solutions, in conjunction with the architects for this project, Insight Design Architects and Chiodini Architects.

Analysis:

The attached bid was drafted with the help of Navigate Solutions to solicit proposals for the construction of the new police facility. The bid includes the following:

- Design set
- Invitation to bid
- Bid performance security
- Affidavit of business entity
- Anti-demonstration- against Israel
- OSHA 10 Affidavit
- General Contractor scope of work
- Bid form
- Supplemental bid form
- AWO 31
- Logistics plan
- Change order calculation
- Project contract(s)
- Geotech report
- Sink hole evaluations report

Once bids are received, we intend to use a shortlist and interview process during the selection phase along with recommended evaluation criteria from Navigate Solutions. The timeline for the process will commence sometime in late June 2025 and wrap up with city approval sometime in late July 2025.

The bid and attached documents have been reviewed by Navigate Building Solutions and Staff. The project contract has been reviewed by City Attorney Nick Woodman.

Recommendation:

It is staffs' recommendation city council pass this resolution and allow this bid to move forward.

MEMO SUBMITTED BY:

Joe Campbell | Chief of Police

jcampbell@nixa.com | 417-725-2510

RESOLUTION NO. 2025-31

A RESOLUTION OF THE COUNCIL OF THE CITY OF NIXA AUTHORIZING THE CITY ADMINISTRATOR TO SOLICIT BIDS FOR THE CONSTRUCTION OF A NEW BUILDING FOR THE POLICE DEPARTMENT.

WHEREAS the Nixa City Code (Chapter 2, Article VI) authorizes the City Administrator to purchase supplies, materials, equipment, and services on behalf of the City when a competitive procurement method is utilized; and

WHEREAS said provisions require the City Administrator to obtain an authorizing resolution from the City Council prior to soliciting purchases totaling \$20,000.00 or more; and

WHEREAS City staff requests authorization to solicit bids for the construction of a new building for the Police Department to be located along Leeann Drive; and

WHEREAS the City Council desires to authorize the City Administrator to undertake the purchase described herein in compliance with Chapter 2, Article VI of the Nixa City Code.

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF NIXA, AS FOLLOWS, THAT:

SECTION 1: The City Administrator, or designee, is hereby authorized, pursuant to the provisions of Chapter 2, Article VI, of the Nixa City Code, to solicit and undertake the purchase described in "Resolution Exhibit A," which said Exhibit is attached hereto and incorporated herein by this reference.

SECTION 2: The City Administrator and the officers of the City are hereby authorized to do all things necessary or convenient to carry out the terms and intent of this Resolution.

SECTION 3: This Resolution shall be in full force and effect from and after its final passage by the City Council and after its approval by the Mayor, subject to the provisions of section 3.11(g) of the City Charter.

[Remainder of page intentionally left blank. Signatures follow on next page.]

RESOLUTION NO. 2025-31

ADOPTED BY THE COUNCIL THIS 24th DAY OF June 2025.

ATTEST:

PRESIDING OFFICER

CITY CLERK

APPROVED BY THE MAYOR THIS _____ DAY OF _____ 2025.

ATTEST:

MAYOR

CITY CLERK

APPROVED AS TO FORM:

CITY ATTORNEY

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 00 0101 - PROJECT TITLE PAGE
PROJECT MANUAL

FOR

NIXA POLICE DEPARTMENT

PROJECT NUMBER: 2024.009

THE CITY OF NIXA

305 N LEEANN DRIVE

NIXA , MISSOURI 65714

DATE: JUNE 11, 2025

END OF SECTION

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 00 0102 - PROJECT INFORMATION

PART 1 GENERAL

1.1 PROJECT IDENTIFICATION

- A. Project Name: Nixa Police Department, located at: 305 N Leeann Drive, Nixa, Missouri 65714.
- B. Architect's Project Number: 2024.009.
305 N Leeann Drive.
Nixa, Missouri 65714.
- C. The Owner, hereinafter referred to as Owner: The City of Nixa
- D. Owner's Representative: Navigate Building Solutions.
 - 1. 8419 Manchester Road.
 - 2. Saint Louis, Missouri 63144.

1.2 NOTICE TO PROSPECTIVE BIDDERS

- A. These documents constitute an Invitation to Bid to and request for qualifications from General Contractors for the construction of the project described below.

1.3 PROJECT DESCRIPTION

- A. Summary Project Description: This project includes a new building and all associated site work for a new 21,280 SF Police facility and accessory structures.
- B. Contract Terms: Lump sum (fixed price, stipulated sum).

1.4 PROJECT CONSULTANTS

- A. The Architect of Record, hereinafter referred to as Architect: Insight Design Architects.
 - 1. 112 South Main Street.
 - 2. Nixa, Missouri 65714.
- B. The Design Architect, hereinafter referred to as Architect: Chiodini Architects.
 - 1. 1401 South Brentwood Blvd, Suite 575.
 - 2. Saint Louis, Missouri 63144

1.5 PROCUREMENT TIMETABLE

- A. Last Request for Substitution Due: 3 days prior to due date of bids.
- B. Last Request for Information Due: 10 days prior to due date of bids.
- C. Bid Due Date: 1 month from date of bid documents issuance, before 2pm local time. Coordinate with Owner's Representative.
- D. Bid Opening: Same day, 2pm local time.
- E. Notice to Proceed: Within 30 days after due date.
- F. Bids May Not Be Withdrawn Until: 60 days after due date.
- G. Contract Time: To be stated in bid documents.
- H. The Owner reserves the right to change the schedule or terminate the entire procurement process at any time.

1.6 PROCUREMENT DOCUMENTS

- A. Documents may be viewed at Springfield Online Plan Room.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

PROJECT INFORMATION		00 0102 - 1
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 00 0103 - PROJECT DIRECTORY

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Identification of project team members and their contact information.

1.2 OWNER:

- A. Name: The City of Nixa
1. Address Line 1: 715 W Mt Vernon Street.
 2. City: Nixa.
 3. State: Missouri.
 4. Zip Code: 65714.

1.3 CONSULTANTS:

- A. Architect: Design Professional of Record. All correspondence from the Contractor regarding construction documents authored by Architect's consultants will be through this party, unless alternate arrangements are mutually agreed upon at preconstruction meeting.
1. Architect of Record: Insight Design Architects.
 - a. Address Line 1: 112 South Main Street.
 - b. City: Nixa.
 - c. State: Missouri.
 - d. Zip Code: 65714.
 - e. Primary Contact:
 - 1) Title: Principal.
 - 2) Name: Nate Rapp.
 - 3) Email: rapp@insightdesignarchitects.com.
 2. Design Architect: Chiodini Architects.
 - a. Address Line 1: 1401 South Brentwood Blvd.
 - b. Address Line 2: Suite 575.
 - c. City: Saint Louis.
 - d. State: Missouri.
 - e. Zip Code: 63144.
 - f. Primary Contact:
 - 1) Title: Project Manager.
 - 2) Name: Leah Hurt.
 - 3) Email: lhurt@chiodini.com.
- B. Civil Engineering Consultant:
1. Company Name: Olsson Engineering.
 - a. Address Line 1: 550 St. Louis Street.
 - b. City: Springfield.
 - c. State: Missouri.
 - d. Zip Code: 65806.
 2. Primary Contact:
 - a. Title: Group Leader.
 - b. Name: Will Hoey.
 - c. Email: whoey@olsson.com.
- C. Structural Engineering Consultant:
1. Company Name: Mettemeyer Engineering.
 - a. Address Line 1: 2225 West Chesterfield Street.
 - b. Address Line 2: Suite 300.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- c. City: Springfield.
 - d. State: Missouri.
 - e. Zip Code: 65807.
- 2. Primary Contact:
 - a. Title: Project Manager.
 - b. Name: Leanna Hurt.
 - c. Email: lhurt@mett-engr.com.
- D. Mechanical Engineering Consultant - Plumbing and HVAC:
 - 1. Company Name: CJD Engineering.
 - a. Address Line 1: 2225 West Chesterfield Street.
 - b. Address Line 2: Suite 200.
 - c. City: Springfield.
 - d. State: Missouri.
 - e. Zip Code: 65807.
 - 2. Primary Contact:
 - a. Title: Principal.
 - b. Name: Allen Davis.
 - c. Email: adavis@cjd-eng.com.
- E. Electrical Engineering Consultant:
 - 1. Company Name: CJD Engineering.
 - a. Address Line 1: 2225 West Chesterfield Street.
 - b. Address Line 2: Suite 200.
 - c. City: Springfield.
 - d. State: Missouri.
 - e. Zip Code: 65807.
 - 2. Primary Contact:
 - a. Title: Principal.
 - b. Name: Allen Davis.
 - c. Email: adavis@cjd-eng.com.
- F. Audiovisual Systems Consultant:
 - 1. Company Name: Pitt Technology Group.
 - a. Address Line 1: 1900 North Le Compte Avenue.
 - b. Address Line 2: Suite 15.
 - c. City: Springfield.
 - d. State: Missouri.
 - e. Zip Code: 65802.
 - 2. Primary Contact:
 - a. Title: Director of Operations.
 - b. Name: Brent Early.
 - c. Email: bearly@pitttechnology.com.

1.4 OWNER'S REPRESENTATIVE:

- A. Company Name: Navigate Building Solutions.
 - 1. Address Line 1: 8419 Manchester Road.
 - 2. City: Saint Louis.
 - 3. State: Missouri.
 - 4. Zip Code: 63144.
- B. Primary Contact:
 - 1. Title: Project Manager.
 - 2. Name: Lori Badalamenti.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

3. Email: lori@navigatebuildingsolutions.com.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 00 0107 - SEALS PAGE

INSIGHT DESIGN ARCHITECTS

112 SOUTH MAIN STREET

NIXA, MISSOURI 63144



CHIODINI ARCHITECTS

1401 SOUTH BRENTWOOD BLVD, SUITE 575

SAINT LOUIS, MISSOURI 63144



OLSSON ENGINEERING

550 ST LOUIS STREET

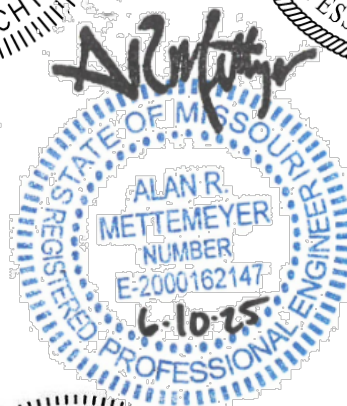
SPRINGFIELD, MISSOURI 65806



METTEMAYER ENGINEERING

2225 WEST CHESTERFIELD STREET, SUITE 200

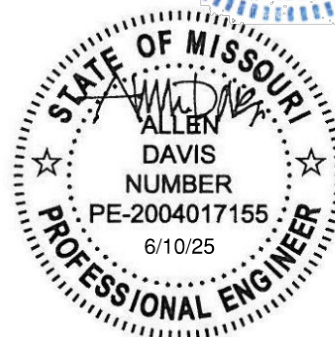
SPRINGFIELD, MISSOURI 65807



CJD ENGINEERING

2225 WEST CHESTERFIELD STREET, SUITE 300

SPRINGFIELD, MISSOURI 65807



END OF SECTION

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 00 0110 - TABLE OF CONTENTS

PROCUREMENT AND CONTRACTING REQUIREMENTS

1.1 DIVISION 00 -- PROCUREMENT AND CONTRACTING REQUIREMENTS

- A. 00 0101 - Project Title Page
- B. 00 0102 - Project Information
- C. 00 0103 - Project Directory
- D. 00 0107 - Seals Page
- E. 00 0110 - Table of Contents
- F. 00 0120 - Invitation to Bid
- G. 00 0121 - Bid Performance Security
- H. 00 0122 - Affidavit of Business Entity
- I. 00 0123 - Anti-Discrimination Against Israel Act Certification
- J. 00 0124 - OSHA 10 Affidavit of Compliance
- K. 00 0130 - General Contractor Scope of Work
- L. 00 0140 - Bid Form
- M. 00 0150 - Supplemental Bid Form
- N. 00 0160 - Annual Wage Order No.31
- O. 00 0170 - Logistics Plan
- P. 00 0180 - Change Order Calculations
- Q. Project Contract – Agreement Between Owner and Contractor
- R. Project Contract – Nixa Police Department Insurance Requirements
- S. Project Contract – General Conditions of the Contract for Construction
- T. Geotechnical Report
- U. Phase I Environmental Site Assessment
- V. Sink Hole Evaluation Report
- W. Bradford Systems Furniture Drawings

SPECIFICATIONS

2.1 DIVISION 01 -- GENERAL REQUIREMENTS

- A. 01 1000 - Summary
- B. 01 2200 - Unit Prices
- C. 01 2300 - Alternates
- D. 01 2500 - Substitution Procedures
- E. 01 3000 - Administrative Requirements
- F. 01 4000 - Quality Requirements
- G. 01 4050 - Required Special Inspections
- H. 01 4339 - Mockups
- I. 01 5000 - Temporary Facilities and Controls
- J. 01 6000 - Product Requirements
- K. 01 6116 - Volatile Organic Compound (VOC) Content Restrictions
- L. 01 7000 - Execution and Closeout Requirements
- M. 01 7419 - Construction Waste Management and Disposal
- N. 01 7800 - Closeout Submittals
- O. 01 9113 - General Commissioning Requirements

2.2 DIVISION 02 -- EXISTING CONDITIONS (NOT USED)

2.3 DIVISION 03 -- CONCRETE

- A. 03 0516 - Underslab Vapor Barrier

TABLE OF CONTENTS		00 0110 - 1
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- B. 03 3000 - Cast-in-Place Concrete
- C. 03 3005 - Moisture Vapor Reducing Admixture for Cast-in-Place Concrete
- D. 03 3511 - Concrete Floor Finishes

2.4 DIVISION 04 -- MASONRY

- A. 04 0511 - Masonry Mortaring and Grouting
- B. 04 2000 - Unit Masonry
- C. 04 2613 - Masonry Veneer
- D. 04 7200 - Cast Stone Masonry

2.5 DIVISION 05 -- METALS

- A. 05 2100 - Steel Joist Framing
- B. 05 3100 - Steel Deck
- C. 05 4000 - Cold-Formed Metal Framing
- D. 05 5133 - Metal Ladders

2.6 DIVISION 06 -- WOOD, PLASTICS, AND COMPOSITES

- A. 06 1000 - Rough Carpentry
- B. 06 4100 - Architectural Wood Casework

2.7 DIVISION 07 -- THERMAL AND MOISTURE PROTECTION

- A. 07 2100 - Thermal Insulation
- B. 07 2400 - Exterior Insulation and Finish Systems
- C. 07 2500 - Weather Barriers
- D. 07 4213 - Metal Wall Panels
- E. 07 4616 - Aluminum Siding
- F. 07 5400 - Thermoplastic Membrane Roofing
- G. 07 6200 - Sheet Metal Flashing and Trim
- H. 07 7100 - Roof Specialties
- I. 07 7123 - Manufactured Gutters and Downspouts
- J. 07 7200 - Roof Accessories
- K. 07 8400 - Firestopping
- L. 07 9200 - Joint Sealants

2.8 DIVISION 08 -- OPENINGS

- A. 08 0671 - Door Hardware Schedule
- B. 08 1113 - Hollow Metal Doors and Frames
- C. 08 1416 - Flush Wood Doors
- D. 08 3613 - Sectional Doors
- E. 08 4313 - Aluminum-Framed Storefronts
- F. 08 5653 - Security Windows
- G. 08 7100 - Door Hardware
- H. 08 8000 - Glazing
- I. 08 8300 - Mirrors

2.9 DIVISION 09 -- FINISHES

- A. 09 0561 - Common Work Results for Flooring Preparation
- B. 09 2116 - Gypsum Board Assemblies
- C. 09 2216 - Non-Structural Metal Framing
- D. 09 3000 - Tiling
- E. 09 5100 - Acoustical Ceilings
- F. 09 6500 - Resilient Flooring
- G. 09 6566 - Resilient Athletic Flooring
- H. 09 6700 - Fluid-Applied Flooring

TABLE OF CONTENTS		00 0110 - 2
--------------------------	--	--------------------

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- I. 09 6813 - Tile Carpeting
- J. 09 9000 - Painting and Coating - Sherwin-Williams Commercial Facility Guide Specification
- K. 09 9300 - Staining and Transparent Finishing

2.10 DIVISION 10 -- SPECIALTIES

- A. 10 1100 - Visual Display Units
- B. 10 1419 - Signage
- C. 10 2113.19 - Plastic Toilet Compartments
- D. 10 2219 - Demountable Partitions
- E. 10 2600 - Wall and Door Protection
- F. 10 2641 - Ballistics Resistant Panels
- G. 10 2800 - Toilet, Bath, and Laundry Accessories
- H. 10 4300 - Emergency Aid Specialties
- I. 10 4400 - Fire Protection Specialties
- J. 10 7313 - Awnings
- K. 10 7500 - Flagpoles

2.11 DIVISION 11 -- EQUIPMENT

- A. 11 3013 - Residential Appliances
- B. 11 5300 - Laboratory Equipment
- C. 11 6623 - Gymnasium Equipment

2.12 DIVISION 12 -- FURNISHINGS

- A. 12 2400 - Window Shades
- B. 12 3600 - Countertops

2.13 DIVISION 13 -- SPECIAL CONSTRUCTION

- A. 13 3419 - Metal Building Systems

2.14 DIVISION 14 -- CONVEYING EQUIPMENT (NOT USED)

2.15 DIVISION 15 -- RESERVED (NOT USED) (FOR MECHANICAL, SEE DIVISIONS 21, 22, AND 23)

2.16 DIVISION 16 -- RESERVED (NOT USED) (FOR ELECTRICAL, SEE DIVISIONS 25, 26, 27, 28, AND 29)

2.17 DIVISION 17 -- RESERVED (NOT USED)

2.18 DIVISION 18 -- RESERVED (NOT USED)

2.19 DIVISION 19 -- RESERVED (NOT USED)

2.20 DIVISION 20 -- RESERVED (NOT USED)

2.21 DIVISION 21 -- FIRE SUPPRESSION (NOT USED)

2.22 DIVISION 22 -- PLUMBING

- A. 22 0100 - General Plumbing Requirements
- B. 22 0500 - Basic Plumbing Materials and Methods
- C. 22 0600 - Hangers and Supports
- D. 22 0800 - Piping Insulation
- E. 22 1100 - General Duty Valves
- F. 22 1220 - Gauges and Thermostats
- G. 22 1400 - Piping Systems
- H. 22 3000 - Fire Protection Systems
- I. 22 4100 - Plumbing Fixtures
- J. 22 4300 - Plumbing Specialties
- K. 22 4850 - Water Heaters
- L. 22 9300 - Plumbing Systems Commissioning
- M. 22 9500 - Testing, Adjusting, and Balancing

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

2.23 DIVISION 23 -- HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC)

- A. 23 0100 - General HVAC Requirements
- B. 23 0500 - Basic HVAC Materials and Methods
- C. 23 0600 - Hangers and Supports
- D. 23 0800 - Piping Insulation
- E. 23 0850 - Ductwork Insulation
- F. 23 1400 - Piping Systems
- G. 23 8150 - Metal Ductwork
- H. 23 8200 - Duct Accessories and HVAC Specialties
- I. 23 8250 - Semi-Custom Packaged Rooftop Units - 15 to 140 Ton
- J. 23 8350 - Power Ventilators
- K. 23 8400 - Variable Air Volume Terminal Units
- L. 23 8550 - Diffusers, Registers, and Grilles
- M. 23 9000 - Direct-Digital Controls Systems
- N. 23 9300 - Mechanical Systems Commissioning
- O. 23 9500 - Testing, Adjusting, and Balancing

2.24 DIVISION 24 -- RESERVED (NOT USED)

2.25 DIVISION 25 -- INTEGRATED AUTOMATION (NOT USED)

2.26 DIVISION 26 -- ELECTRICAL

- A. 26 0100 - General Electrical Requirements
- B. 26 0500 - Basic Electrical Materials and Methods
- C. 26 0600 - Grounding and Bonding
- D. 26 0720 - Electrical Supports
- E. 26 0750 - Electrical Identification
- F. 26 1200 - Conductors and Cables
- G. 26 1300 - Raceways and Boxes
- H. 26 1400 - Wiring Devices
- I. 26 1450 - Lighting Control Devices
- J. 26 2500 - Emergency Standby Generator
- K. 26 4100 - Safety Switches
- L. 26 4410 - Switchboards
- M. 26 4113 - Lightning Protection
- N. 26 4420 - Panelboards
- O. 26 4430 - Motor Starters and Controllers
- P. 26 5110 - Lighting Fixtures
- Q. 26 6100 - Data and Communications
- R. 26 9000 - Fire Detection and Alarm System
- S. 26 9300 - Electrical Systems Commissioning

2.27 DIVISION 27 -- COMMUNICATIONS

- A. 27 0000 - Communications - General Requirements
- B. 27 1000 - Structured Cabling
- C. 27 4100 - Audiovisual Systems

2.28 DIVISION 28 -- ELECTRONIC SAFETY AND SECURITY (NOT USED)

2.29 DIVISION 29 -- RESERVED (NOT USED)

2.30 DIVISION 30 -- RESERVED (NOT USED)

2.31 DIVISION 31 -- EARTHWORK

- A. 31 1000 - Site Clearing
- B. 31 2000 - Earth Moving

TABLE OF CONTENTS		00 0110 - 4
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

2.32 DIVISION 32 -- EXTERIOR IMPROVEMENTS

- A. 32 1216 - Asphalt Paving
- B. 32 1313 - Concrete Paving
- C. 32 1373 – Concrete Paving Joint Sealants
- D. 32 3113 - Chain Link Fences and Gates
- E. 32 3119 - Decorative Metal Fences and Gates
- F. 32 3913 - Metal Bollards
- G. 32 9200 - Turf and Grasses
- H. 32 9300 - Plants

2.33 DIVISION 33 -- UTILITIES

- A. 33 1000 - Water Utility
- B. 33 4100 - Storm Utility Drainage

END OF SECTION

TABLE OF CONTENTS		00 0110 - 5
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**INVITATION TO BID
Nixa Police Department
305 N Leeann Dr. Nixa, MO 65714**

Notice is hereby given that the City of Nixa is accepting sealed bids for the construction of a new Police Department. Bids shall be submitted on the City's lonWave site on or before **2:00 P.M. local time, Wednesday July 30, 2025.**

Bids shall be submitted via lonWave in attention to:

**City of Nixa
c/o Jimmy Liles
715 W Mt. Vernon St. PO Box 395 Nixa, MO 65714**

There will not be a public opening of the bids.

There will be one (1) General Construction bid package associated with this bid. The scope for this project includes construction of a new 21,280 SF police department and associated site development.

Prospective General Contractors and Subcontractors are encouraged to review current site conditions. The Owner may or may not elect to host an organized pre-bid meeting, date and time are TBD if the Owner elects to host this meeting.

Bid documents and specifications may be obtained beginning June 26, 2025 and thereafter via lonWave.

Questions regarding this project should be submitted via lonWave to the City.

Clarifications requested by bidders must be submitted via lonWave not less than 10 business days prior to the receipt of bids. The reply will be in the form of an addendum, a copy of which will be forwarded to known bidders.

Each Bid Proposal must be accompanied by Bid Security. Reference "Bid Performance Security" exhibit attached.

Each Bidder must submit a completed "Affidavit of Business Entity" form. See attached exhibit.

Each Bidder is to review, complete, and return the "Anit-Discrimination Against Israel Act Certification" form. See attached exhibit.

Each Bidder must provide a completed "OSHA-10 Affidavit of Compliance" form. Reference attached exhibit.

Not less than the prevailing hourly rates of wages, as set forth by the State of Missouri Department of Labor, or determined by court on appeal, shall be paid to

all workmen performing work under this Contract, and the Contractor will indemnify and hold the District harmless therefore.

The project will be tax exempt.

Contract terms will include Liquidated Damages.

The City of Nixa reserves the right to reject any and all bids, or to advertise for new bids if deemed necessary. By submitting a bid, a bidder agrees that their bid will not be withdrawn for a period of sixty (60) days except as provided herein, subsequent to the specified time for receipt of bids and further agrees to the terms and conditions of this invitation and the Specifications regarding the bidding process. No low bidder shall have a business expectancy merely because their bid is the lowest one received; until the contract is awarded, no business expectancy exists. Bids may be withdrawn solely for demonstrated and verifiable clerical or typographical mistake, but not mistake of judgement.

BID PERFORMANCE SECURITY

Requirement for Bid Security: Bid Security shall be required for all formal Bids, requiring City Council approval, as set forth in the City of Nixa's Purchasing Policy, for the purchase of Capital Improvement items, and City projects entailing engineering or construction. Bid security shall be a bond provided by a surety company authorized to do business in the State of Missouri, or cashier's check in an amount equal to 5% of the total amount of the bid. Failure to provide security, as set forth shall result in the City's rejection of bid.

Withdrawal of Bids: After the bids are opened, they shall be irrevocable for the period of up to sixty (60) days from bid opening date. If a bidder is permitted to withdraw its bid before the opening of bids, no action shall be taken against the bidder or the bid security.

Correction or Withdrawal of Bids: Correction or withdrawal of inadvertently erroneous bids after bid opening, or cancellations of awards or contracts based on such bid mistakes shall not be permitted and shall mandate forfeiture of Bid Performance Security to the City of Nixa.

Return of Bid Security: The City shall return the security bond to bidders who do not receive the bid.

The City shall hold the security bid bond of the awarded bidder until Capital Improvement Project is delivered to the City of Nixa or a 100% percent performance bond is issued to the City for awarded contractual services or project construction.

**BUSINESS ENTITY CERTIFICATION, ENROLLMENT DOCUMENTATION,
AND AFFIDAVIT OF WORK AUTHORIZATION**

BUSINESS ENTITY CERTIFICATION:

The bidder/contractor must certify their current business status by completing either Box A or Box B or Box C on this Exhibit.

- BOX A:** To be completed by a non-business entity as defined below.
- BOX B:** To be completed by a business entity who has not yet completed and submitted documentation pertaining to the federal work authorization program as described at http://www.dhs.gov/files/programs/gc_1185221678150.shtm.
- BOX C:** To be completed by a business entity who has current work authorization documentation on file with a Missouri state agency including Division of Purchasing and Materials Management.

Business entity, as defined in section 285.525, RSMo, pertaining to section 285.530, RSMo, is any person or group of persons performing or engaging in any activity, enterprise, profession, or occupation for gain, benefit, advantage, or livelihood. The term “**business entity**” shall include but not be limited to self-employed individuals, partnerships, corporations, contractors, and subcontractors. The term “**business entity**” shall include any business entity that possesses a business permit, license, or tax certificate issued by the state, any business entity that is exempt by law from obtaining such a business permit, and any business entity that is operating unlawfully without such a business permit. The term “**business entity**” shall not include a self-employed individual with no employees or entities utilizing the services of direct sellers as defined in subdivision (17) of subsection 12 of section 288.034, RSMo.

Note: Regarding governmental entities, business entity includes Missouri schools, Missouri universities (other than stated in Box C), out of state agencies, out of state schools, out of state universities, and political subdivisions. A business entity does not include Missouri state agencies and federal government entities.

BOX A – CURRENTLY NOT A BUSINESS ENTITY

I certify that _____ (Company/Individual Name) **DOES NOT CURRENTLY MEET** the definition of a business entity, as defined in section 285.525, RSMo pertaining to section 285.530, RSMo as stated above, because: (check the applicable business status that applies below)

- ☐ I am a self-employed individual with no employees; **OR**
- ☐ The company that I represent employs the services of direct sellers as defined in subdivision (17) of subsection 12 of section 288.034, RSMo.

I certify that I am not an alien unlawfully present in the United States and if _____ (Company/Individual Name) is awarded a contract for the services requested herein under _____ (Bid/SFS/Contract Number) and if the business status changes during the life of the contract to become a business entity as defined in section 285.525, RSMo, pertaining to section 285.530, RSMo, then, prior to the performance of any services as a business entity, _____ (Company/Individual Name) agrees to complete Box B, comply with the requirements stated in Box B and provide the _____ (insert agency name) with all documentation required in Box B of this exhibit.

Authorized Representative's Name (Please Print)

Authorized Representative's Signature

Company Name (if applicable)

Date

(Complete the following if you DO NOT have the E-Verify documentation and a current Affidavit of Work Authorization already on file with the State of Missouri. If completing Box B, do not complete Box C.)

BOX B – CURRENT BUSINESS ENTITY STATUS

I certify that _____ (Business Entity Name) **MEETS** the definition of a business entity as defined in section 285.525, RSMo, pertaining to section 285.530.

Authorized Business Entity Representative's
Name (Please Print)

Authorized Business Entity
Representative's Signature

Business Entity Name

Date

E-Mail Address

As a business entity, the bidder/contractor must perform/provide each of the following. The bidder/contractor should check each to verify completion/submission of all of the following:

- ☐ Enroll and participate in the E-Verify federal work authorization program (Website: http://www.dhs.gov/files/programs/gc_1185221678150.shtm; Phone: 888-464-4218; Email: e-verify@dhs.gov) with respect to the employees hired after enrollment in the program who are proposed to work in connection with the services required herein; AND
- ☐ Provide documentation affirming said company's/individual's enrollment and participation in the E-Verify federal work authorization program. Documentation shall include EITHER the E-Verify Employment Eligibility Verification page listing the bidder's/contractor's name and company ID OR a page from the E-Verify Memorandum of Understanding (MOU) listing the bidder's/contractor's name and the MOU signature page completed and signed, at minimum, by the bidder/contractor and the Department of Homeland Security – Verification Division. If the signature page of the MOU lists the bidder's/contractor's name and company ID, then no additional pages of the MOU must be submitted; AND
- ☐ Submit a completed, notarized Affidavit of Work Authorization provided on the next page of this Exhibit.

AFFIDAVIT OF WORK AUTHORIZATION:

The bidder/contractor who meets the section 285.525, RSMo, definition of a business entity must complete and return the following Affidavit of Work Authorization.

Comes now _____ (Name of Business Entity Authorized Representative) as _____ (Position/Title) first being duly sworn on my oath, affirm _____ (Business Entity Name) is enrolled and will continue to participate in the E-Verify federal work authorization program with respect to employees hired after enrollment in the program who are proposed to work in connection with the services related to contract(s) with the State of Missouri for the duration of the contract(s), if awarded in accordance with subsection 2 of section 285.530, RSMo. I also affirm that _____ (Business Entity Name) does not and will not knowingly employ a person who is an unauthorized alien in connection with the contracted services provided under the contract(s) for the duration of the contract(s), if awarded.

In Affirmation thereof, the facts stated above are true and correct. (The undersigned understands that false statements made in this filing are subject to the penalties provided under section 575.040, RSMo.)

Authorized Representative's Signature

Printed Name

Title

Date

E-Mail Address

E-Verify Company ID Number

Subscribed and sworn to before me this _____ of _____. I am
(DAY) (MONTH, YEAR)
commissioned as a notary public within the County of _____, State of
(NAME OF COUNTY)
_____, and my commission expires on _____.
(NAME OF STATE) (DATE)

Signature of Notary

Date

(Complete the following if you have the E-Verify documentation and a current Affidavit of Work Authorization already on file with the State of Missouri. If completing Box C, do not complete Box B.)

BOX C – AFFIDAVIT ON FILE - CURRENT BUSINESS ENTITY STATUS

I certify that _____ (Business Entity Name) **MEETS** the definition of a business entity as defined in section 285.525, RSMo, pertaining to section 285.530, RSMo, and have enrolled and currently participates in the E-Verify federal work authorization program with respect to the employees hired after enrollment in the program who are proposed to work in connection with the services related to contract(s) with the State of Missouri. We have previously provided documentation to a Missouri state agency or public university that affirms enrollment and participation in the E-Verify federal work authorization program. The documentation that was previously provided included the following.

- ✓ The E-Verify Employment Eligibility Verification page OR a page from the E-Verify Memorandum of Understanding (MOU) listing the bidder's/contractor's name and the MOU signature page completed and signed by the bidder/contractor and the Department of Homeland Security – Verification Division
- ✓ A current, notarized Affidavit of Work Authorization (must be completed, signed, and notarized within the past twelve months).

Name of **Missouri State Agency** or **Public University*** to Which Previous E-Verify Documentation Submitted: _____

(*Public University includes the following five schools under chapter 34, RSMo: Harris-Stowe State University – St. Louis; Missouri Southern State University – Joplin; Missouri Western State University – St. Joseph; Northwest Missouri State University – Maryville; Southeast Missouri State University – Cape Girardeau.)

Date of Previous E-Verify Documentation Submission: _____

Previous **Bid/Contract Number** for Which Previous E-Verify Documentation Submitted: _____

(if known)

Authorized Business Entity Representative's
Name (Please Print)

Authorized Business Entity
Representative's Signature

E-Verify MOU Company ID Number

E-Mail Address

Business Entity Name

Date

FOR STATE USE ONLY

Documentation Verification Completed By:

Buyer

Date

ANTI-DISCRIMINATION AGAINST ISRAEL ACT CERTIFICATION

Statutory Requirement: Section 34.600, RSMo, precludes entering into a contract with a company to acquire products and/or services “unless the contract includes a written certification that the company is 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 laws of the State of Israel; or persons or entities doing business in the State of Israel.”

Exceptions: The statute provides two exceptions for this certification: 1) “contracts with a total potential value of less than one hundred thousand dollars” or 2) “contractors with fewer than ten employees.” Therefore the following certification is required prior to any contract award.

Section 34.600, RSMo, defines the following terms:

Company - any for-profit or not-for-profit organization, association, corporation, partnership, joint venture, limited partnership, limited liability partnership, limited liability company, or other entity or business association, including all wholly-owned subsidiaries, majority-owned subsidiaries, parent companies, or affiliates of those entities or business associations.

Boycott Israel and Boycott of the State of Israel - engaging in refusals to deal, terminating business activities, or other actions to discriminate against, inflict economic harm, or otherwise limit commercial relations specifically with the State of Israel; companies doing business in or with Israel or authorized by, licensed by, or organized under the laws of the State of Israel; or persons or entities doing business in the State of Israel, that are all intended to support a boycott of the State of Israel. A company’s statement that it is participating in boycotts of the State of Israel; companies doing business in or with Israel or authorized by, licensed by, or organized under the laws of the State of Israel; or persons or entities doing business in the State of Israel, or that it has taken the boycott action at the request, in compliance with, or in furtherance of calls for a boycott of the State of Israel; companies doing business in or with Israel or authorized by, licensed by, or organized under the laws of the State of Israel; or persons or entities doing business in the State of Israel shall be considered to be conclusive evidence that a company is participating in a boycott of the State of Israel; companies doing business in or with Israel or authorized by, licensed by, or organized under the laws of the State of Israel; or persons or entities doing business in the State of Israel; provided, however that a company that has made no such statement may still be considered to be participating in a boycott of the State of Israel; companies doing business in or with Israel or authorized by, licensed by, or organized under the laws of the State of Israel; or persons or entities doing business in the State of Israel if other factors warrant such a conclusion.

Certification: The vendor must therefore certify their current status by completing either Box A, Box B, or Box C on the next page of this Exhibit.

- | | |
|---------------|--|
| BOX A: | To be completed by any vendor that <u>does not meet the definition of “company”</u> above, hereinafter referred to as “Non-Company.” |
| BOX B: | To be completed by a vendor that meets the definition of “Company” but has <u>less than ten employees</u> . |
| BOX C: | To be completed by a vendor that <u>meets the definition of “Company”</u> and <u>has ten or more employees</u> . |

BOX A – NON-COMPANY ENTITY

I certify that _____ (Entity Name) currently **DOES NOT MEET** the definition of a company as defined in section 34.600, RSMo, but that if awarded a contract and the entity's business status changes during the life of the contract to become a "company" as defined in section 34.600, RSMo, and the entity has ten or more employees, then, prior to the delivery of any services and/or supplies as a company, the entity agrees to comply with, complete, and return Box C to the Division of Purchasing at that time.

Authorized Representative's Name (Please Print)

Authorized Representative's Signature

Entity Name

Date

BOX B – COMPANY ENTITY WITH LESS THAN TEN EMPLOYEES

I certify that _____ (Company Name) **MEETS** the definition of a company as defined in section 34.600, RSMo, and currently has less than ten employees but that if awarded a contract and if the company increases the number of employees to ten or more during the life of the contract, then said company shall comply with, complete, and return Box C to the Division of Purchasing at that time.

Authorized Representative's Name (Please Print)

Authorized Representative's Signature

Company Name

Date

BOX C – COMPANY ENTITY WITH TEN OR MORE EMPLOYEES

I certify that _____ (Company Name) **MEETS** the definition of a company as defined in section 34.600, RSMo, has ten or more employees, and is not currently engaged 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 laws of the State of Israel; or persons or entities doing business in the State of Israel as defined in section 34.600, RSMo. I further certify that if the company is awarded a contract for the services and/or supplies requested herein said company shall not 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 laws of the State of Israel; or persons or entities doing business in the State of Israel as defined in section 34.600, RSMo, for the duration of the contract.

Authorized Representative's Name (Please Print)

Authorized Representative's Signature

Company Name

Date

OSHA 10 – AFFIDAVIT OF COMPLIANCE

Before me, the undersigned Notary Public in and for the County of _____
State of _____ personally came and appeared _____
(printed name) _____ (position) of _____ (company name)
(a corporation) (a partnership) (a proprietorship), and after being duly sworn, did depose
and say that all provisions and requirements set out in Section 292.675, Missouri Revised
Statutes, pertaining to the 10-hour OSHA construction safety training of workers employed on
public works projects have been fully satisfied and there has been no exception to the full
and complete compliance with said provisions and requirements. The referenced OSHA
training is necessary in carrying out the contract and work with the City of Nixa in Christian
County, Missouri.

Said training of all project workers has been or will be undertaken within 60 days of commencement of construction of the project. The contractor is to provide to the city copies of OSHA certification cards of each project worker.

Signature (person with authority)

Date _____

STATE OF _____)
) ss
COUNTY OF _____)

On this ____ day of _____, 20____, before me personally appeared _____, to me known to be the person described herein and who executed the forgoing instrument and acknowledged that they executed the same as their free act and deed.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal in the county and state aforesaid, the day and year first above written.

Notary Public

My commission expires: _____.

SECTION 00 01 30 GENERAL CONTRACTOR SCOPE OF WORK

The Owner's Representative referred to below is Navigate Building Solutions, LLC. The Owner referred to below is the City of Nixa. The Contractor referred to below is the General Contractor. This bid package includes, but is not limited to, the following:

1. All work outlined by the project documents (plans and specifications) issued by Insight Design Architects dated June 11, 2025.
2. This contractor will be responsible for reviewing all specifications and drawings including Architectural, Civil, Mechanical, Plumbing, Electrical, Fire Protection, Low Voltage, and Structural, etc. and will include all divisions of work in their proposal.
3. Project will be tax exempt, taxes not to be included by Contractor.
4. The Owner will utilize an Owner Representative (Navigate Building Solutions) in connection with the Project. The Contractor's routine communication related to the Project shall all be directed to the Owner Representative. Official communications related to claims and other important matters shall be submitted to the Owner Representative.
5. The contract forms that will be issued to the awarded Contractor are included in the Project Manual. Contractor shall read and agree to these documents as part of the bid process.
6. Contractor is aware of the potential for Liquidated Damages. Contractor shall be responsible to maintain scheduled items for the Contractor's work as included in the Master Project Schedule below. Contractor shall reference the contract forms and exhibits included in the bid documents. Contractor agrees to pay the Owner, or to deduct from the Contract Sum, not as a penalty, but as liquidated damages, the amounts listed in the contract drafts provided.
7. Upon execution of this contract, this contractor must submit to the Owner Representative a detailed critical path baseline construction schedule outlining each construction activity and phase. This schedule must fall within the master project schedule outlined below and be submitted no later than ten (10) days following execution of the contract. Contractor is required to provide updated work schedules on a bi-weekly basis. Contractor's detailed activity schedule/critical path schedule shall adhere to the master project schedule. Should the Contractor fall behind schedule by more than 5 work days due to the fault of this Contractor, the Contractor shall provide a recovery schedule to the Owner Representative within 5 days of request by the Owner Representative.

Project Master Schedule/Milestone Dates:

- | | |
|---|---------------------------|
| 1. Receipt of Bids | July 30, 2025 at 2:00pm |
| 2. Supplemental Bid Documents Due | July 31, 2025 at 2:00pm |
| 3. Pre-Award Interviews, Owner's Option | August 4-8, Date/Time TBD |
| 4. Board Approval of Contractor | August 12, 2025 |
| 5. Issue Contract | August 15, 2025 |
| 6. Notice to Proceed (Day 1) / Mobilization | August 15, 2025 |

- | | |
|--|--------------------------------------|
| 7. All Submittals Delivered to Design Team | November 15, 2025 |
| 8. Substantial Completion | *Based on Bidder's proposed duration |

(All Life Safety Inspections and Occupancy Inspections to be completed on or before Substantial Completion date.)

- | | |
|---|--|
| 9. Final Completion / Completion of Punchlist | 30 calendar days after Subst. Completion |
|---|--|

8. Bidders will be required to submit all questions via IonWave no later than 10 business days prior to the bid due date. The Design Team will then issue an addendum via IonWave with all questions listed and final responses to each question.
9. The contractual project duration shall be proposed by bidders on the Bid Form. The proposed duration will be used as key criteria along with other information on the Bid Form to select and award a General Contractor. The project duration will be incorporated into the Contract between the Owner and the General Contractor.
10. Contractor accepts all risks associated with adverse weather. 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. All provisions in the Contract and its Exhibits otherwise respecting weather are superseded by this provision, and are of no force and effect.
11. Any claims for delay to critical path activities shall be submitted to the Owner's Representative within 24 hours of occurrence, identifying the event and the impacted critical path activity. The 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 meetings.
12. Contractor is required to hold their alternate pricing that was included in the Bid Form for 3 months after the bid date. Contractor will notify Owner Representative when decisions need to be made regarding the acceptance of bid alternates in order to maintain deliveries, installation, and the master project schedule.
13. The Master Project Milestone Dates include all work proposed in the Bid Alternates. No time extensions will be granted for accepted Alternates.
14. The Master Project Milestone Dates include base bid soil remediation per the Geotechnical Report. No time extensions will be granted for soil remediation taking place under the base bid.
15. Builder's Risk to be carried by the Contractor. Deductibles shall be paid by the Contractor. Reference the Contract for additional information and requirements.
16. The Owner will furnish a building permit, fire district permit, and the City or Utility Company water/sewer/irrigation tap fees. This contractor (or its subcontractors) is responsible for all other trade permits, connection fees required by utility companies, state, county, local, regional, and federal authorities and agencies associated with this scope of work. Contractor shall also include the cost of the meters from the governing utility companies unless stated otherwise in the contract documents.
17. Contractor is required to obtain a Business License from the City of Nixa.

18. This Contractor will be required to sign up and comply with PaymentWorks as part of the Owner's payment verification process. Reference Contract for additional information and requirements.
19. Not less than the prevailing hourly rates of wages, as set forth by the State of Missouri Department of Labor, or determined by court on appeal, shall be paid to all workmen performing work under this Contract, and the Contractor will indemnify and hold the District harmless therefore. Reference the Contract for additional information and requirements regarding prevailing wage.
20. Certified payrolls are required to be submitted to the Owner monthly with pay applications.
21. Construction work shall adhere to the hours allowed by the local municipality.
22. Provide all supervision, labor, tools, equipment and materials to complete the work.
23. Full-time onsite superintendent is required when any of this Contractor's labor or this Contractor's subcontractors labor is onsite.
24. Perform all freight, unloading, loading, distribution and hoisting of materials.
25. This contractor shall provide all layout required to complete the work included in this Contractor's scope of work.
26. Furnish, install, maintain and remove temporary on-site trailers and storage containers as required to perform the work. This contractor shall provide in the jobsite trailer a conference table and chairs for contractor weekly foreman meetings, bi-weekly Owner meetings, and other meetings as needed.
27. Perform all work in accordance with OSHA standards.
28. This Contractor will install, maintain, and remove all SWPPP procedures and silt fence for the project. Contractor will provide weekly and rain event SWPPP reports per MDNR standards.
29. All erosion control systems shall be inspected and corrected weekly at a minimum, or as dictated by local regulations. Any silt or debris leaving the site and affecting public rights-of-ways or storm water drainage facilities shall be cleaned up within 24 hours after the end of the storm. A SWPPP map/plan needs to be posted in the trailer and marked up as BMP's are installed/modified.
30. This Contractor is responsible for locating all public and private utilities.
31. Provide street cleaning to remove dirt, mud, and debris generated by the project site as needed to maintain a clean surface along the streets adjacent to the site as well as existing parking lots.
32. Contractor is responsible for mowing the entire site and keeping weeds trimmed.
33. This Contractor shall be responsible for the cost of temporary utilities during the course of construction i.e. but not limited to: gas, electric, sewer, water.
34. Take note of nearest water source and the schedule for water line installation; if no water is available on site, provide alternate means for tire wash down of trucks prior to leaving the site.

35. Provide adequate dust control during construction work, including misting during demo and earthwork operations.
36. Provide barricades, signage, flagging and flagman for traffic control and public safety during the execution of the work as needed. Coordination of all road closures (full or partial) with Owner Representative and city officials.
37. Protect 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 and utilities. If this requires engineered shoring systems, this Contractor will provide as needed for this scope of work.
38. This Contractor shall furnish all dumpsters for the project and shall include cost to haul offsite and legally dispose of all construction rubbish and debris. Cleanup all rubbish and debris from site and building daily.
39. Contractor will provide temporary construction toilets for the project. Tradesmen shall not use permanent toilet fixtures.
40. Contractor will provide ice and cups and distribute drinking water for the jobsite.
41. Contractor to furnish first aid and safety supplies as needed. Contractor is solely responsible for site/project safety. Site Specific Safety Plan shall be completed and kept in the job trailer at all times.
42. This Contractor and its Subcontractors will be responsible for providing a 10-hour OSHA Construction Safety Program or similar. Reference contract for additional information and requirements.
43. Contractor to maintain proper SDS sheets for all materials utilized by this Contractor (and its subcontractors) in a central location on site per OSHA standards.
44. Provide labor and material for temporary protection. Contractor to also install adequate temporary protection across any exposed concrete floors to eliminate staining or damage to finished floor product. Contractor to maintain this until all work is complete. Once all the work has been completed Contractor will remove and dispose of the temporary protection (at a minimum, use of masonite boards with the seams taped). Any damage to exposed floors that requires remediation prior to installation of finished surface will be at the expense and responsibility of this Contractor.
45. Contractor to provide and maintain weather protection for material and work as required by the project schedule. Contractor to also provide any cold or hot weather measures for weather sensitive materials like concrete, masonry, roofing materials, air/vapor barrier, etc. Delays will not be awarded for construction activities impacted by hot/cold temperatures.
46. Include water pumping and dewatering necessary to proceed with work being performed under this bid package.
47. All areas must be left at the end of each day so that there is no standing water. Grade temporary swales to drain site, if necessary to achieve this requirement.

48. Stabilization measures must be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased.
49. Strip topsoil, stockpile, and stabilize until ready for use. Spread topsoil to the depth required by civil and landscape drawings and landscape specifications. Remove gravel, debris and rocks from topsoil prior to planting.
50. Pressure test and chlorinate site water lines. Provide test reports to Owner verifying acceptable pressures and chlorination. Coordinate with utility company / fire district and obtain approval from those parties as required.
51. Include in the Base Bid soil remediation below the building pad and all footings per recommendations in the Geotechnical Report dated October 11, 2024 as issued by Gredell Engineering.
 - a. Include remediation to depths of 18" below finished floor elevation. Include import / placement / compaction of engineered fill per the Geotechnical Report and haul off of unsuitable / excess material as needed.
 - b. Include scarifying of 9" of subgrade soils across the site and recompact per the Geotechnical Report.
52. Include in the Base Bid sink hole remediation per the recommendations included in the Sink Hole Evaluation Report dated July 2024 as issued by Gredell Engineering.
53. It is currently expected that the project site will require imported material to achieve finished grades. Base bid should include all necessary material import, export, and earthwork to complete the project per the project documents. The City of Nixa may get an opportunity to stockpile excess excavated soils from an adjacent property on the building pad of this project site. All soils are assumed to be clean of debris and suitable to be spread. This Contractor shall provide pricing for Alternate No. 7 in the Bid Form regarding grading and compacting of 500 CY of this material on site. If the Owner elects to proceed with Alternate No. 7, the actual quantity of imported material will be determined by the City of Nixa and the Third Party Material Testing Agency, and must be verified by this Contractor.
54. No change orders will be awarded for additional forming or additional concrete in over excavated footings.
55. Proof roll subgrade prior to placing base rock for paving.
56. Asphalt lifts shall be no greater than 3" thick.
57. Provide site bollards complete with footing, anchoring, concrete fill, painting and plastic covers.
58. No smoking shall be allowed inside the building once interior construction begins.
59. This contractor to broom clean all floors at least once a week to ensure safe, clean, organized and presentable conditions.
60. This Contractor shall provide a heavy construction cleaning prior to punch list creation so all surfaces can be observed by the design team. Clean exterior and interior surfaces exposed to view; remove temporary labels, stains, putty, soil, paint and foreign substances from all surfaces,

including glass and painted surfaces; polish transparent and glossy surfaces; clean equipment and fixtures to a sanitary condition; replace air filters in mechanical equipment; clean roofs, gutters, and downspouts; remove obstructions and flush debris from drainage systems; clean site; sweep paved areas and rake clean other surfaces; remove trash and surplus materials from the site; clean and polish all floors; clean and polish all hardware; and repair all Work damaged during cleaning.

61. Provide final cleaning of all buildings and site prior to occupancy.
62. Provide fuel for generator testing. At turnover of emergency generator, this Contractor is to completely fill generator fuel tank.
63. Clean all HVAC coils and replace all filters with new filters at the time of building turnover to the Owner.
64. All ductwork ends to be sealed before arriving at site and seals at end of runs to be maintained.
65. The Owner, Architect, and Owner Representative will be very stringent on the quality of exposed concrete floors during punch list. It is ultimately in this contractor's scope of work to protect all finish products through education, signage, and temporary protection.
66. No lignite to be used in any flatwork concrete (interior and exterior).
67. Contractor must not burn in the concrete at the carpet tile, vinyl, or other resilient flooring locations. Contractor to ensure floors are kept dry and clean so that the concrete can dry in order to accept adhesive for flooring products. Include moisture mitigation as required by the specifications.
68. Contractor to grout fill frames per architectural details and notes.
69. Provide code compliant seismic support and bracing as required for installation of acoustical ceiling systems and MEPFP systems.
70. Include ALL caulking and sealants for all systems and materials furnished and installed.
71. Provide fire stop systems as required for the installation of the work of this project.
72. Particular attention shall be given to sealing up opening in ceilings and walls that are open to the attic, to prevent condensation from forming in the finished space. Fire caulk openings where cabling penetrates such ceiling or walls, as well as any openings in back boxes and junction boxes.
73. Include cost to furnish and install toilet accessories as indicated.
74. Provide all interior and exterior signage shown on plans and indicated in specifications, including but not limited to site and parking signage and the monument sign.
75. Include wall blocking as needed for ALL toilet accessories and specialty items shown in the drawings including those items provided by Owner.
76. Verify that all plumbing fixtures are mounted at ADA height required by AHJ.
77. Provide access panels needed for all work installed under this contract.

78. Contractor is required to maintain access to the work as needed to maintain schedule. Schedule delays will not be accepted for wet/poor site conditions after weather events.
79. Once the building is closed in, this contractor is responsible for securing the building with temporary or permanent measures at the close of every day. Any temporary openings in existing walls are to be secured at all times at the end of the work day.
80. This Contractor to supply, install, maintain, move and remove temporary site fence with gates.
81. Contractor to provide and maintain adequate temporary rock parking area for visitors to the site, temporary construction parking, staging, and laydown areas. If onsite area is not sufficient, the Contractor shall secure parking elsewhere and get written permission from such property owners. There will be no parking on the street. Parking on adjacent businesses' parking lots is strictly prohibited. The Contractor is responsible for managing all subcontractor parking. Remove temporary rock at the completion of the project.
82. Contractor will be required and install/maintain a construction entrance/road. All construction traffic, deliveries, staging, etc. will be required to use this entrance. The gate at the entrance needs to be set far enough off the road that a semi-truck and trailer waiting for the gate to open will not block the public road.
83. This contractor is responsible for any temporary heating/cooling, humidifying/dehumidifying as needed to maintain the project schedule and as needed prior to starting the permanent HVAC equipment. Use of the new HVAC system will not be allowed during construction unless permission is requested and granted by the Owner. In such case, the Contractor must pay for any extended warranty needed in order to still deliver the specified warranty duration that begins at Substantial Completion.
84. Coordinate all work with the Owner Representative.
85. Bi-weekly meetings at the jobsite will be held with the Owner Representative. This contractor's Project Manager and Foreman/Superintendent to coordinate installation of all systems. The work of this contractor must be performed in accordance with the decision and schedules formulated at these meetings so as not to delay the work. The Contractor's Project Manager and Foreman/Superintendent must be present at these meetings. Contractor to create agenda and issue meeting minutes for each meeting, prior to the next meeting.
86. Weekly meetings at the jobsite MUST be held with this contractor and its subcontractor's Foreman/Project Managers to coordinate installation of all systems. The Owner and the Owner's Representative shall be invited to all of these meetings and will attend at their discretion. This contractor shall keep minutes of these meetings and forward to the OR for review weekly.
87. This contractor shall organize and arrange for pre-installation meetings for all major scopes of work with the subcontractors and manufacturers prior to commencement of those activities and invite the Owner, Architect, and Owner Representative to all pre-installation meetings. This Contractor shall keep minutes of those meetings and forward to the Owner Representative and Architect for review.
88. As-built Surveys will be required by this Contractor at the Completion of the Project, including for Site Utilities, detention basins, etc. to submit to Utility company/department or City/County for final approval. A portion of retainage will be held until all surveyed as-builts have been submitted and accepted by the utility company and authorities having jurisdiction.

89. Materials Testing and Inspections agency shall be contracted by the Owner and paid for by Owner. Contractor shall coordinate testing/inspections required by the documents and as needed to maintain the schedule. If the agency must re-test or re-inspect for failed tests/inspections or if the Contractor fails to notify the testing agency of a cancelled test/inspection, this Contractor shall compensate the Owner for such tests.
90. The Contractor shall use Procore Project Management software or similar program for coordination of project RFIs, submittals, change orders, etc. Contractor shall be the administrator and maintain all records in the program, and shall grant access to the Owner, Owner's Representative and design team members.
91. This Contractor shall produce a submittal log at the beginning of the project that is populated with all of the required submittals for the project and assign due dates for submission to the Architect and due dates for return from the Architect. This log must be submitted to the Construction Manager and Architect for review on a weekly basis. All submittals shall be submitted to the Design Team within 3 months from Notice to Proceed.
92. This contractor shall maintain an RFI log for the project indicating the following. This log must be submitted to the Construction Manager and Architect for review on a weekly basis.
- a. Topic of RFI
 - b. Date submitted
 - c. Date requested response by
 - d. Date returned
 - e. Status- Open or Closed
93. Immediately upon award this Contractor shall submit a proposed site logistics plan for review. The Owner, Owner Representative, Contractor, and Architect will meet to review and discuss site logistics and finalize an agreed upon plan of action for construction parking, office/storage containers, temporary toilets, temporary site fence, etc.
94. This Contractor must prepare and make available upon request, a procurement log for all long lead materials and equipment. Procurement log must include date of order, date of confirmation of order, expected delivery date, actual delivery date, and comments noting any changes to dates and reasons for change.
95. This Contractor will be responsible for submitting daily logs containing the number of workers, equipment, work accomplished, daily weather, deliveries, visitors to the site, any inspections passed or failed, problems encountered, and other relevant data as may be required. Daily logs are required to have a minimum of 6 pictures attached each day. These reports must be emailed to the Owner Representative daily, within 24 hours of work performance.
96. Contractor shall take photographs of all in-wall and below slab rough-ins prior to cover up. Label each photograph to identify the location of the rough-in and assemble all photographs into a single electronic file.
97. This Contractor must populate a closeout log and submit to the Owner's Representative and Architect for review to verify that all required items have been populated. Once approved, this log will be used to track required closeout items prior to final payment. This Contractor is highly encouraged to submit O&M requirements as soon as possible in advance of final acceptance to help eliminate delay in payment.

98. This Contractor shall arrange, schedule, organize and video tape as it pertains to this scope of work all equipment start-ups and Owner Training sessions per contract documents.
99. This Contractor will compile for the Owner a 'record set' of all documents and drawings for the project at Substantial Completion. This shall be 'red-lined' copies of all project changes throughout the course of the project to identify all systems as they were actually installed on the project for the Owner's records. These must be electronically recorded and submitted to the Owner in pdf format on a 'thumb drive'.
100. During the warranty period of the project, this Contractor shall document, maintain and update a Warranty Log of all warranty items, weekly, to be shared with the Owner. Contractor shall acknowledge the Owner's warranty call within 4 hours and keep the Owner apprised of the resolution status. Any roof or building envelope leaks or elevator issues or any issue that interferes with regular building operations shall be considered as urgent / emergencies. Contractor to provide a 24-hour on-call service for such urgent or emergency items.
101. The Owner may pursue rebates available through the utility companies. Contractor to provide information as needed for completing rebate applications.
102. Provide a mockup per documents of the building envelope materials and construction techniques. The mockup should reflect the project document details and be installed exactly as indicated in the drawings/specs. The purpose of the mockup is to not only review and achieve an approval of the materials, but also to ensure the transition of the materials results in a good water tight condition. Contractor to follow the mockup guidelines outlined in the project documents. If the Contractor questions a detail provided, it should be submitted as an RFI and discussed with the project team prior to the construction of the mockup.
103. Contractor to order and install knox boxes as shown in the contract documents and as required per the local AHJ. Review with the Owner before ordering the knox boxes. Keying should be selected for 'mutual aid'.
104. Any permanent building system that requires access to the Owner's internet network must be approved by the Owner. Coordinate with the Owner's I.T. department early in the project.

BID FORM

This Bid Proposal Form must be completed and submitted on the City's IonWave site no later than 2:00 PM on the specified date.

The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an agreement with OWNER in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

Below is a 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	

BIDDER accepts all of the terms and conditions of the "Invitation to Bid" and the "Instructions to Bidders", including without limitation those dealing with the disposition of Bid security.

STIPULATED SUM BID FORM

Name of Project: **Nixa Police Department**

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).

Nixa Police Department
305 N Leeann Dr.
Nixa, MO 65714

TO: Attn: Jimmy Liles
715 W. Mt. Vernon St. PO Box 395
Nixa, MO 65714

The Bidder, in compliance with the Invitation for Bid for the project, and having carefully examined the Bidding 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

ITEM NO.	ITEM DESCRIPTION	SUB-TOTAL
1	Payment & Performance Bond	
2	Builder's Risk	
3	Remaining Scope of Work	

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 City of Nixa Police Department, as defined in the Bid Documents for the TOTAL LUMP SUM AMOUNT of

\$ _____

TIME

Council approval and issuance of conditional Notice to Proceed is anticipated to occur in August 2025. 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 bidding and contract requirements.

Bidders shall propose a contractual duration for achieving Substantial Completion in the blank space below. Proposed duration will be utilized as criteria for selection of General Contractor.

Complete all work related to new construction, site development, bid alternates, and anticipated base bid soil treatment / remediation to achieve Substantial Completion within _____ calendar days from the issuance of the Notice to Proceed.

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 No. 1 – Covered Parking Structure Scope of Work (to include all work associated with the foundations, lighting, etc. Supply and installation of the Structures themselves to be by others.)

Add / Deduct (circle one): \$ _____

ALTERNATE No. 2 – Water Line to Future Building (include all excavation, material, labor, backfill, etc.)

Add / Deduct (circle one): \$ _____

ALTERNATE No. 3 – Shade Structure at Back Patio (include all foundations, material, labor, etc.)

Add / Deduct (circle one): \$ _____

ALTERNATE No. 4 – Walk Track (include all grading, base rock, paving, striping, etc.)

Add / Deduct (circle one): \$ _____

ALTERNATE No. 5 – Faraday Cage Protection to Walls and Ceiling in Room 134 (include Faraday door and grilles on all lights and ductwork)

Add / Deduct (circle one): \$ _____

ALTERNATE No. 6 – Lightning Protection per Electrical Plans

Add / Deduct (circle one): \$ _____

ALTERNATE No. 7 – It is currently expected that the project site will require imported material to achieve finished grades. There is a potential that excavated material could be stockpiled on this project site from an adjacent project site by the adjacent property developer. Alternate 7 to include costs associated with this Contractor grading and compacting 500 CY of imported material stock piled on the building pad by others.

Add / Deduct (circle one): \$ _____

Nixa Police Department
305 N Leeann Dr.
Nixa, MO 65714

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.

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 \$8M 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. _____

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
 - a. Addenda No. _____ Dated _____
 - b. Addenda No. _____ Dated _____
 - c. Addenda No. _____ Dated _____
 - d. Addenda No. _____ Dated _____
 - e. 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.

UNIT PRICES - To be submitted to Owner 24 Hours after Bid Date/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 Specifications. Submit within 24 hours of the Bid date and time.

LIST OF PROPOSED SUBCONTRACTORS – To be submitted to Owner 24 Hours after Bid Date/Time.

List all proposed subcontractors on the “**Supplemental Bid Information**” form provided in the Specifications. Submit within 24 hours of the Bid date and time.

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.

Nixa Police Department
305 N Leeann Dr.
Nixa, MO 65714

SUPPLEMENTAL BID INFORMATION

ATTN: Jimmy Liles
715 W. Mt. Vernon St. PO Box 395
Nixa, MO 65714

Proposal for:
Nixa Police Department
305 N Leeann Dr. Nixa, MO 65714

This form shall be completed and submitted in its entirety on the City's IonWave site **no later than 24 hours following the receipt of the Bids** to the Owner.

Name of Project: Nixa Police Department

Date: _____

Proposal from: _____

COST BREAKOUT for Nixa PD Base Bid:

Bidder shall provide the breakout of costs for the following divisions of work that are included in the Base Bid.

Division 1 Scope of Work (General Conditions/Insurance/Bond/Profit)

_____ DOLLARS (\$_____).

Division 2 Scope of Work (Existing Conditions/Site Construction)

_____ DOLLARS (\$_____).

Division 3 Scope of Work (Concrete)

_____ DOLLARS (\$_____).

Division 4 Scope of Work (Masonry)

_____ DOLLARS (\$_____).

Division 5 Scope of Work (Metals)

_____ DOLLARS (\$_____).

Division 6 Scope of Work (Wood/Plastics/Composites)

_____ DOLLARS (\$_____).

Division 7 Scope of Work (Thermal and Moisture Protection)

_____ DOLLARS (\$_____).

Division 8 Scope of Work (Openings)

_____ DOLLARS (\$_____).

Division 9 Scope of Work (Finishes)

_____ DOLLARS (\$_____).

Division 10 Scope of Work (Specialties)

_____ DOLLARS (\$_____).

Division 11 Scope of Work (Equipment)

_____ DOLLARS (\$_____).

Division 12 Scope of Work (Furnishings)

_____ DOLLARS (\$_____).

Division 13 Scope of Work (Special Construction)

_____ DOLLARS (\$_____).

Division 21 Scope of Work (Fire Suppression)

_____ DOLLARS (\$_____).

Division 22 Scope of Work (Plumbing)

_____ DOLLARS (\$_____).

Division 23, 25 Scope of Work (HVAC, Temperature Controls, Testing & Balancing)

_____ DOLLARS (\$_____).

Division 26, 27, 28 Scope of Work (Electrical, Low Voltage)

_____ DOLLARS (\$_____).

Divisions 31, 32, 33 Scopes of Work (Sitework and Site Utilities)

_____ DOLLARS (\$_____).

UNIT PRICES:

Unit Price Description	Unit	\$/Unit
Unit Price No. 1: Removal and haul-off of rippable rock.	Per CY	
Unit Price No. 2: Removal, haul-off and disposal of unsuitable soils and import/placement/compaction of MSSHC Grade 4 Aggregate for soil remediation per Geotech Report.	Per CY	
Unit Price No. 3: Removal, haul-off and disposal of unsuitable soils and import/placement/compaction of MSSHC Type 1 Aggregate per the Geotech Report.	Per CY	
Unit Price No. 4: Scarify subgrade and recompact beyond the 9" depth specified in the Geotech Report.	Per CY	
Unit Price No. 5: Removal/haul-off of native soils and import/placement/compaction of MSSHC Type 1 Aggregate		
Unit Price No. 6: Removal/haul-off of native soils and import/placement/compaction of MSSHC Grade 4 Aggregate		
Unit Price No. 7: 1" clean rock placement and compaction	Per CY	
Unit Price No. 8: 1" minus rock placement and compaction	Per CY	
Unit Price No. 9: Topsoil place and final grade	Per CY	
Unit Price No. 10: Flowable fill used to backfill trenches.	Per CY	
Unit Price No. 11: Grading and compacting imported material stockpiled on building pad by others. Includes reduction of imported fill material required.	Per CY	

LIST OF PROPOSED SUBCONTRACTORS:

Please list the two subcontractors in each category that the referenced Bidder is considering for subcontract award for materials, services, supplies, specialty contractors, etc. in each category 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?
Earthwork	1. 2.	
Site Utilities	1. 2.	
Asphalt	1. 2.	
Landscaping/ Irrigation	1. 2.	
Site Improvements	1. 2.	
Site Concrete	1. 2.	
Footings/ Foundations	1. 2.	
Concrete Flatwork	1. 2.	
Masonry	1. 2.	
Steel	1. 2.	
Rough / Finish Carpentry	1. 2.	
Millwork/Casework	1.	

	2.	
Roofing/Sheet Metal	1. 2.	
Thermal Insulation	1. 2.	
Weather Barrier	1. 2.	
Facades	1. 2.	
Overhead Doors	1. 2.	
Doors, Frames, Hardware	1. 2.	
Glass & Glazing	1. 2.	
Drywall	1. 2.	
Ceilings	1. 2.	
Flooring/Tiling	1. 2.	
Painting	1. 2.	
Signage	1. 2.	

Nixa Police Department
305 N Leeann Dr.
Nixa, MO 65714

Misc Specialties	1. 2.	
Awnings	1. 2.	
Equipment	1. 2.	
Furnishings	1. 2.	
Plumbing	1. 2.	
Fire Protection	1. 2.	
Mechanical	1. 2.	
Electrical	1. 2.	
Low Voltage	1. 2.	

Nixa Police Department
305 N Leeann Dr.
Nixa, MO 65714

Submitted By:

Bidder: _____

Address: _____

Business Telephone: _____ Fax: _____

Typed/Printed Name: _____

Authorized Signature: _____

Title: _____

(Seal, if bid by a
Corporation)

Date: _____

END: SUPPLEMENTAL BID INFORMATION

Missouri

Division of Labor Standards

WAGE AND HOUR SECTION



MICHAEL L. PARSON, Governor

Annual Wage Order No. 31

Section 022
CHRISTIAN 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

Todd Smith, Director
Division of Labor Standards

Filed With Secretary of State: _____ March 8, 2024

Last Date Objections May Be Filed: April 8, 2024

Prepared by Missouri Department of Labor and Industrial Relations

Building Construction Rates for
CHRISTIAN County

Section 022

OCCUPATIONAL TITLE	**Prevailing Hourly Rate
Asbestos Worker	\$24.45*
Boilermaker	\$24.45*
Bricklayer-Stone Mason	\$24.45*
Carpenter	\$49.60
Lather	
Linoleum Layer	
Millwright	
Pile Driver	
Cement Mason	\$39.48
Plasterer	
Communication Technician	\$24.45*
Electrician (Inside Wireman)	\$47.72
Electrician Outside Lineman	\$24.45*
Lineman Operator	
Lineman - Tree Trimmer	
Groundman	
Groundman - Tree Trimmer	
Elevator Constructor	\$24.45*
Glazier	\$44.09
Ironworker	\$65.89
Laborer	\$39.20
General Laborer	
First Semi-Skilled	
Second Semi-Skilled	
Mason	\$24.45*
Marble Mason	
Marble Finisher	
Terrazzo Worker	
Terrazzo Finisher	
Tile Setter	
Tile Finisher	
Operating Engineer	\$37.47
Group I	
Group II	
Group III	
Group III-A	
Group IV	
Group V	
Painter	\$41.08
Plumber	\$52.00
Pipe Fitter	
Roofer	\$24.45*
Sheet Metal Worker	\$48.94
Sprinkler Fitter	\$24.45*
Truck Driver	\$24.45*
Truck Control Service Driver	
Group I	
Group II	
Group III	
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.

Heavy Construction Rates for
CHRISTIAN County

Section 022

OCCUPATIONAL TITLE	**Prevailing Hourly Rate
Carpenter	\$24.45*
Millwright	
Pile Driver	
Electrician (Outside Lineman)	\$24.45*
Lineman Operator	
Lineman - Tree Trimmer	
Groundman	
Groundman - Tree Trimmer	
Laborer	\$44.47
General Laborer	
Skilled Laborer	
Operating Engineer	\$51.80
Group I	
Group II	
Group III	
Group IV	
Truck Driver	\$24.45*
Truck Control Service Driver	
Group I	
Group II	
Group III	
Group IV	

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

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

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

*The Division of Labor Standards received 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.

Contractor Option: Laydown area to be located in paved area instead. Rock base for laydown to be reused on site if deemed acceptable material.

Temporary construction fence. Permanent fence can be used, but site must remain secure.

Area to be used as primary
Construction Parking and Laydown.
Rock base to be installed, maintained,
and removed by GC as needed to
complete underground and finish
work.

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF ALL EROSION & SEDIMENT CONTROL MEASURES AND PRACTICES THROUGHOUT THE PROJECT, AND ALL FINES ASSOCIATED WITH EROSION CONTROL VIOLATIONS WILL BE THE CONTRACTOR'S RESPONSIBILITY.
2. EROSION CONTROL IS THE CONTRACTOR'S RESPONSIBILITY. THIS PLAN SHOULD BE USED AS A GUIDE AND REPRESENTS THE MINIMUM EROSION CONTROL DEVICES REQUIRED.
3. EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. ADDITIONAL EROSION & SEDIMENT CONTROL MEASURES WILL BE INSTALLED IF DEEMED NECESSARY BY ON-SITE INSPECTION.
4. CONTRACTOR IS RESPONSIBLE FOR REPAIRING ALL EROSION & SEDIMENT CONTROL DEVICES AFTER EACH RAINFALL EVENT.
5. THE CONTRACTOR SHALL PROVIDE ANY FURTHER EROSION CONTROL MEASURES IN ADDITION TO THOSE LISTED TO ENSURE THAT SILT WILL NOT LEAVE THE PROJECT CONFINES.
6. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING THE TEMPORARY EROSION & SEDIMENT CONTROL DEVICES AFTER COMPLETION OF CONSTRUCTION AND ONLY WHEN AREAS HAVE BEEN STABILIZED WITH A HEALTHY STAND OF PERMANENT VEGETATION.
7. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING SILT FROM SITE IF NOT REUSABLE ON-SITE AND ASSURING PLAN ALIGNMENT AND GRADE IN ALL DITCHES AT COMPLETION OF CONSTRUCTION.
8. THE CONTRACTOR SHALL ENSURE THAT ALL DRAINAGE STRUCTURES, FLUMES, PIPES, ETC. ARE CLEANED OUT AND WORKING PROPERLY AT TIME OF ACCEPTANCE.
9. THE CONTRACTOR SHALL PROVIDE ANY TEMPORARY STABILIZATION AS REQUIRED.
10. THE CONTRACTOR SHALL PROVIDE A TEMPORARY CONSTRUCTION ENTRANCE FOR VEHICULAR TRAFFIC AT LOCATION(S) SHOWN.
11. ALL EROSION CONTROL DEVICES SHALL CONFORM TO THE APPLICABLE SECTIONS OF THE STANDARD SPECIFICATIONS AND DESIGN CRITERIA OF THE CITY OF NIXA, MISSOURI.
12. REFERENCE DETAILS ON SHEET C4.1 FOR TYPICAL EROSION CONTROL DEVICE INSTALLATION.
13. THE CONTRACTOR WILL BE REQUIRED TO CLEAN THE STREETS OF DEPOSITED MUD AS FREQUENTLY AS NEEDED AS DETERMINED BY THE ENGINEER IN ORDER TO KEEP THEM USABLE AND TO CONTROL DUST.
14. SEE TEMPORARY VEGETATION REQUIREMENT NOTES ON SHEET C4.1 FOR EXPOSED SOIL WHERE NO ACTIVITY WILL OCCUR FOR MORE THAN 14 DAYS.
15. CONTRACTOR IS RESPONSIBLE FOR PHASED INSTALLATION OF EROSION CONTROL BMP'S IN ORDER TO PREVENT SEDIMENT FROM BREACHING THE LIMITS OF DISTURBANCE.

Contractor Option:
Double swinging
gates at secondary
entrance.

GC to have Construction Trailer on Site

Double swinging gates to be installed at main construction entrance.

No track out allowed on City streets. Street cleaning required as needed.

CITY OF NIXA POLICE DEPARTMENT SITE LOGISTICS PLAN
ANY DEVIATION FROM THIS PLAN MUST BE APPROVED BY THE
CITY OF NIXA AND THE OWNER'S REPRESENTATIVE.

DUMPSTERS AND SITE TOILETS TO BE PLACED ON SITE AS NEEDED.

CONCRETE WASTE LOCATION TBD.

EROSION CONTROL PHASING CHART					
PROJECT STAGE	BMP PLAN REF. #	BMP DESCRIPTION	REMOVE AFTER STAGE	NOTES:	INSTALLATION DATE / REMOVAL DATE
A - PRE-CONSTRUCTION	A1	CONSTRUCTION ENTRANCE/EXIT	C	SEE DETAIL SHEET C6.1	
	A2	TEMPORARY COMPOST FILTER SOCK	C	SEE DETAIL SHEET C6.1	
	A3	TEMPORARY STAGING/STOCKPILE AREA	C	SEE APPROX. LOCATION ON THIS SHEET	
	A4	INSTALL PORTA-POTTY(S)	C	CONTRACTOR TO MARK FINAL PLACEMENT ON ERC PLAN.	
	A5	INSTALL DUMPSTER, SITE SIGN & SPILL KIT	C	CONTRACTOR TO MARK FINAL PLACEMENT ON ERC PLAN.	
	A6	INSTALL CONCRETE WASHOUT	B	SEE DETAIL SHEET C6.1	
	A7	INSTALL TEMPORARY ROCK DITCH CHECK @ 100' MAX. DISTANCE APART	C	SEE DETAIL SHEET C6.1	
	A8	INSTALL EXIST. CURB INLET PROTECTION	C	SEE DETAIL SHEET C6.1	
B - MASS GRADING & ON-SITE IMPROVEMENTS		TEMPORARY SEEDING	N/A	PROVIDE TEMPORARY SEEDING (SEE EROSION CONTROL NOTES & TEMP. SEEDING NOTES ON SHEET C6.1)	
	B1	INSTALL INLET PROTECTION	C	SEE DETAIL SHEET C6.1	
	B2	INSTALL SLOPE REINFORCEMENT	N/A	INSTALL PER MANUFACTURERS RECOMMENDATIONS	
	B3	INSTALL WQ OUTLET PROTECTION	C	SEE DETAIL SHEET C6.1	
	B4	INSTALL FLARED END SECTION ROCK CHECK	C	SEE DETAIL SHEET C6.1	
		CONTRACTOR SHALL MAINTAIN EROSION CONTROL DEVICES THROUGHOUT CONSTRUCTION PHASE	N/A		
C - POST-CONSTRUCTION/FINAL STABILIZATION		PLACE TOPSOIL, INSTALL EROSION CONTROL MATTING SEED, MULCH, HYDROSEED, LANDSCAPE	N/A	ESTABLISH PERENNIAL VEGETATION WITH A 70% DENSITY OVER 100% OF DISTURBED AREA. REFER TO SHEET C6.1 & SHEET L3.0 FOR ADDITIONAL INFORMATION	

	RIGHT-OF-WAY LINE
	PROPERTY LINE
	UTILITY EASEMENT
	EXIST. CONTOUR
	FINISH GRADE CONTOUR
	LIMITS OF DISTURBANCE
	INSTALL COMPOST FILTER SOCK (SEE DETAIL SHEET C6.1)
	INSTALL INLET PROTECTION (SEE DETAIL SHEET C6.1)
	INSTALL OUTLET PROTECTION (SEE DETAIL SHEET C6.1)
	INSTALL ROCK DITCH CHECK (SEE DETAIL SHEET C6.1)
	INSTALL GRAVEL CONSTRUCTION ENTRANCE/EXIT (SEE DETAIL SHEET C6.1)
	INSTALL CONCRETE WASHOUT (SEE DETAIL SHEET C6.1)
	STORM OUTFALL
	INSTALL NORTH AMERICAN GREEN SC-150 EROSION CONTROL BLANKET PER MANUFACTURER'S RECOMMENDATIONS ON SLOPES 4:1 OR STEEPER. ECB SHALL BE INSTALLED INCREMENTALLY AS FILL IS ADDED.

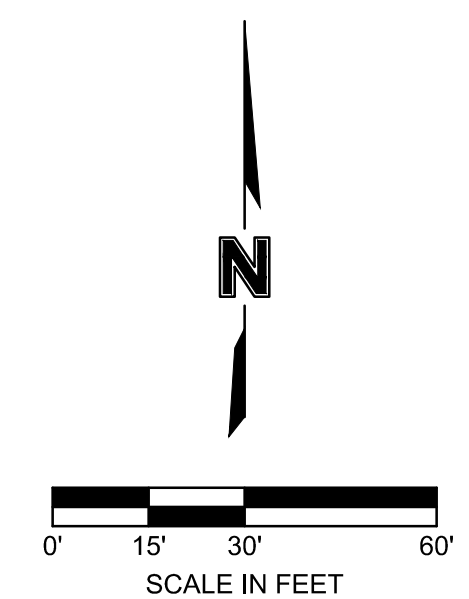
LAND DISTURBANCE:
PROPERTY AREA: 5.02 AC
TOTAL DISTURBED AREA: 5.73± AC

BENCHMARK #1 - TOP NUT OF FIRE
HYDRANT 63' E. OF EXIST. EASTERN
PROPERTY LINE & 124' SOUTH OF
NORTHERN PROPERTY LINE
N: 442855.34 E: 1400549.85
ELEVATION: 1288.78



olsson®

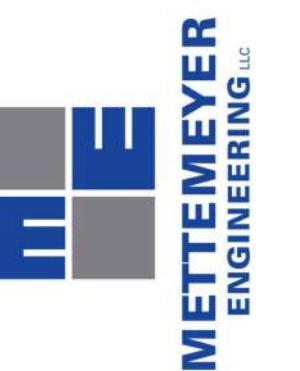
Olsson, Inc. Engineering MO State Cert. of Authority #001592
Olsson, Inc. Landscape Architecture MO State Cert. of Authority #2005000285



**NIXA POLICE
DEPARTMENT**
NORTH LEEANN DRIVE
NIXA, MO 65714



65714 Ph: 417-724-8553



Issue Date

Professional of Record

PROGRESS DRAWINGS
NOT FOR CONSTRUCTION

DATE _____

awn by

Subject #

te

2025.04.11

Drawing Title:

EROSION CONTROL PLAN

Sheet:

C6.0

SECTION 00 01 80 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 12%

To the Contractor for work performed by other than its own forces 5%

To the Subcontractor/Supplier for work performed with their own forces 12%

To the Subcontractor/Supplier for work performed by other than its own forces 5%

Not more than above specified percentages for overhead, 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 five percent (5%). 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.

Contractor may be directed to proceed in writing by the Owner or Construction Manager on a time and material basis for a change. In such case, the Contractor must notify Construction Manager 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 Construction Manager. Any change order request submitted without these daily signed tickets will be rejected and will not be compensated.

*Agreement Between Owner and Contractor for the Construction
of a certain Police Headquarters.*

AGREEMENT made as of the « » day of « » in the year « »

BETWEEN the Owner:

City of Nixa, Missouri715 W. Mt. Vernon St.
PO Box 395
Nixa, MO 65714

and the Contractor:

TBD

for the following Project:

Nixa Police Department
305 N Leeann Dr.
Nixa, MO 65714

The Architect:

Insight Design Architects, LLCPO Box 1982
112 South Main Street
Nixa, MO 65714

The Owner and Contractor agree as follows.

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 Construction Manager 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 Owner’s representatives, the City Administrator for Owner, shall have 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 said City Administrator on behalf of the Owner in order to be effective.

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of those documents reference in Article 9 of this Agreement and any authorized 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 of this Agreement.

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:

☒ [X] A date set forth in a notice to proceed issued by the Owner.

§ 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 all work related to new construction, associated sitework, site utilities and bid alternates, and anticipated soil treatment/remediation identified as being included in the Base Bid, within [TO BE POPULATED WITH BID FORM DURATION] 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.

§ 3.3.2 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: NONE INCLUDED

§ 4.4 Unit prices, if any:

Item	Units and Limitations	Price per Unit (\$0.00)

§ 4.5 Liquidated damages, if any:

The Owner and Contractor mutually and expressly agree that time of completion of the work by the Contractor is of the essence. Time is of the essence due to the fact that delays in construction would, among other things, compromise public safety and the operational efficiency of the police department, lead to increased project costs and financial strain on the City budget due to increased construction and labor costs, and negatively impact community morale and trust in the City government's ability to timely deliver essential services to the community.. If the Contractor fails to achieve Substantial Completion of the Contractor's Work within the period of [TO BE POPULATED WITH BID FORM DURATION] 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 Construction Manager. The Owner may deduct any such damages from amounts otherwise due the Contractor at Final Completion.

If the Contractor shall neglect, refuse, or fail to submit all of the project submittals within ninety (90) calendar days after Notice to Proceed, Contractor shall pay the Owner the stipulated sum of Five Hundred Dollars (\$500.00) for each day beyond the submittal milestone.

It is stipulated by the Owner and Contractor that actual damage resulting to the Owner due to delays would be difficult, if not impossible to ascertain, and therefore the Parties mutually agree to the liquidated damage provisions expressed herein.

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.

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the first day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the 30th day of the same 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 thirty (30) days after the Architect receives the Application for Payment.

§ 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.

§ 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 Exhibit B: 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 The City of Nixa";
 - 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;
 - e) Bailment Agreement.
- .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 Exhibit B: General Conditions of the Contract for Construction;
- .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 Exhibit B: General Conditions of the Contract for Construction; and
- .5 Retainage withheld pursuant to Section 5.1.7 of this Contract.

§ 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:

5%

Retainage shall be invoiced and paid upon Final Completion of the Contractor's Work, less such amounts as are attributable to 150% of the value of incomplete work and unsettled claims.

§ 5.1.7.3 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:

Retainage shall be invoiced and paid upon Final Completion of the Contractor's Work, less such amounts as are attributable to 150% of the value of incomplete work and unsettled claims.

§ 5.1.8 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 Exhibit B: General Conditions of the Contract for Construction.

§ 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 Exhibit B: General Conditions of the Contract for Construction, 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 Construction Manager, 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
 - 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 accepted by The City of Nixa;
- .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.

§ 5.3 Additional Payment Terms

§ 5.3.1 Payment to Contractor shall be by check or by electronic funds transfer, at the sole discretion of the Owner. Payment shall be provided to the Contractor at the address or the account number provided by the Contractor.

Contractor shall, as a condition precedent to any payments made as part of this Contract, sign up and comply with the requirements of the Owner's payment verification vendor, currently PaymentWorks. The Contractor agrees to reasonably cooperate with the Owners' payment verification vendor's requests for information.

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Architect will serve as the Initial Decision Maker pursuant to Article 15 of Exhibit B: General Conditions of the Contract for Construction.

§ 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of Exhibit B: General Conditions of the Contract for Construction, the method of binding dispute resolution shall be as follows:

[☒] 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 Exhibit B: General Conditions of the Contract for Construction.

§ 7.1.1 Intentionally left blank.

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of Exhibit B: General Conditions of the Contract for Construction.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of Exhibit B: General Conditions of the Contract for Construction 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:

« » Navigate Building Solutions ("NAVIGATE")
« » 8419 Manchester Rd.
« » Brentwood, MO 63144
« » ATTN: Lori Badalamenti
« » Lori@navigatebuildingsolutions.com
« » 636.614.8531

§ 8.3 The Contractor's representative:

« »
« »
« »
« »
« »
« »

§ 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 (Insurance Services

Office) 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 this agreement , and elsewhere in the Contract Documents.

§ 8.7 Other provisions:

§8.7.1 Tax Exemption: The Owner intends to use the tax exempt purchase procedure authorized by Section 144.062 RSMo..

§8.7.2 Prevailing Wage: In compliance with sections 290.210 through 290.340 RSMo, all workers performing work under this Contract shall be paid a wage of no less than the "prevailing hourly rate of wages" for work of a similar character in this locality or the public works contracting minimum wage, whichever is applicable, as set out in the Wage Order included in the Project Documents. If at any time the Contractor is found to not have paid prevailing wages, the Contractor shall forfeit as a penalty to the Owner \$100.00 for each calendar day or portion of a calendar day for each worker paid less than the stipulated required rates for any work done under this Contract by the Contractor or by any subcontractor under the Contractor.

§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 Safety Training: Pursuant to Missouri Revised Statute Section 292.675, Contractors and subcontractors who sign a contract to work on public works projects must provide a 10-hour OSHA construction safety program, or similar program approved by the Department of Labor and Industrial Relations, to be completed by their on-site employees within sixty (60) days of beginning work on the construction project. The Contractor shall provide an acceptable notarized affidavit stating that Contractor has verified the completion of a 10-hour construction safety program with respect to the employees working in connection with the contracted services. Contractors and subcontractors in violation of this provision will forfeit to the Owner \$2,500.00 plus \$100 a day for each employee who is employed without training. The Owner may withhold assessed penalties from the payment due to Contractor and subcontractors. The penalties shall not begin to accrue until the time periods in the statute have elapsed (60 days after notice to

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents, including any authorized modifications:

- .1 Agreement Between Owner and Contractor
- .2 Exhibit A: Insurance and Bonds
- .3 Exhibit B: General Conditions of the Contract for Construction
- .4 Exhibit C: Bid Proposal Form and Bid Bond
- .5 Exhibit D: Supplemental Bid Information Form
- .6 Exhibit E: Change Order Calculations
- .7 Exhibit F: Contract Document Log (Drawings, Specifications and Front Ends)

IN WITNESS WHEREOF, the parties have set their hands on the day and year herein stated.

CITY

CONTRACTOR

Jimmy Liles, City Administrator

Authorized Signer

Date: _____

Date: _____

ATTEST:

Printed Name

Rebekka Coffey, City Clerk

Title

Approved as to form:

Nick Woodman, City Attorney

Director of Finance Certification:

I certify that this contract is within the purpose of the appropriation to which it is to be charged and that there is an unencumbered balance to the credit of such appropriation sufficient to pay therefore, and that the appropriate accounting entries have been made.

Jennifer Evans, Director of Finance

Insurance Requirements

1.1. Without limiting any of the other obligations or liabilities of the Contractor, Contractor shall at all times during the Term of this Contract, and for a period of three years thereafter, unless waived in writing by the City, at Contractor's sole cost and expense, have at least the following types and amounts of insurance:

1.1.1. Commercial General Liability Insurance with limits no less than \$517,306.00 per occurrence and \$ 3,448,710.00 in the aggregate, including bodily injury and property damage, which policy shall include contractual liability coverage insuring the activities of Contractor under this Contract;

1.1.2. Worker's Compensation Insurance with statutory coverage as provided for in RSMo. 287.010 et seq.;

1.1.3. Employers Liability Insurance with limits no less than \$517,306.00 per occurrence and \$ 3,448,710.00 in the aggregate;

1.1.4. Commercial Automobile Liability with limits no less than \$517,306.00 per occurrence and \$3,448,710.00 in the aggregate; and

1.1.5. Builder's Risk Contractor shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. This insurance shall include interests of the Owner, Contractor, and Subcontractors in the Project. Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication

of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Contractor's services and expenses required as a result of such insured loss. If the property insurance requires deductibles, the Contractor shall pay costs not covered because of such deductibles. This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit.

1.1.6. Owner's and Contractor's Protective Liability Insurance. To protect the City, its agents, servants, and employees from claims which may arise from the performance of this Contract, with limits of at least \$3,448,710.00 for all claims arising out of a single accident or occurrence and at least \$517,306.00 with respect to injuries and/or death of any one person in a single accident or occurrence. The Owner's and Contractor's Protective Liability Insurance must:

1.1.6.1. Be a separate policy with the named insured being: The City of Nixa, Missouri; and

1.1.6.2. Be with the same insurance company with which the Contractor carries its Commercial General Liability Insurance and Automotive Liability Insurance; and

1.1.6.3. Contain an endorsement that disclaims coverage for any claim barred by the doctrines of sovereign immunity or official immunity, except attorney's fees and other litigation costs incurred in defending a claim. Nothing contained in this policy (or this endorsement thereto) shall constitute any waiver of whatever kind of these defenses or sovereign immunity or official immunity for any monetary amount whatsoever.

1.2. All insurance policies required pursuant to Paragraph 14 shall:

1.2.1. Be issued by insurance companies reasonably accepted by the City, able to transact business within the State of Missouri, and with an A.M. Best Rating of no less than a B+ Rating;

1.2.2. Provide that such insurance carriers give the City at least 30 days' prior written notice of cancellation or non-renewal of policy coverage; provided that, prior to such cancellation, the Contractor shall have new insurance policies in place that meet the requirements of this Paragraph 14;

1.2.3. Waive any right of subrogation of the insurers against the City or any of its officials, employees, or agents;

1.2.4. Provide that such insurance be primary insurance and any similar insurance in the name of and/or for the benefit of the City shall be excess and non-contributory;

1.2.5. Name the City and its officials, employees, and agents, as additional insured;

1.2.6. Not be met by the use of a single limit policy.

1.3. Contractor shall provide the City with copies of the certificates of insurance and policy endorsements for all insurance coverage required by this Paragraph 14 at the time of execution of this Contract and shall not do anything to invalidate such insurance.

1.4. Failure of the Contractor to maintain the coverages set out in this Paragraph 14 shall not relieve it of any contractual responsibility or obligation or liability in general or under this Contract.

1.5. This Paragraph 14 shall not be construed in any manner as waiving, restricting, or limiting the liability of the Contractor for any obligations imposed under this Contract (including but not limited to, any provisions requiring a party hereto to indemnify, defend, and hold harmless under this Contract).

1.6. Subcontracts. In case any or all the performance of this Contract is sublet, the Contractor shall require the subcontractor to procure and maintain all insurance required in this Paragraph 14. Contractor shall provide evidence of such insurance from said subcontractor.

1.7. Changes in policy limits. In the event the scope or extent of the City's tort liability as a governmental entity as described in Section 537.600 through 537.650 RSMo. is broadened or increased during the term of this Contract by legislative or judicial action or in the event that the Sovereign Immunity limits for a given calendar year, as published annually on the Missouri Register by the Missouri Department of Insurance are increased during the term of this Contract, the City may require Contractor, upon 10 days written notice, to execute a contract addendum whereby the Contractor agrees to provide, at a price not exceeding Contractor's actual increased premium cost, additional liability insurance coverage as the City may require to protect the City from increased exposure as the result of increase. Any such additional insurance coverage shall be evidenced by an appropriate Certificate of Insurance and shall take effect within the time set forth in the addendum.

1.8. Survival. The provisions of this Paragraph shall survive the termination or expiration of this Contract.

Exhibit B: General Conditions of the Contract for Construction

for the following PROJECT:

Nixa Police Department
305 N Leeann Dr.
Nixa, MO 65714

THE OWNER:

City of Nixa, Missouri
715 W. Mt. Vernon St.
PO Box 395
Nixa, MO 65714

THE ARCHITECT:

Insight Design Architects, LLC
PO Box 1982
112 South Main Street
Nixa, MO 65714

TABLE OF ARTICLES

1	GENERAL PROVISIONS
2	OWNER
3	CONTRACTOR
4	ARCHITECT
5	SUBCONTRACTORS
6	CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS
7	CHANGES IN THE WORK
8	TIME
9	PAYMENTS AND COMPLETION
10	PROTECTION OF PERSONS AND PROPERTY
11	INSURANCE AND BONDS
12	UNCOVERING AND CORRECTION OF WORK
13	MISCELLANEOUS PROVISIONS
14	TERMINATION OR SUSPENSION OF THE CONTRACT
15	CLAIMS AND DISPUTES

INDEX

(Topics and numbers in bold are Section headings.)

Acceptance of Nonconforming Work

9.6.6, 9.9.3, **12.3**

Acceptance of Work

9.6.6, 9.8.2, 9.9.3, 9.10.1, 9.10.3, 12.3

Access to Work

3.16, 6.2.1, 12.1

Accident Prevention

10

Acts and Omissions

3.2, 3.3.2, 3.12.8, 3.18, 4.2.3, 8.3.1, 9.5.1, 10.2.5,
10.2.8, 13.3.2, 14.1, 15.1.2, 15.2

Addenda

1.1.1

Additional Costs, Claims for

3.7.4, 3.7.5, 10.3.2, 15.1.5

Additional Inspections and Testing

9.4.2, 9.8.3, 12.2.1, **13.4**

Additional Time, Claims for

3.2.4, 3.7.4, 3.7.5, 3.10.2, 8.3.2, **15.1.6**

Administration of the Contract

3.1.3, **4.2**, 9.4, 9.5

Advertisement or Invitation to Bid

1.1.1

Aesthetic Effect

4.2.13

Allowances

3.8

Applications for Payment

4.2.5, 7.3.9, 9.2, **9.3**, 9.4, 9.5.1, 9.5.4, 9.6.3, 9.7, 9.10

Approvals

2.1.1, 2.3.1, 2.5, 3.1.3, 3.10.2, 3.12.8, 3.12.9,
3.12.10.1, 4.2.7, 9.3.2, 13.4.1

Arbitration

8.3.1, 15.3.2, **15.4**

ARCHITECT

4

Architect, Definition of

4.1.1

Architect, Extent of Authority

2.5, 3.12.7, 4.1.2, 4.2, 5.2, 6.3, 7.1.2, 7.3.4, 7.4, 9.2,
9.3.1, 9.4, 9.5, 9.6.3, 9.8, 9.10.1, 9.10.3, 12.1, 12.2.1,
13.4.1, 13.4.2, 14.2.2, 14.2.4, 15.1.4, 15.2.1

Architect, Limitations of Authority and
Responsibility

2.1.1, 3.12.4, 3.12.8, 3.12.10, 4.1.2, 4.2.1, 4.2.2,
4.2.3, 4.2.6, 4.2.7, 4.2.10, 4.2.12, 4.2.13, 5.2.1, 7.4,
9.4.2, 9.5.4, 9.6.4, 15.1.4, 15.2

Architect's Additional Services and Expenses

2.5, 12.2.1, 13.4.2, 13.4.3, 14.2.4

Architect's Administration of the Contract

3.1.3, 3.7.4, 15.2, 9.4.1, 9.5

Architect's Approvals

2.5, 3.1.3, 3.5, 3.10.2, 4.2.7

Architect's Authority to Reject Work

3.5, 4.2.6, 12.1.2, 12.2.1

Architect's Copyright

1.1.7, 1.5

Architect's Decisions

3.7.4, 4.2.6, 4.2.7, 4.2.11, 4.2.12, 4.2.13, 4.2.14, 6.3,
7.3.4, 7.3.9, 8.1.3, 8.3.1, 9.2, 9.4.1, 9.5, 9.8.4, 9.9.1,
13.4.2, 15.2

Architect's Inspections

3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.8.3, 9.9.2, 9.10.1, 13.4

Architect's Instructions

3.2.4, 3.3.1, 4.2.6, 4.2.7, 13.4.2

Architect's Interpretations

4.2.11, 4.2.12

Architect's Project Representative

4.2.10

Architect's Relationship with Contractor

1.1.2, 1.5, 2.3.3, 3.1.3, 3.2.2, 3.2.3, 3.2.4, 3.3.1, 3.4.2,
3.5, 3.7.4, 3.7.5, 3.9.2, 3.9.3, 3.10, 3.11, 3.12, 3.16,
3.18, 4.1.2, 4.2, 5.2, 6.2.2, 7, 8.3.1, 9.2, 9.3, 9.4, 9.5,
9.7, 9.8, 9.9, 10.2.6, 10.3, 11.3, 12, 13.3.2, 13.4, 15.2

Architect's Relationship with Subcontractors

1.1.2, 4.2.3, 4.2.4, 4.2.6, 9.6.3, 9.6.4, 11.3

Architect's Representations

9.4.2, 9.5.1, 9.10.1

Architect's Site Visits

3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.5.1, 9.9.2, 9.10.1, 13.4

Asbestos

10.3.1

Attorneys' Fees

3.18.1, 9.6.8, 9.10.2, 10.3.3

Award of Separate Contracts

6.1.1, 6.1.2

Award of Subcontracts and Other Contracts for Portions of the Work

5.2

Basic Definitions

1.1

Bidding Requirements

1.1.1

Binding Dispute Resolution

8.3.1, 9.7, 11.5, 13.1, 15.1.2, 15.1.3, 15.2.1, 15.2.5,
15.2.6.1, 15.3.1, 15.3.2, 15.3.3, 15.4.1

Bonds, Lien

7.3.4.4, 9.6.8, 9.10.2, 9.10.3

Bonds, Performance, and Payment

7.3.4.4, 9.6.7, 9.10.3, **11.1.2**, 11.1.3, **11.5**

Building Information Models Use and Reliance

1.8

Building Permit

3.7.1

Capitalization

1.3

Certificate of Substantial Completion

9.8.3, 9.8.4, 9.8.5

Certificates for Payment

4.2.1, 4.2.5, 4.2.9, 9.3.3, **9.4**, 9.5, 9.6.1, 9.6.6, 9.7, 9.10.1, 9.10.3, 14.1.1.3, 14.2.4, 15.1.4

Certificates of Inspection, Testing or Approval
13.4.4

Certificates of Insurance
9.10.2

Change Orders

1.1.1, 3.4.2, 3.7.4, 3.8.2.3, 3.11, 3.12.8, 4.2.8, 5.2.3, 7.1.2, 7.1.3, **7.2**, 7.3.2, 7.3.7, 7.3.9, 7.3.10, 8.3.1, 9.3.1.1, 9.10.3, 10.3.2, 11.2, 11.5, 12.1.2

Change Orders, Definition of

7.2.1

CHANGES IN THE WORK

2.2.2, 3.11, 4.2.8, 7, 7.2.1, 7.3.1, 7.4, 8.3.1, 9.3.1.1, 11.5

Claims, Definition of

15.1.1

Claims, Notice of
1.6.2, 15.1.3

CLAIMS AND DISPUTES

3.2.4, 6.1.1, 6.3, 7.3.9, 9.3.3, 9.10.4, 10.3.3, **15**, 15.4
Claims and Timely Assertion of Claims
15.4.1

Claims for Additional Cost

3.2.4, 3.3.1, 3.7.4, 7.3.9, 9.5.2, 10.2.5, 10.3.2, **15.1.5**

Claims for Additional Time

3.2.4, 3.3.1, 3.7.4, 6.1.1, 8.3.2, 9.5.2, 10.3.2, **15.1.6**

Concealed or Unknown Conditions, Claims for 3.7.4

Claims for Damages

3.2.4, 3.18, 8.3.3, 9.5.1, 9.6.7, 10.2.5, 10.3.3, 11.3, 11.3.2, 14.2.4, 15.1.7

Claims Subject to Arbitration
15.4.1

Cleaning Up

3.15, 6.3

Commencement of the Work, Conditions Relating to
2.2.1, 3.2.2, 3.4.1, 3.7.1, 3.10.1, 3.12.6, 5.2.1, 5.2.3, 6.2.2, 8.1.2, 8.2.2, 8.3.1, 11.1, 11.2, **15.1.5**

Commencement of the Work, Definition of **8.1.2**

Communications

3.9.1, 4.2.4

Completion, Conditions Relating to

3.4.1, 3.11, 3.15, 4.2.2, 4.2.9, 8.2, 9.4.2, 9.8, 9.9.1, 9.10, 12.2, 14.1.2, 15.1.2

COMPLETION, PAYMENTS AND 9

Completion, Substantial

3.10.1, 4.2.9, 8.1.1, 8.1.3, 8.2.3, 9.4.2, 9.8, 9.9.1, 9.10.3, 12.2, 15.1.2

Compliance with Laws

2.3.2, 3.2.3, 3.6, 3.7, 3.12.10, 3.13, 9.6.4, 10.2.2, 13.1, 13.3, 13.4.1, 13.4.2, 13.5, 14.1.1, 14.2.1.3, 15.2.8, 15.4.2, 15.4.3

Concealed or Unknown Conditions

3.7.4, 4.2.8, 8.3.1, 10.3

Conditions of the Contract

1.1.1, 6.1.1, 6.1.4

Consent, Written

3.4.2, 3.14.2, 4.1.2, 9.8.5, 9.9.1, 9.10.2, 9.10.3, 13.2, 15.4.4.2

Consolidation or Joinder

15.4.4

CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

1.1.4, **6**

Construction Change Directive, Definition of
7.3.1

Construction Change Directives

1.1.1, 3.4.2, 3.11, 3.12.8, 4.2.8, 7.1.1, 7.1.2, 7.1.3, **7.3**, 9.3.1.1

Construction Schedules, Contractor's

3.10, 3.11, 3.12.1, 3.12.2, 6.1.3, 15.1.6.2

Contingent Assignment of Subcontracts

5.4, 14.2.2.2

Continuing Contract Performance

15.1.4

Contract, Definition of

1.1.2

CONTRACT, TERMINATION OR SUSPENSION OF THE

5.4.1.1, 5.4.2, 11.5, **14**

Contract Administration

3.1.3, 4, 9.4, 9.5

Contract Award and Execution, Conditions Relating to

3.7.1, 3.10, 5.2, 6.1

Contract Documents, Copies Furnished and Use of
1.5.2, 2.3.6, 5.3

Contract Documents, Definition of

1.1.1

Contract Sum

2.2.2, 2.2.4, 3.7.4, 3.7.5, 3.8, 3.10.2, 5.2.3, 7.3, 7.4, **9.1**, 9.2, 9.4.2, 9.5.1.4, 9.6.7, 9.7, 10.3.2, 11.5, 12.1.2, 12.3, 14.2.4, 14.3.2, 15.1.4.2, **15.1.5, 15.2.5**

Contract Sum, Definition of

9.1

Contract Time

1.1.4, 2.2.1, 2.2.2, 3.7.4, 3.7.5, 3.10.2, 5.2.3, 6.1.5, 7.2.1.3, 7.3.1, 7.3.5, 7.3.6, 7, 7, 7.3.10, 7.4, 8.1.1, 8.2.1, 8.2.3, 8.3.1, 9.5.1, 9.7, 10.3.2, 12.1.1, 12.1.2, 14.3.2, 15.1.4.2, 15.1.6.1, 15.2.5

Contract Time, Definition of

8.1.1

CONTRACTOR

3

Contractor, Definition of

3.1, 6.1.2

Contractor's Construction and Submittal Schedules

3.10, 3.12.1, 3.12.2, 4.2.3, 6.1.3, 15.1.6.2

Contractor's Employees
2.2.4, 3.3.2, 3.4.3, 3.8.1, 3.9, 3.18.2, 4.2.3, 4.2.6,
10.2, 10.3, 11.3, 14.1, 14.2.1.1

Contractor's Liability Insurance
11.1
Contractor's Relationship with Separate Contractors
and Owner's Forces
3.12.5, 3.14.2, 4.2.4, 6, 11.3, 12.2.4
Contractor's Relationship with Subcontractors
1.2.2, 2.2.4, 3.3.2, 3.18.1, 3.18.2, 4.2.4, 5, 9.6.2,
9.6.7, 9.10.2, 11.2, 11.3, 11.4
Contractor's Relationship with the Architect
1.1.2, 1.5, 2.3.3, 3.1.3, 3.2.2, 3.2.3, 3.2.4, 3.3.1, 3.4.2,
3.5.1, 3.7.4, 3.10, 3.11, 3.12, 3.16, 3.18, 4.2, 5.2,
6.2.2, 7, 8.3.1, 9.2, 9.3, 9.4, 9.5, 9.7, 9.8, 9.9, 10.2.6,
10.3, 11.3, 12, 13.4, 15.1.3, 15.2.1
Contractor's Representations
3.2.1, 3.2.2, 3.5, 3.12.6, 6.2.2, 8.2.1, 9.3.3, 9.8.2
Contractor's Responsibility for Those Performing the
Work
3.3.2, 3.18, 5.3, 6.1.3, 6.2, 9.5.1, 10.2.8
Contractor's Review of Contract Documents
3.2
Contractor's Right to Stop the Work
2.2.2, 9.7
Contractor's Right to Terminate the Contract
14.1
Contractor's Submittals
3.10, 3.11, 3.12, 4.2.7, 5.2.1, 5.2.3, 9.2, 9.3, 9.8.2,
9.8.3, 9.9.1, 9.10.2, 9.10.3
Contractor's Superintendent
3.9, 10.2.6
Contractor's Supervision and Construction
Procedures
1.2.2, 3.3, 3.4, 3.12.10, 4.2.2, 4.2.7, 6.1.3, 6.2.4,
7.1.3, 7.3.4, 7.3.6, 8.2, 10, 12, 14, 15.1.4
Coordination and Correlation
1.2, 3.2.1, 3.3.1, 3.10, 3.12.6, 6.1.3, 6.2.1
Copies Furnished of Drawings and Specifications
1.5, 2.3.6, 3.11
Copyrights
1.5, **3.17**
Correction of Work
2.5, 3.7.3, 9.4.2, 9.8.2, 9.8.3, 9.9.1, 12.1.2, **12.2**, 12.3,
15.1.3.1, 15.1.3.2, 15.2.1

Correlation and Intent of the Contract Documents
1.2
Cost, Definition of
7.3.4
Costs
2.5, 3.2.4, 3.7.3, 3.8.2, 3.15.2, 5.4.2, 6.1.1, 6.2.3,
7.3.3.3, 7.3.4, 7.3.8, 7.3.9, 9.10.2, 10.3.2, 10.3.6,
11.2, 12.1.2, 12.2.1, 12.2.4, 13.4, 14

Cutting and Patching
3.14, 6.2.5

Damage to Construction of Owner or Separate
Contractors
3.14.2, 6.2.4, 10.2.1.2, 10.2.5, 10.4, 12.2.4
Damage to the Work
3.14.2, 9.9.1, 10.2.1.2, 10.2.5, 10.4, 12.2.4
Damages, Claims for
3.2.4, 3.18, 6.1.1, 8.3.3, 9.5.1, 9.6.7, 10.3.3, 11.3.2,
11.3, 14.2.4, 15.1.7
Damages for Delay
6.2.3, 8.3.3, 9.5.1.6, 9.7, 10.3.2, 14.3.2

Date of Commencement of the Work, Definition of
8.1.2
Date of Substantial Completion, Definition of
8.1.3
Day, Definition of
8.1.4
Decisions of the Architect
3.7.4, 4.2.6, 4.2.7, 4.2.11, 4.2.12, 4.2.13, 6.3, 7.3.4,
7.3.9, 8.1.3, 8.3.1, 9.2, 9.4, 9.5.1, 9.8.4, 9.9.1, 13.4.2,
14.2.2, 14.2.4, 15.1, 15.2

Decisions to Withhold Certification
9.4.1, **9.5**, 9.7, 14.1.1.3
Defective or Nonconforming Work, Acceptance,
Rejection and Correction of
2.5, 3.5, 4.2.6, 6.2.3, 9.5.1, 9.5.3, 9.6.6, 9.8.2, 9.9.3,
9.10.4, 12.2.1
Definitions
1.1, 2.1.1, 3.1.1, 3.5, 3.12.1, 3.12.2, 3.12.3, 4.1.1, 5.1,
6.1.2, 7.2.1, 7.3.1, 8.1, 9.1, 9.8.1, 15.1.1

Delays and Extensions of Time
3.2, **3.7.4**, 5.2.3, 7.2.1, 7.3.1, **7.4**, **8.3**, 9.5.1, **9.7**,
10.3.2, **10.4**, 14.3.2, **15.1.6**, 15.2.5

Digital Data Use and Transmission
1.7
Disputes
6.3, 7.3.9, 15.1, 15.2

Documents and Samples at the Site
3.11
Drawings, Definition of
1.1.5
Drawings and Specifications, Use and Ownership of
3.11
Effective Date of Insurance
8.2.2

Emergencies
10.4, 14.1.1.2, **15.1.5**
Employees, Contractor's
3.3.2, 3.4.3, 3.8.1, 3.9, 3.18.2, 4.2.3, 4.2.6, 10.2,
10.3.3, 11.3, 14.1, 14.2.1.1
Equipment, Labor, or Materials
1.1.3, 1.1.6, 3.4, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1,
4.2.6, 4.2.7, 5.2.1, 6.2.1, 7.3.4, 9.3.2, 9.3.3, 9.5.1.3,
9.10.2, 10.2.1, 10.2.4, 14.2.1.1, 14.2.1.2
Execution and Progress of the Work
1.1.3, 1.2.1, 1.2.2, 2.3.4, 2.3.6, 3.1, 3.3.1, 3.4.1, 3.7.1,
3.10.1, 3.12, 3.14, 4.2, 6.2.2, 7.1.3, 7.3.6, 8.2, 9.5.1,
9.9.1, 10.2, 10.3, 12.1, 12.2, 14.2, 14.3.1, 15.1.4

Extensions of Time
3.2.4, 3.7.4, 5.2.3, 7.2.1, 7.3, 7.4, 9.5.1, 9.7, 10.3.2, 10.4, 14.3, 15.1.6, **15.2.5**

Failure of Payment
9.5.1.3, **9.7**, 9.10.2, 13.5, 14.1.1.3, 14.2.1.2

Faulty Work
(See Defective or Nonconforming Work)

Final Completion and Final Payment
4.2.1, 4.2.9, 9.8.2, **9.10**, 12.3, 14.2.4, 14.4.3

Financial Arrangements, Owner's
2.2.1, 13.2.2, 14.1.1.4

GENERAL PROVISIONS

1

Governing Law

13.1
Guarantees (See Warranty)

Hazardous Materials and Substances
10.2.4, **10.3**

Identification of Subcontractors and Suppliers
5.2.1

Indemnification
3.17, **3.18**, 9.6.8, 9.10.2, 10.3.3, 11.3

Information and Services Required of the Owner
2.1.2, **2.2**, 2.3, 3.2.2, 3.12.10.1, 6.1.3, 6.1.4, 6.2.5, 9.6.1, 9.9.2, 9.10.3, 10.3.3, 11.2, 13.4.1, 13.4.2, 14.1.1.4, 14.1.4, 15.1.4

Initial Decision
15.2

Initial Decision Maker, Definition of
1.1.8
Initial Decision Maker, Decisions
14.2.4, 15.1.4.2, 15.2.1, 15.2.2, 15.2.3, 15.2.4, 15.2.5
Initial Decision Maker, Extent of Authority
14.2.4, 15.1.4.2, 15.2.1, 15.2.2, 15.2.3, 15.2.4, 15.2.5

Injury or Damage to Person or Property
10.2.8, 10.4

Inspections
3.1.3, 3.3.3, 3.7.1, 4.2.2, 4.2.6, 4.2.9, 9.4.2, 9.8.3, 9.9.2, 9.10.1, 12.2.1, 13.4

Instructions to Bidders
1.1.1

Instructions to the Contractor
3.2.4, 3.3.1, 3.8.1, 5.2.1, 7, 8.2.2, 12, 13.4.2

Instruments of Service, Definition of
1.1.7

Insurance
6.1.1, 7.3.4, 8.2.2, 9.3.2, 9.8.4, 9.9.1, 9.10.2, 10.2.5, **11**

Insurance, Notice of Cancellation or Expiration
11.1.4, 11.2.3

Insurance, Contractor's Liability
11.1
Insurance, Effective Date of
8.2.2, 14.4.2

Insurance, Owner's Liability
11.2

Insurance, Property
10.2.5, 11.2, 11.4, 11.5

Insurance, Stored Materials
9.3.2

INSURANCE AND BONDS
11
Insurance Companies, Consent to Partial Occupancy
9.9.1
Insured loss, Adjustment and Settlement of
11.5
Intent of the Contract Documents
1.2.1, 4.2.7, 4.2.12, 4.2.13

Interest
13.5

Interpretation
1.1.8, 1.2.3, **1.4**, 4.1.1, 5.1, 6.1.2, 15.1.1
Interpretations, Written
4.2.11, 4.2.12
Judgment on Final Award
15.4.2

Labor and Materials, Equipment
1.1.3, 1.1.6, **3.4**, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1, 5.2.1, 6.2.1, 7.3.4, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2, 10.2.1, 10.2.4, 14.2.1.1, 14.2.1.2
Labor Disputes
8.3.1
Laws and Regulations
1.5, 2.3.2, 3.2.3, 3.2.4, 3.6, 3.7, 3.12.10, 3.13, 9.6.4, 9.9.1, 10.2.2, 13.1, 13.3.1, 13.4.2, 13.5, 14, 15.2.8, 15.4
Liens
2.1.2, 9.3.1, 9.3.3, 9.6.8, 9.10.2, 9.10.4, 15.2.8
Limitations, Statutes of
12.2.5, 15.1.2, 15.4.1.1
Limitations of Liability
3.2.2, 3.5, 3.12.10, 3.12.10.1, 3.17, 3.18.1, 4.2.6, 4.2.7, 6.2.2, 9.4.2, 9.6.4, 9.6.7, 9.6.8, 10.2.5, 10.3.3, 11.3, 12.2.5, 13.3.1
Limitations of Time
2.1.2, 2.2, 2.5, 3.2.2, 3.10, 3.11, 3.12.5, 3.15.1, 4.2.7, 5.2, 5.3, 5.4.1, 6.2.4, 7.3, 7.4, 8.2, 9.2, 9.3.1, 9.3.3, 9.4.1, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 12.2, 13.4, 14, 15, 15.1.2, 15.1.3, 15.1.5

Materials, Hazardous
10.2.4, **10.3**

Materials, Labor, Equipment and
1.1.3, 1.1.6, 3.4.1, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1, 5.2.1, 6.2.1, 7.3.4, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2, 10.2.1.2, 10.2.4, 14.2.1.1, 14.2.1.2
Means, Methods, Techniques, Sequences and Procedures of Construction
3.3.1, 3.12.10, 4.2.2, 4.2.7, 9.4.2
Mechanic's Lien
2.1.2, 9.3.1, 9.3.3, 9.6.8, 9.10.2, 9.10.4, 15.2.8

Mediation
8.3.1, 15.1.3.2, 15.2.1, 15.2.5, 15.2.6, **15.3**, 15.4.1, 15.4.1.1

Minor Changes in the Work

1.1.1, 3.4.2, 3.12.8, 4.2.8, 7.1, 7.4

MISCELLANEOUS PROVISIONS

13

Modifications, Definition of

1.1.1

Modifications to the Contract

1.1.1, 1.1.2, 2.5, 3.11, 4.1.2, 4.2.1, 5.2.3, 7, 8.3.1, 9.7, 10.3.2

Mutual Responsibility

6.2

Nonconforming Work, Acceptance of

9.6.6, 9.9.3, 12.3

Nonconforming Work, Rejection and Correction of
2.4, 2.5, 3.5, 4.2.6, 6.2.4, 9.5.1, 9.8.2, 9.9.3, 9.10.4, 12.2

Notice

1.6, 1.6.1, 1.6.2, 2.1.2, 2.2.2, 2.2.3, 2.2.4, 2.5, 3.2.4, 3.3.1, 3.7.4, 3.7.5, 3.9.2, 3.12.9, 3.12.10, 5.2.1, 7.4, 8.2.2, 9.6.8, 9.7, 9.10.1, 10.2.8, 10.3.2, 11.5, 12.2.2.1, 13.4.1, 13.4.2, 14.1, 14.2.2, 14.4.2, 15.1.3, 15.1.5, 15.1.6, 15.4.1

Notice of Cancellation or Expiration of Insurance
11.1.4, 11.2.3

Notice of Claims

1.6.2, 2.1.2, 3.7.4, 9.6.8, 10.2.8, 15.1.3, 15.1.5, 15.1.6, 15.2.8, 15.3.2, 15.4.1

Notice of Testing and Inspections
13.4.1, 13.4.2

Observations, Contractor's
3.2, 3.7.4

Occupancy

2.3.1, 9.6.6, 9.8

Orders, Written

1.1.1, 2.4, 3.9.2, 7, 8.2.2, 11.5, 12.1, 12.2.2.1, 13.4.2, 14.3.1

OWNER

2

Owner, Definition of

2.1.1

Owner, Evidence of Financial Arrangements

2.2, 13.2.2, 14.1.1.4

Owner, Information and Services Required of the

2.1.2, 2.2, 2.3, 3.2.2, 3.12.10, 6.1.3, 6.1.4, 6.2.5, 9.3.2, 9.6.1, 9.6.4, 9.9.2, 9.10.3, 10.3.3, 11.2, 13.4.1, 13.4.2, 14.1.1.4, 14.1.4, 15.1.4

Owner's Authority

1.5, 2.1.1, 2.3.32.4, 2.5, 3.4.2, 3.8.1, 3.12.10, 3.14.2, 4.1.2, 4.2.4, 4.2.9, 5.2.1, 5.2.4, 5.4.1, 6.1, 6.3, 7.2.1, 7.3.1, 8.2.2, 8.3.1, 9.3.2, 9.5.1, 9.6.4, 9.9.1, 9.10.2, 10.3.2, 11.4, 11.5, 12.2.2, 12.3, 13.2.2, 14.3, 14.4, 15.2.7

Owner's Insurance

11.2

Owner's Relationship with Subcontractors

1.1.2, 5.2, 5.3, 5.4, 9.6.4, 9.10.2, 14.2.2

Owner's Right to Carry Out the Work

2.5, 14.2.2

Owner's Right to Clean Up

6.3

Owner's Right to Perform Construction and to Award Separate Contracts

6.1

Owner's Right to Stop the Work

2.4

Owner's Right to Suspend the Work

14.3

Owner's Right to Terminate the Contract

14.2, 14.4

Ownership and Use of Drawings, Specifications and Other Instruments of Service

1.1.1, 1.1.6, 1.1.7, 1.5, 2.3.6, 3.2.2, 3.11, 3.17, 4.2.12, 5.3

Partial Occupancy or Use

9.6.6, 9.9

Patching, Cutting and

3.14, 6.2.5

Patents

3.17

Payment, Applications for

4.2.5, 7.3.9, 9.2, 9.3, 9.4, 9.5, 9.6.3, 9.7, 9.8.5, 9.10.1, 14.2.3, 14.2.4, 14.4.3

Payment, Certificates for

4.2.5, 4.2.9, 9.3.3, 9.4, 9.5, 9.6.1, 9.6.6, 9.7, 9.10.1, 9.10.3, 14.1.1.3, 14.2.4

Payment, Failure of

9.5.1.3, 9.7, 9.10.2, 13.5, 14.1.1.3, 14.2.1.2

Payment, Final

4.2.1, 4.2.9, 9.10, 12.3, 14.2.4, 14.4.3

Payment Bond, Performance Bond and

7.3.4.4, 9.6.7, 9.10.3, 11.1.2

Payments, Progress

9.3, 9.6, 9.8.5, 9.10.3, 14.2.3, 15.1.4

PAYMENTS AND COMPLETION

9

Payments to Subcontractors

5.4.2, 9.5.1.3, 9.6.2, 9.6.3, 9.6.4, 9.6.7, 14.2.1.2
PCB

10.3.1

Performance Bond and Payment Bond

7.3.4.4, 9.6.7, 9.10.3, 11.1.2

Permits, Fees, Notices and Compliance with Laws

2.3.1, 3.7, 3.13, 7.3.4.4, 10.2.2

PERSONS AND PROPERTY, PROTECTION OF

10

Polychlorinated Biphenyl

10.3.1

Product Data, Definition of

3.12.2

Product Data and Samples, Shop Drawings

3.11, 3.12, 4.2.7

Progress and Completion

4.2.2, **8.2**, 9.8, 9.9.1, 14.1.4, 15.1.4

Progress Payments

9.3, **9.6**, 9.8.5, 9.10.3, 14.2.3, 15.1.4

Project, Definition of

1.1.4

Project Representatives

4.2.10

Property Insurance

10.2.5, **11.2**

Proposal Requirements

1.1.1

PROTECTION OF PERSONS AND PROPERTY 10

Regulations and Laws

1.5, 2.3.2, 3.2.3, 3.6, 3.7, 3.12.10, 3.13, 9.6.4, 9.9.1, 10.2.2, 13.1, 13.3, 13.4.1, 13.4.2, 13.5, 14, 15.2.8, 15.4

Rejection of Work

4.2.6, 12.2.1

Releases and Waivers of Liens

9.3.1, 9.10.2

Representations

3.2.1, 3.5, 3.12.6, 8.2.1, 9.3.3, 9.4.2, 9.5.1, 9.10.1

Representatives

2.1.1, 3.1.1, 3.9, 4.1.1, 4.2.10, 13.2.1

Responsibility for Those Performing the Work

3.3.2, 3.18, 4.2.2, 4.2.3, 5.3, 6.1.3, 6.2, 6.3, 9.5.1, 10

Retainage

9.3.1, 9.6.2, 9.8.5, 9.9.1, 9.10.2, 9.10.3

Review of Contract Documents and Field

Conditions by Contractor

3.2, 3.12.7, 6.1.3

Review of Contractor's Submittals by Owner and Architect

3.10.1, 3.10.2, 3.11, 3.12, 4.2, 5.2, 6.1.3, 9.2, 9.8.2

Review of Shop Drawings, Product Data and

Samples by Contractor

3.12

Rights and Remedies

1.1.2, 2.4, 2.5, 3.5, 3.7.4, 3.15.2, 4.2.6, 5.3, 5.4, 6.1, 6.3, 7.3.1, 8.3, 9.5.1, 9.7, 10.2.5, 10.3, 12.2.1, 12.2.2, 12.2.4, **13.3**, 14, 15.4

Royalties, Patents and Copyrights

3.17

Rules and Notices for Arbitration

15.4.1

Safety of Persons and Property

10.2, 10.4

Safety Precautions and Programs

3.3.1, 4.2.2, 4.2.7, 5.3, **10.1**, 10.2, 10.4

Samples, Definition of

3.12.3

Samples, Shop Drawings, Product Data and

3.11, **3.12**, 4.2.7

Samples at the Site, Documents and

3.11

Schedule of Values

9.2, 9.3.1

Schedules, Construction

3.10, 3.12.1, 3.12.2, 6.1.3, 15.1.6.2

Separate Contracts and Contractors

1.1.4, 3.12.5, 3.14.2, 4.2.4, 4.2.7, 6, 8.3.1, 12.1.2

Separate Contractors, Definition of

6.1.1

Shop Drawings, Definition of

3.12.1

Shop Drawings, Product Data and Samples

3.11, **3.12**, 4.2.7

Site, Use of

3.13, 6.1.1, 6.2.1

Site Inspections

3.2.2, 3.3.3, 3.7.1, 3.7.4, 4.2, 9.9.2, 9.4.2, 9.10.1, 13.4

Site Visits, Architect's

3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.5.1, 9.9.2, 9.10.1, 13.4

Special Inspections and Testing

4.2.6, 12.2.1, 13.4

Specifications, Definition of

1.1.6

Specifications

1.1.1, **1.1.6**, 1.2.2, 1.5, 3.12.10, 3.17, 4.2.14

Statute of Limitations

15.1.2, 15.4.1.1

Stopping the Work

2.2.2, 2.4, 9.7, 10.3, 14.1

Stored Materials

6.2.1, 9.3.2, 10.2.1.2, 10.2.4

Subcontractor, Definition of

5.1.1

SUBCONTRACTORS

5

Subcontractors, Work by

1.2.2, 3.3.2, 3.12.1, 3.18, 4.2.3, 5.2.3, 5.3, 5.4, 9.3.1.2, 9.6.7

Subcontractual Relations

5.3, 5.4, 9.3.1.2, 9.6, 9.10, 10.2.1, 14.1, 14.2.1

Submittals

3.10, 3.11, 3.12, 4.2.7, 5.2.1, 5.2.3, 7.3.4, 9.2, 9.3, 9.8, 9.9.1, 9.10.2, 9.10.3

Submittal Schedule

3.10.2, 3.12.5, 4.2.7

Subrogation, Waivers of

6.1.1, **11.3**

Substances, Hazardous

10.3

Substantial Completion

4.2.9, 8.1.1, 8.1.3, 8.2.3, 9.4.2, **9.8**, 9.9.1, 9.10.3, 12.2, 15.1.2

Substantial Completion, Definition of

9.8.1

Substitution of Subcontractors

5.2.3, 5.2.4

Substitution of Architect

2.3.3

Substitutions of Materials
3.4.2, 3.5, 7.3.8
Sub-subcontractor, Definition of
5.1.2
Subsurface Conditions
3.7.4
Successors and Assigns
13.2
Superintendent
3.9, 10.2.6
Supervision and Construction Procedures
1.2.2, **3.3**, 3.4, 3.12.10, 4.2.2, 4.2.7, 6.1.3, 6.2.4,
7.1.3, 7.3.4, 8.2, 8.3.1, 9.4.2, 10, 12, 14, 15.1.4
Suppliers
1.5, 3.12.1, 4.2.4, 4.2.6, 5.2.1, 9.3, 9.4.2, 9.5.4, 9.6,
9.10.5, 14.2.1
Surety
5.4.1.2, 9.6.8, 9.8.5, 9.10.2, 9.10.3, 11.1.2, 14.2.2,
15.2.7
Surety, Consent of
9.8.5, 9.10.2, 9.10.3
Surveys
1.1.7, 2.3.4
Suspension by the Owner for Convenience
14.3
Suspension of the Work
3.7.5, 5.4.2, 14.3
Suspension or Termination of the Contract
5.4.1.1, 14
Taxes
3.6, 3.8.2.1, 7.3.4.4
Termination by the Contractor
14.1, 15.1.7
Termination by the Owner for Cause
5.4.1.1, **14.2**, 15.1.7
Termination by the Owner for Convenience
14.4
Termination of the Architect
2.3.3
Termination of the Contractor Employment
14.2.2

TERMINATION OR SUSPENSION OF THE CONTRACT
14
Tests and Inspections
3.1.3, 3.3.3, 3.7.1, 4.2.2, 4.2.6, 4.2.9, 9.4.2, 9.8.3,
9.9.2, 9.10.1, 10.3.2, 12.2.1, **13.4**
TIME
8
Time, Delays and Extensions of
3.2.4, 3.7.4, 5.2.3, 7.2.1, 7.3.1, 7.4, **8.3**, 9.5.1, 9.7,
10.3.2, 10.4, 14.3.2, 15.1.6, 15.2.5

Time Limits
2.1.2, 2.2, 2.5, 3.2.2, 3.10, 3.11, 3.12.5, 3.15.1, 4.2,
5.2, 5.3, 5.4, 6.2.4, 7.3, 7.4, 8.2, 9.2, 9.3.1, 9.3.3,
9.4.1, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 12.2, 13.4, 14,
15.1.2, 15.1.3, 15.4
Time Limits on Claims
3.7.4, 10.2.8, 15.1.2, 15.1.3
Title to Work
9.3.2, 9.3.3
UNCOVERING AND CORRECTION OF WORK
12
Uncovering of Work
12.1
Unforeseen Conditions, Concealed or Unknown
3.7.4, 8.3.1, 10.3
Unit Prices
7.3.3.2, 9.1.2
Use of Documents
1.1.1, 1.5, 2.3.6, 3.12.6, 5.3
Use of Site
3.13, 6.1.1, 6.2.1
Values, Schedule of
9.2, 9.3.1
Waiver of Claims by the Architect
13.3.2
Waiver of Claims by the Contractor
9.10.5, 13.3.2, **15.1.7**
Waiver of Claims by the Owner
9.9.3, 9.10.3, 9.10.4, 12.2.2.1, 13.3.2, 14.2.4, **15.1.7**
Waiver of Consequential Damages
14.2.4, 15.1.7
Waiver of Liens
9.3, 9.10.2, 9.10.4
Waivers of Subrogation
6.1.1, **11.3**
Warranty
3.5, 4.2.9, 9.3.3, 9.8.4, 9.9.1, 9.10.2, 9.10.4, 12.2.2,
15.1.2
Weather Delays
8.3, 15.1.6.2
Work, Definition of
1.1.3
Written Consent
1.5.2, 3.4.2, 3.7.4, 3.12.8, 3.14.2, 4.1.2, 9.3.2, 9.10.3,
13.2, 13.3.2, 15.4.4.2
Written Interpretations
4.2.11, 4.2.12
Written Orders
1.1.1, 2.4, 3.9, 7, 8.2.2, 12.1, 12.2, 13.4.2, 14.3.1

The Construction Manager 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 Owner’s representatives, the City Administrator for Owner, shall, have 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 the City Administrator for Owner, shall on behalf of the Owner in order to be effective.

ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

The following words, terms, and phrases, when used in the Contract Documents, shall have the meanings ascribed to them in this section.

§ 1.1.1 The Contract Documents

Shall have the meaning set forth in Article 1 of the Agreement.

§ 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.

§ 1.1.8 Initial Decision Maker

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 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, or (2) the titles of numbered articles.

§ 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 before proceeding with the Work. If the Contractor fails to request such interpretation from the Owner, it is presumed that the more stringent, better quality or higher quality 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 Owner 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 General Conditions

Specifications shall control over Drawings, and details in drawings shall control over large-scale drawings.

§ 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 of these General Terms and Conditions, 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 of these General Terms and Conditions, 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 of these General Terms and Conditions 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.

§ 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 of these General Terms and Conditions, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 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 of these General Terms and Conditions, 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.

§ 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 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 reasonable information or reasonable 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 of these General Terms and Conditions.

§ 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 of these General Terms and Conditions 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 of these General Terms and Conditions.

§ 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 of the General Terms and Conditions, 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 Construction Manager's Compensation for Services to Remedy Defective Work

When the Architect's and Construction Manager'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.

§ 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 of these General Terms and Conditions, 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 is aware, or which could reasonably have been discovered by the review required by Section 3.2, 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. 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.

§ 3.5 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.

§ 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.

§ 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 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
- .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.

§ 3.9.2 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, promptly 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, promptly 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.

§ 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 the Contractor's 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.

§ 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.

§ 3.13 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.

§ 3.16 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, Construction Manager, 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 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.

§ 4.2.3 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.

§ 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.

§ 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 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.

§ 7.2 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 Construction Manager or within ten (10) work days of the event 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 Construction Manager 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;
- .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.

§ 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, Construction Manager 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 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 Construction Manager before 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 Construction Manager. This schedule, unless objected to by the Architect or Construction Manager, 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 Construction Manager and supported by such data to substantiate its accuracy as the Architect and Construction Manager may require, and unless objected to by the Architect or Construction Manager, 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 Construction Manager 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

Construction Manager 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 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.

§ 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' 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 **Authorities Having Judications'** 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.

§ 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
- .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.

§ 10.2.4 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.

§ 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. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Construction Manager, 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.

§ 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. 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 Contractor waives all rights against (1) the Owner and agents, and employees, each of the Owner; (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 Contractor 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.

§ 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.

§ 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 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.

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
- .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 Construction Manager'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 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 Construction Manager, 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.

§ 15.1.3.2 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.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

§ 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 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 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.



October 11, 2024

Mr. Jimmy Liles, City Administrator
City of Nixa
715 West Mt. Vernon Street
Nixa, MO 65714

RE: Subsurface Investigation, Analysis and Geotechnical Engineering Recommendations for
City of Nixa New Police Station, Nixa, Missouri

Dear Mr. Liles:

GREDELL Engineering Resources, Inc. presents the attached report of "Subsurface Investigation, Analysis and Geotechnical Engineering Recommendations for City of Nixa New Police Station, Nixa, Missouri.

This report was prepared to provide geotechnical recommendations and construction considerations to assist in the preparation of construction documents for the planned construction. The investigation was conducted using methods and procedures consistent with the professional standard of care and customary practice for geotechnical engineering investigations of this nature in Missouri.

GREDELL Engineering Resources, Inc. looks forward to continuing to work with you as this project moves ahead in design and construction. If you have any questions or require additional information, please contact me at (573) 659-9078.

Sincerely,

A handwritten signature in blue ink that reads 'Bruce Dawson'.

Bruce Dawson, P.E.

Enclosure: Report Titled: ***Subsurface Investigation, Analysis and Geotechnical Engineering Recommendations for City of Nixa New Police Station, Nixa, Missouri***

c: Thomas R. Gredell, P.E., GREDELL Engineering Resources, Inc.
Lee Ann Livengood, Navigate Building Solutions (*via email only*)

**Subsurface Investigation, Analysis and
Geotechnical Engineering Recommendations for
City of Nixa New Police Station
Nixa, Missouri**



Prepared for:

**Mr. Jimmy Liles, City Administrator
City of Nixa
715 West Mt. Vernon Street
Nixa, MO 65714**

October 2024

**Subsurface Investigation, Analysis and
Geotechnical Engineering Recommendations for
City of Nixa New Police Station
Nixa, Missouri**

Prepared for
**Mr. Jimmy Liles, City Administrator
City of Nixa
715 West Mt. Vernon Street
Nixa, MO 65714**

October 2024

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**Phone: (417) 890-6200
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10/11/24

**Subsurface Investigation, Analysis and Geotechnical Engineering
Recommendations for
City of Nixa New Police Station
Nixa, Missouri**

October 2024

TABLE OF CONTENTS

1.0	COMMISSION AND REPORT USE	1
2.0	PROJECT SCOPE OF SERVICES	1
3.0	SITE DESCRIPTION	2
3.1	Site Location	2
3.2	Site Conditions.....	2
3.3	Project Description.....	3
4.0	FIELD INVESTIGATION	3
5.0	LABORATORY INVESTIGATION	3
6.0	GEOLOGY OF AREA	3
7.0	SUBSURFACE CONDITIONS	4
7.1	General.....	4
7.2	Observed Stratigraphy	4
8.0	ENGINEERING ANALYSIS AND RECOMMENDATIONS	4
8.1	Feasible Foundation Systems.....	5
8.2	Seismic Design Criteria.....	5
8.3	Floor Slabs	5
8.4	Pavement Design Parameters	5
9.0	CONSTRUCTION CONSIDERATIONS	6
9.1	Site Preparation	6
9.2	Rock Excavation	6
9.3	Subgrade Preparation.....	6
9.4	Foundation Construction.....	7
9.5	Surface and Subsurface Drainage	7
9.6	Potential Impact of High Plasticity Clays	7
9.7	Engineered Fill.....	7
9.8	Quality Assurance Testing	8
10.0	WARRANTIES AND LIMITATIONS	9

APPENDICES

Site Location Map
Exploration Plan
Laboratory Test Results
Exploration Log Legend and Nomenclature
Boring Logs
Key to Symbols

1.0 COMMISSION AND REPORT USE

GREDELL Engineering Resources, Inc. (GER) was retained by the City of Nixa, Missouri to perform a subsurface investigation at the site of the proposed New Police Station in Nixa, Missouri. This subsequent engineering report was prepared for the exclusive use of our Client and their consultants to develop construction documents for the proposed construction at this site. GER completed this investigation using methods and procedures consistent with the professional standard of care and customary practice for geotechnical engineering investigations of projects of this nature in Missouri.

GER conducted this investigation to evaluate the impact of subsurface conditions on design and construction of the proposed project, and to develop geotechnical design parameters and recommendations for use by the responsible design professionals. This report is based on the findings of our geotechnical investigation, our interpretation of subsurface conditions at the site, our experience with the geology of this region, and the currently anticipated engineering characteristics of the proposed project. Preliminary project information has been provided by Navigate Building Solutions, LLC, and Chiodini Architects. GER has also previously completed a sinkhole evaluation and environmental site assessment at this site. The following report describes GER's geotechnical investigation and related design recommendations for the proposed construction.

This investigation included but was not limited to evaluation of:

- Subsurface stratigraphy including existing fills (if encountered), native soils, and bedrock conditions (if encountered).
- Groundwater conditions and their potential impact on construction and on foundation and pavement performance.
- Site preparation, including engineered fill material, placement, and compaction recommendations.
- Recommendations for the building foundation system—foundation type, suitable bearing materials, net allowable bearing capacity, minimum depth to bearing, and estimated settlement.
- The presence and potential effect of high plastic soils.
- The recommended modulus of subgrade reaction for floor slab-on-grade design.
- Pavement design parameters for both rigid and flexible pavements.
- Seismic site classification.
- Geotechnical conditions potentially impacting construction methods such as excavation conditions, groundwater, temporary site drainage, existing fill materials, and others that may be recognized during this investigation.

Findings and recommendations related to these topics are provided in this report. This report represents our professional opinion concerning these matters based on information and data available to us during the course of this assignment.

2.0 PROJECT SCOPE OF SERVICES

The scope of our geotechnical investigation and evaluation was as follows:

1. Perform a site reconnaissance and conduct a subsurface investigation consisting of nine (9) geotechnical borings at the site of the proposed facility.
2. Develop recommendations for the proposed buildings' foundation systems to include foundation type, allowable foundation bearing capacity, minimum depth to bearing, foundation settlement estimates, and seismic site classification.
3. Provide recommendations for controlled fill materials, placement, and compaction consistent with subsurface characteristics, site design, and foundation requirements.
4. Assess the location of the groundwater or phreatic surface, if encountered, and evaluate its potential impact on geotechnical related design and construction.
5. Evaluate the potential impact of high plasticity soils, if any, on floor slabs and foundations.
6. Evaluate the suitability of on-site materials for use as fill, backfill, and floor slab and pavement subgrade.
7. Provide general recommendations for the design of surface and sub-surface drainage systems.
8. Describe the nature, location, and estimated quantities of identifiable deleterious materials that may interfere with construction progress or structure performance.
9. Identify critical design or construction details.

3.0 SITE DESCRIPTION

The following subsections identify the site location and general site conditions of the project site.

3.1 Site Location

The site of the proposed facility is located at the northerly approximately five acres of 1209 West Mount Vernon Street, just west of the intersection of North Leeann Drive and Faye Road, and just west of the City of Nixa, Missouri corporate limits. The site is generally located in the northeast quarter of Section 15, Township 27 North, Range 22 West in Christian County, Missouri. (See Site Location Map, Appendix). The proposed site is bordered to the west by a tree line, stormwater detention basin, residence, and church; to the south is pastureland. The east side of the property is bounded by North Leeann drive and a residential neighborhood. To the north is a sparsely wooded lot.

3.2 Site Conditions

The site is currently used for agricultural purposes. The site is suitably clear of woody vegetation for use as pasture. Available historic satellite imagery and USGS Topo maps dating from 1996 do not indicate that the site has been previously developed. The site is bordered on its north and west by mature trees and a fence line. Overhead electric is present along the east property line bordering North Leeann Drive.

The site generally slopes east-northeast with about eight feet of relief. A shallow central swale flows off the property to the east. Ground surface conditions were dry at the time of the investigation.

3.3 Project Description

The project consists of a single story, slab-on-grade, pre-engineered metal building, a covered parking area west of the building, ancillary driveways, and connecting sidewalks. Exterior finishes are currently expected to be a combination of masonry and metal. Navigate Building Solutions, LLC provided estimated maximum column loads of 40 kips dead load and 25 kips live load and anticipated continuous footing loads for the perimeter wall of 3 kips per linear foot. An interior hardened room is planned with anticipated continuous footing loads of 6 kips per linear foot live load and 4 kips per linear foot dead load. Finished floor elevation for the building is estimated between 1289 and 1291 feet. Future planned site development includes a 5,000 to 10,000 square foot police station expansion and a separate garage structure.

4.0 FIELD INVESTIGATION

The field investigation was conducted September 17, 2024 and included a surface reconnaissance, location and identification of known underground utilities, and the drilling, sampling, and logging of 9 geotechnical borings at the locations shown on the Exploration Plan in the Appendix. The borings were surveyed and staked in the field by GER on September 16 based on the locations indicated by Chiodini Architects. The ground surface elevations shown on the boring logs were interpolated from the topographic survey prepared by Olsson, Inc. and are considered accurate to within +/- 1.0 foot.

Borings were advanced using a truck mounted CME 45C rotary drill rig equipped with 4-inch continuous flight augers to depths between five and twenty feet. Building borings 2, 3, 4 and 5 were each advanced to 20-feet below existing grade. Pavement and site development borings were advanced to a minimum depth of 5-feet below existing grade or 5-feet below anticipated finished grade, whichever was deeper.

Representative disturbed soil samples were obtained from Standard Penetration Tests performed in accordance with ASTM D 1586, "Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils". Samples were preserved and transported in accordance with ASTM D 4220, "Standard Practices for Preserving and Transporting Soil Samples". Field shear strength tests were conducted on appropriate strata during drilling, and an engineering log was prepared for each exploration.

5.0 LABORATORY INVESTIGATION

Following the field investigation, we conducted a laboratory investigation to quantify the engineering characteristics of the subsurface materials used to analyze and predict the geotechnical performance of the planned structures. The laboratory investigation included supplementary visual classification by the geotechnical engineer, water content tests, and Atterberg Limits determinations. Laboratory testing was conducted in accordance with ASTM procedures by OWN, Inc, as requested by GER. A Summary of Laboratory Test Results is provided in the Appendix.

6.0 GEOLOGY OF AREA

Nixa, Missouri lies in the Springfield Plateau within the Western Plains Physiographic Province, in close proximity to the Salem Plateau of the Ozark Uplift Physiographic Province. The regional geology is characterized by limestone of the Mississippian age Burlington-Keokuk formation overlain by residual soils

composed primarily of clay and chert. Due to the karst nature of the Burlington-Keokuk, clay thickness can range from less than five feet to over seventy feet.

The Burlington-Keokuk Formation consists of coarsely crystalline limestone subject to karst development and is highly irregular in elevation and thickness, occasionally exceeding 100 feet in thickness. Contact between clay residuum and underlying bedrock is highly irregular and is commonly referred to as “pinnacle and cutter” terrain.

The Burlington-Keokuk Limestone is the host rock for the development of karst features in the Springfield area. Irregular outcrops showing solution enlarged vertical joints and fractures are apparent in exposed rock cuts along roadways in the area. Underlying the Burlington-Keokuk is the Elsey-Reeds Springs formation, a fine-grained limestone usually 50-60 feet thick in this area of Missouri.

7.0 SUBSURFACE CONDITIONS

The following subsections identify the general site subsurface conditions, field observations and observed groundwater conditions.

7.1 General

GER visually classified the types of foundation materials encountered by the methods of ASTM D 2488, “Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)”. The soils and bedrock are described in detail by the Boring Logs and Summary of Laboratory Test Results provided in the Appendix. The stratification lines represent approximate boundaries and the transitions may be gradual.

7.2 Observed Stratigraphy

Surface materials consisted of sod and pasture root zone. These borings found soil types and thicknesses typical to Christian County and the Nixa area. The typical soil profile observed in these borings consisted of about one to five feet of loam and loamy clay with varying proportions of silt underlain by up to fifteen feet of residual clay and gravelly clay. Borings did not contact bedrock. Publicly available data indicate bedrock depths on the order of 25 to 40 feet for this locale.

Groundwater was not encountered at these borings. Groundwater levels are expected to vary depending on seasonal and longer-term trends in precipitation.

8.0 ENGINEERING ANALYSIS AND RECOMMENDATIONS

The design recommendations that follow are based on the findings of our geotechnical investigation, our interpretation of subsurface conditions at the site, our experience with the geology of this region, and current project information furnished by Navigate Building Solutions, LLC, and Chiodini Architects. We recommend that GER review geotechnical related aspects of foundation plans, specifications, and design details during the design development and construction documents phases.

8.1 Feasible Foundation Systems

General. Conventional shallow foundations are considered appropriate for the proposed building. Specific site preparation recommendations are provided in later sections of this report.

Shallow Foundations on Native Soils. The proposed building may be founded on conventional shallow foundations bearing on existing clay soils. Conventional shallow foundations may be designed for a net allowable bearing capacity of 2,500 pounds per square foot. Contingent upon site preparation being completed as recommended later in this report, GER recommends a minimum depth to bottom of foundation of 24-inches below lowest adjacent exterior grade for frost protection. Subject to site preparation and engineered fill recommendations provided in this report, shallow foundations designed and constructed as recommended are expected to experience post construction settlement of about 0.25 to 0.5 inches.

8.2 Seismic Design Criteria

The foundations for the proposed addition are anticipated to bear on native clay soils. In accordance with Chapter 20 of ASCE 7, the site is assigned a Site Class designation "D".

8.3 Floor Slabs

Materials encountered at anticipated subgrade elevations consisted of moderate to high plasticity clays when tested in accordance with ASTM D 4318, "Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils", and have moderate to significant potential for swelling upon wetting or shrinkage upon drying. To provide a uniform subgrade across the building footprint and to reduce the risk of structural damage to slabs caused by shrink-swell movements in the plastic soils at this site, we recommend that the native soils at subgrade elevation be removed to a minimum depth of 18-inches below finished floor elevation and replaced with low volume change material (LVCM).

Anticipating that slab design will include a capillary break with drainage aggregate, we recommend that the upper 4 to 6-inches of LVCM beneath the floor slab consist of drainage aggregate similar to Missouri Standard Specifications for Highway Construction (MSSHC) Section 1009 Grade 4 Aggregate for Drainage, with the remainder to consist of dense graded aggregate base similar to Missouri Standard Specifications for Highway Construction (MSSHC) Section 1007 Type 1 Aggregate for Base, or dense graded aggregate material locally known as "screenings", "waste rock", and "buckshot". This material is typically produced with a top-size of about 5/16-inches and is well graded to sand size.

Drainage aggregates and dense graded aggregate bases should be compacted in accordance with the Engineered Fill recommendations of this report. Interior slabs on drainage aggregate over a dense graded aggregate subbase as recommended above may be designed based on a modulus of subgrade reaction, k , of 150 pounds per cubic inch. A minimum slab thickness of four inches is recommended. Structural considerations may dictate a greater thickness.

8.4 Pavement Design Parameters

Flexible Pavements. An estimated Bearing Ratio (ASTM D 1883) of 5 is recommended for asphalt cement concrete (ACC) pavement design at this site. If an aggregate base course is included in the flexible

pavement design, pavement aggregate base gradation should conform to MSSHC 1007 Type 1 or Type 5. Other aggregate types may be acceptable, subject to review by GER.

Portland Cement Concrete Pavements. Portland cement concrete (PCC) pavement is recommended at drive approaches subject to frequent turning movements such as entry aprons, and for areas with heavy truck traffic, such as service drives, dumpster access routes, and associated aprons and access areas. GER recommends a modulus of subgrade reaction, k , of 100 pounds per cubic inch for design of exterior Portland cement concrete pavements. A minimum aggregate base course thickness of 4 inches and a minimum PCC pavement thickness of 5 inches are recommended, based on a 28-day concrete compressive strength of 4,000 pounds per square inch. For pavements subject to concentrated heavy truck traffic, such as loading zones and dumpster accesses, a minimum PCC pavement thickness of 6 inches is recommended. A project specific pavement design based on traffic characteristics may determine thicker pavement sections. Aggregate base course consisting of MSSHC Section 1007 Type 1 or 5 is recommended for concrete pavements. Other aggregate types may be acceptable, subject to the discretion of the Civil Engineer or review by GER.

9.0 CONSTRUCTION CONSIDERATIONS

The following subsections identify the recommendations for site and subgrade preparation, rock excavation, foundation construction, groundwater and storm water management, engineered fill and backfill, and quality assurance testing. We recommend that GER be retained to provide construction observations of initial site preparation and stripping, cut-fill operations, and foundation excavation.

9.1 Site Preparation

Site preparation will involve stripping topsoil and vegetation, followed by cut-fill grading to a soil subgrade elevation. These borings encountered about 0.5 to 1.0 feet of surficial silt loam or gravelly silt loam that is recommended to be stripped and stockpiled for later use in finish grading green areas of the site. Site preparation also affords the opportunity to review exposed soil conditions across the building and identify high plasticity clay strata that may be present near subgrade but were not encountered in these borings. We recommend that GER be retained during site preparation to verify that subgrade conditions are compatible with the final design requirements and to identify potential high plasticity clay strata that may necessitate additional excavation prior to LVCM placement.

9.2 Rock Excavation

Based on conditions observed at these borings we do not expect that conventional shallow foundation excavations will encounter materials requiring rock excavation tools or methods.

9.3 Subgrade Preparation

General. Subgrade preparation across the site will include controlled cut and fill of existing soils and potential placement of new controlled fill to reach subgrade elevation. Existing materials at subgrade elevation are expected to include silt loam, clay loam, and gravelly silt loam. We recommend scarifying the subgrade to a minimum depth of nine inches and re-compacting the scarified material to a minimum of 95 percent of maximum dry density as determined by ASTM D 698 (Standard Proctor) at a moisture

content between one percentage point below and five percentage points above optimum moisture content as determined in accordance with ASTM D 698.

We recommend that the native soils at floor slab subgrade elevation be removed to a minimum depth of 18-inches below finished floor and replaced with a low volume change material (LVCM). We anticipate that the floor slab design will include a capillary break layer of drainage aggregate approximately 4 to 6-inches thick immediately under the slab. This drainage aggregate thickness should be considered part of the LVCM total thickness.

9.4 Foundation Construction

Shallow foundation bearing surfaces in soil should be excavated flat and level. Loose materials or materials disturbed by the excavation process should be re-compacted to densify and stabilize the bearing material. Foundation excavations that become inundated should be dewatered and re-evaluated prior to concrete placement. Foundation construction should be monitored by GER during excavation to verify that excavations have reached bearing materials capable of safely sustaining the design bearing capacity.

9.5 Surface and Subsurface Drainage

Temporary Drainage Systems. Positive surface drainage should be provided to the greatest practical extent during construction to minimize degradation and erosion of exposed clay subgrades and fill surfaces under construction. Seepage water that may accumulate in foundation excavations should be removed prior to reinforcement installation and concrete placement.

Permanent Drainage Systems. Site grading should be designed to maintain positive drainage away from the building and paved surfaces. We recommend a minimum surface grade of 5 percent away from the building on gravel or landscape areas in the first 10 feet outside the building. We recommend a minimum surface grade of 2 percent away from the building on all paved surfaces in the first 10 feet away from the building. Based on the understanding that no occupied or finished spaces below exterior grade are planned, the expectation of positive surface drainage away from the structures, the general nature of the shallow subsurface soils at foundation bearing elevation, and the anticipated nature of the proposed construction, a conventional shallow foundation perimeter drainage system is not considered necessary.

9.6 Potential Impact of High Plasticity Clays

Limited areas of high plasticity soils composed of varying proportions of clay, silt, sand, and gravel may be encountered at floor-slab and pavement subgrade elevation. These soils are susceptible to expansion upon wetting that can heave floor slabs and lightly loaded structures. We recommend that fine grained soils within 18-inches of finished floor elevation be removed and replaced with crushed limestone LVCM.

9.7 Engineered Fill

General. We anticipate that the material excavated on site will include predominantly moderate plasticity native clay soil and lesser volumes of high plasticity clay and gravelly clay. Materials, placement and compaction recommendations are provided below.

Materials. Material used as engineered fill or backfill should be free of significant organic matter, frozen material, significant construction debris, and corrodible or other deleterious material. Existing on site soils may be used as fill in accordance with the placement and compaction recommendations below. Imported fill materials are expected to be limited to crushed aggregate quarry products required for specific purposes defined by the design, such as base courses or drainage courses. If imported fine grained soils are proposed for use as fill or backfill, they should be reviewed and analyzed by the geotechnical engineer prior to use on site. Suitable imported materials for general site fill are those that classify as GW, GM, GC, SC, and CL in accordance with ASTM D 2487. Soil classified as CH, MH, OH, OL, or PT (high plasticity soils and organic soils) by the Unified Soil Classification System (ASTM D 2487) should not be imported for use as engineered fill.

Placement and Compaction. Fine-grained soils used as general site fill should be placed and compacted in uniform, horizontal lifts with a maximum loose thickness of nine inches. Loose lift thickness should be reduced to six inches for compaction with compaction equipment such as walk-behind rollers, gas-powered tampers, or skid steer roller attachments. Crushed aggregate products should be placed and compacted in uniform, horizontal lifts with a maximum loose thickness of six inches.

Engineered fill composed of fine grained soil should be compacted to a minimum of 95 percent of maximum dry density as determined by ASTM D 698 (Standard Proctor), at a moisture content ranging from one percentage point below optimum moisture content to five percentage points above optimum moisture content as determined by ASTM D 698. Otherwise suitable fill materials that are outside this range of moisture contents may be wetted or dried, as appropriate, to bring them to an acceptable moisture content. Otherwise suitable soils that become saturated due to weather or disturbed by construction activities may be used as fill or backfill subject to preceding materials recommendations, final design requirements, and compaction and moisture content requirements recommended in this report. Excessively wet soils may require spreading, aeration, disking, or other manipulation to reduce their moisture content.

Dense graded aggregate base beneath floor slabs and pavements should be compacted to a minimum of 95 percent of Standard Proctor maximum dry density. Although moisture control is not necessary with these materials to control volume change characteristics, adequate moisture is essential to efficient compaction. These materials generally should be placed and compacted at moisture contents within two to three percentage points of their optimum moisture content. A smooth, steel-wheeled roller (static or vibratory) is expected to provide efficient compaction of dense graded aggregate base materials. In close quarters, where hand operated equipment is necessary, a large vibratory plate compactor or a "jumping jack" tamper is recommended. Loose lift thickness should be limited to about six inches.

Open graded or clean rock fill material with a thickness equal to or greater than three inches or in trench and wall backfill applications should be compacted to a minimum relative density of 70 percent, as determined in accordance with ASTM D 4253 and 4254.

9.8 Quality Assurance Testing

We recommend that GER be retained to observe initial sitework excavation, to observe subgrade conditions prior to engineered fill or aggregate base placement, and to observe foundation bearing surfaces immediately after excavation and immediately prior to concrete placement. We recommend that excavation and foundation construction be carefully monitored to verify that actual field conditions are compatible with

recommended design criteria. If actual field conditions vary from our interpretation of subsurface data, recommendations can then be provided to maintain or improve design and construction quality and function.

The construction quality assurance program should include sampling and classifying borrow materials in advance of controlled fill construction, and monitoring fill and backfill placement and compaction to assure that adequate compaction is achieved and proper methods are employed. In-place field density tests will be practical for on-site and similar fine grained soils or crushed aggregate bases. Field density tests should be conducted in accordance with ASTM D 6938.

10.0 WARRANTIES AND LIMITATIONS

This report has been prepared for the exclusive use of the City of Nixa, Missouri and their consultants for the specific project discussed, in accordance with generally accepted geotechnical engineering practices common to projects of this nature in Missouri. No other warranties, expressed or implied, are provided.

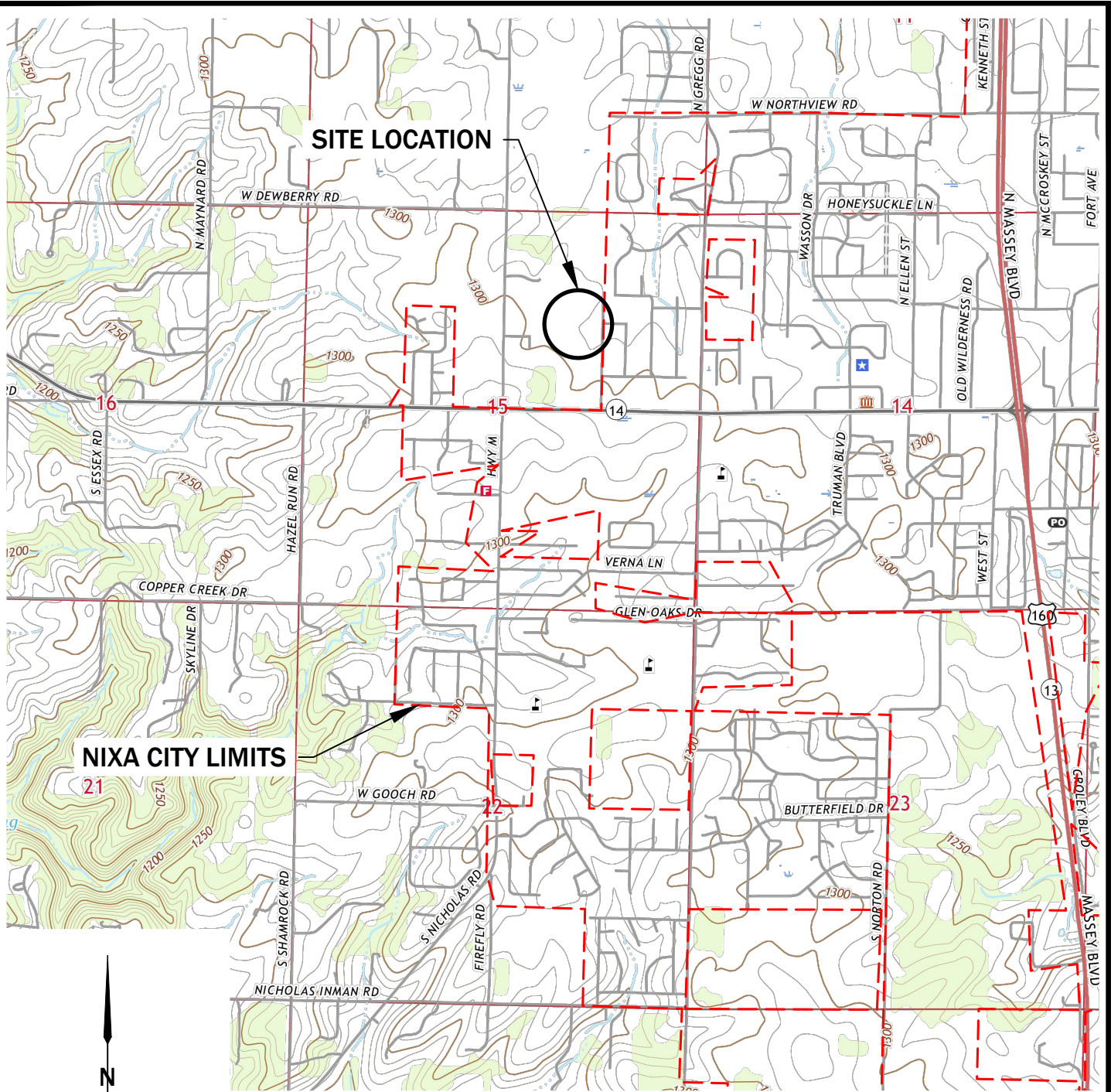
This investigation and report do not constitute a guarantee of subsurface conditions, groundwater conditions, excavation characteristics or construction conditions. We recommend that foundation bearing conditions and excavation conditions across the site be evaluated during construction relative to this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

This report provides general specification content to be incorporated into the construction documents. Specification content is provided in a pre-design context and form that requires integration with specification development and is not considered final contract language. The report also provides commentary and discussion on perceived constructability matters such as groundwater impacts, excavation conditions, satisfactory and unsatisfactory soils, potential deleterious materials, and similar matters. This information is provided in schematic form and should not be considered a complete construction planning guide. We recommend coordination of these pre-design recommendations, specification content, and constructability matters with concept and design development.

Opinions and recommendations contained in this report are based on subsurface conditions, anticipated designs, and proposed designs provided as of this date. Factors affecting design and construction often become apparent during detailed design or actual construction that were not anticipated in the pre-design or early design phases. The above study and recommendations are applicable only for the project and site conditions described by this report. Any significant changes in project parameters or subsurface conditions should be brought to our attention. GER will be available at any stage of design development and construction to assist in the interpretation and application of these recommendations.

Use of the data contained herein by others may require interpretation or analysis that was not contemplated by our investigation and analysis. The use of this data and any interpretations or conclusions developed by others are the sole responsibility of those firms or individuals.

Appendix



SCALE: 1" = 2000'
0 1000' 2000'

**USGS NIXA QUADRANGLE
MISSOURI, 7.5-MINUTE SERIES
NE 1/4, SW 1/4, NE 1/4 SECTION 15 T27N R22W**

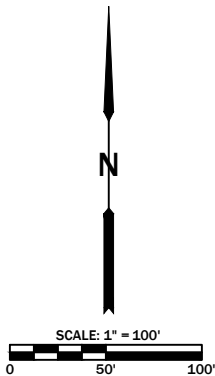
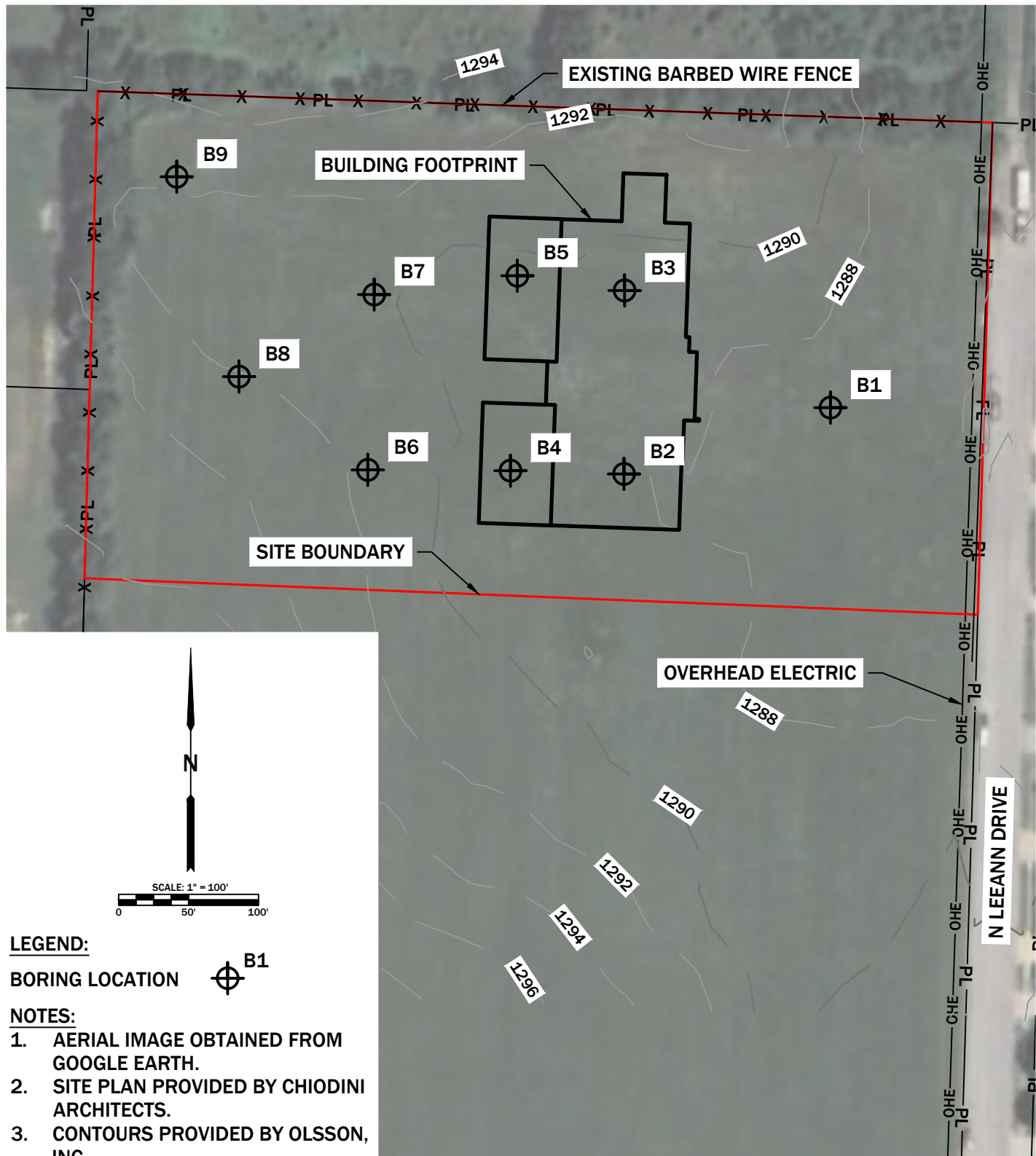
**CITY OF NIXA
GEOTECHNICAL INVESTIGATION
TASK ORDER 24-003**

SITE LOCATION MAP



CIVIL • GEOTECHNICAL • ENVIRONMENTAL • GEOLOGY • EARTH SCIENCES
1505 East High Street Telephone: (573) 659-9078
Jefferson City, Missouri Facsimile: (573) 659-9079
MO CORP. ENGINEERING LICENSE NO. E-2001001669-D

DATE 10/2024	SCALE 1" = 2000'	PROJECT NAME NIXA GEOTECH INV T.O. 24-003	REVISION —
DRAWN MW	APPROVED WE	FILE NAME SITE-PLAN-03	SHEET # 1 OF 2



LEGEND:

BORING LOCATION



NOTES:

1. AERIAL IMAGE OBTAINED FROM GOOGLE EARTH.
2. SITE PLAN PROVIDED BY CHIODINI ARCHITECTS.
3. CONTOURS PROVIDED BY OLSSON, INC.

**CITY OF NIXA
GEOTECHNICAL INVESTIGATION
TASK ORDER 24-003**

EXPLORATION PLAN



CIVIL • GEOTECHNICAL • ENVIRONMENTAL • GEOLOGY • EARTH SCIENCES
1505 East High Street Telephone: (573) 659-9078
Jefferson City, Missouri Facsimile: (573) 659-9079
MO CORP. ENGINEERING LICENSE NO. E-2001001669-D

DATE 10/2024	SCALE 1" = 100'	PROJECT NAME NIXA GEOTECH INV T.O. 24-003	REVISION —
DRAWN MW	APPROVED WE	FILE NAME SITE-PLAN-04	SHEET # 2 OF 2



CIVIL • GEOTECHNICAL • ENVIRONMENTAL • GEOLOGY • EARTH SCIENCES

**City of Nixa, MO
New Police Station Site
Summary of Laboratory Test Results**

Boring	Sample	Depth (ft)	Water Content	USCS	Atterberg Limits		
					LL	PL	PI
B1	SS1	3.5	21.1				
B2	SS1	3.5	21.0	CL	41	21	20
B2	SS2	8.5	20.3				
B2	SS3	13.5	24.3				
B2	SS4	18.5	22.7				
B3	SS1	3.5	22.0	CL	37	22	15
B3	SS2	8.5	18.9				
B3	SS3	13.5	34.6	CH	62	30	32
B3	SS4	18.5	35.7				
B4	SS1	3.5	19.4				
B4	SS2	8.5	23.6	CH	53	28	25
B4	SS3	13.5	22.8				
B4	SS4	18.5	22.5				
B5	SS1	3.5	21.5	CL	38	20	18
B5	S2	8.5	23.1				
B5	SS3	13.5	25.4	CH	61	26	35
B5	SS4	18.5	35.0				
B6	SS1	3.5	19.4	CL	36	21	15
B7	SS1	3.5	20.7				
B8	SS1	3.5	13.7				
B9	SS1	5.5	19.0				

EXPLORATION LOG LEGEND AND NOMENCLATURE

Depth is in feet below ground surface. **Elevation** is in feet mean 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).
- ST** Thin-walled (Shelby) tube sample, relatively undisturbed, obtained by pushing a 3-inch diameter tube (ASTM D 1587).
- S** Disturbed sample, obtained from cuttings.
- CS** Continuous sample, disturbed, obtained by pushing a split-barrel tube, Giddings tube, or similar.

Recovery is expressed as a ratio of the length recovered to the total length pushed, driven, 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).

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.

WH Weight of Hammer

Description indicates soil constituents and other classification characteristics using the visual-manual procedure (ASTM D 2488) and may include the laboratory determined Unified Soil Classification System (ASTM D 2487). Color is further defined by the Munsell notation using the Munsell Soil Color Book. Secondary soil constituents (expressed as a percentage) are described as follows:

Trace	0 to 5
Few	5 to 10
Little	15 to 25
Some	30 to 45

Stratigraphic Breaks may be observed or interpreted, and are indicated by a dashed line. 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 tons per square foot (tsf).
- Unconfined compressive strength (ASTM D 2166) in tons per square foot (tsf).
- Liquid and Plastic Limits (ASTM D 4318) in percent.

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

Excellent	91 to 100
Good	76 to 90
Fair	51 to 75
Poor	26 to 50
Very Poor	0 to 25

GREDELL Engineering Resources, Inc.

BORING LOG B1

City of Nixa New Police Dept.
Nixa, Missouri
CLIENT: City of Nixa

LOCATION: Nixa, MO
ELEVATION: 1287.5 ft DATUM: Site Topo
DATE DRILLED: 9-18-24

DEPTH (FEET)	ELEVATION	WATER TABLE	GRAPHIC LOG	SAMPLE TYPE	MATERIAL DESCRIPTION	SAMPLE ID DRY DENSITY (pcf) BLOWS PER 6 INCHES RQD= ROCK QUALITY DES. REC= RECOVERY	MOISTURE CONTENT PERCENT BY WEIGHT	<div> SHEAR STRENGTH, tsf △ QU/2 ■ PP □ SV ⊕ TV 1 2 3 STANDARD PENETRATION TEST ▲ N-VALUE (BLOWS PER LAST FOOT) ● MOISTURE CONTENT, % ○ % FINES (PASSING #200 SIEVE) PL ————— LL 20 40 60 </div>
0.0	1287.5				SILT: Pale brown, dry, friable, root zone.			
0.5	1287				- light reddish brown, no roots.			
1.0	1286.5				CLAY: Light reddish brown mottled light red and gray, dry, firm, some silt.			
3.5	1284					SS1	21.0	
3.7	1283.8					4-7-9		
						REC=128%		
5.0	1282.5				Boring terminated at 5.0 feet in clay.			

DRILLING COMPANY: Twehous Excavating Co.
DRILLING METHOD: 4" Rotary CFA
DRILL RIG: CME 45C
SPT HAMMER: Auto
LOGGED BY: CM Houts

STRATIFICATION LINES ARE
APPROXIMATE SOIL BOUNDARIES
ONLY; ACTUAL CHANGES MAY BE
GRADUAL OR MAY OCCUR BETWEEN
SAMPLES.

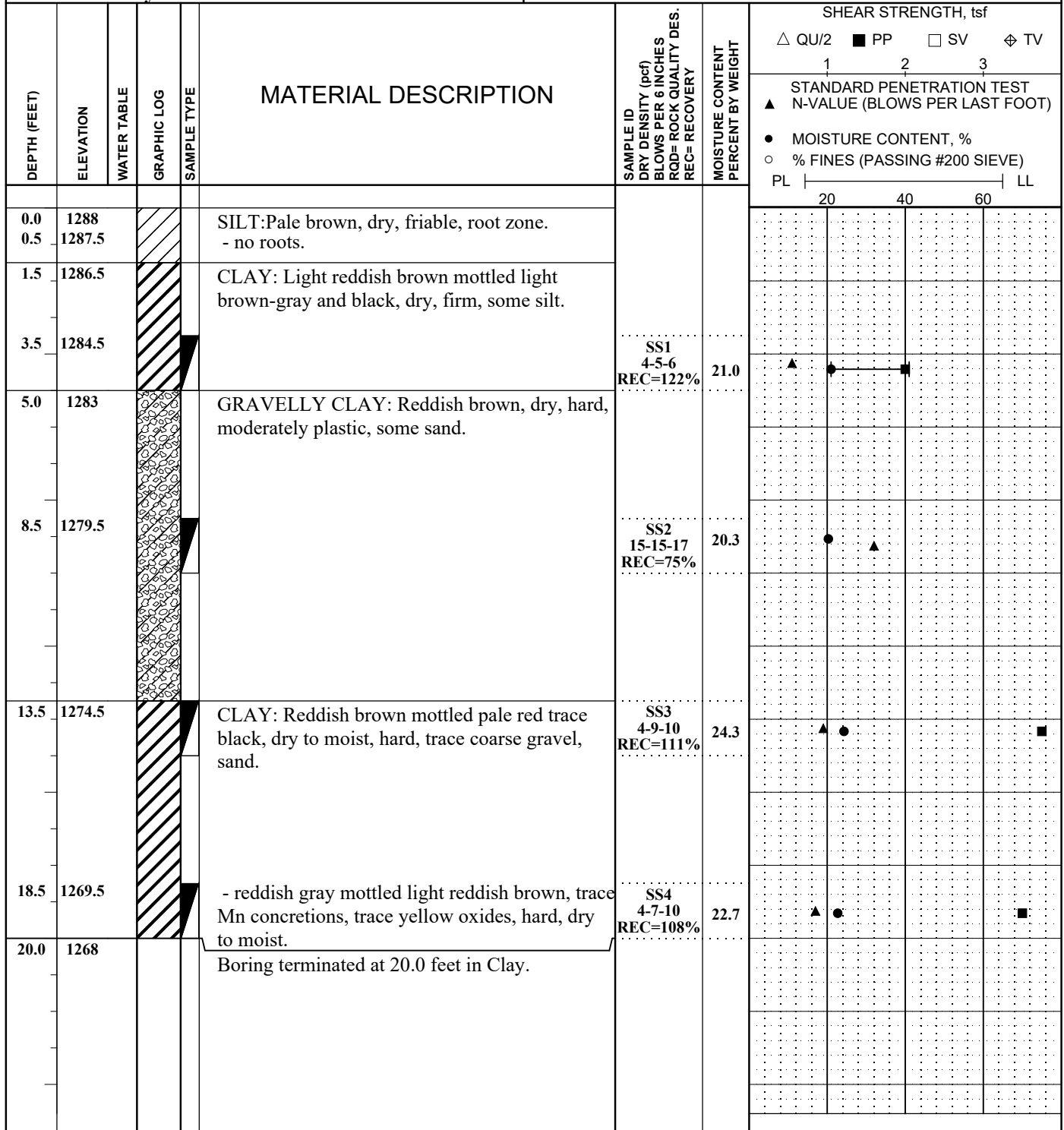
WATER LEVELS: DURING DRILLING: - FEET
AFTER DRILLING: - FEET
COMPLETION DEPTH: 5.0 FEET
BACKFILLED WITH: Cuttings
CHECKED BY: BD REVIEWED BY: BD

GREDELL Engineering Resources, Inc.

BORING LOG B2

City of Nixa New Police Dept.
Nixa, Missouri
CLIENT: City of Nixa

LOCATION: Nixa, MO
ELEVATION: 1288.0 ft DATUM: Site Topo
DATE DRILLED: 9-18-24



DRILLING COMPANY: Twehous Excavating Co.
DRILL METHOD: 4" Rotary CFA
DRILL RIG: CME 45C
SPT HAMMER: Auto
LOGGED BY: CM Houts

STRATIFICATION LINES ARE
APPROXIMATE SOIL BOUNDARIES
ONLY; ACTUAL CHANGES MAY BE
GRADUAL OR MAY OCCUR BETWEEN
SAMPLES.

WATER LEVELS: DURING DRILLING: - FEET
AFTER DRILLING: - FEET
COMPLETION DEPTH: 20.0 FEET
BACKFILLED WITH: Cuttings
CHECKED BY: BD REVIEWED BY: BD

Date Printed: 10/8/2024

GREDELL Engineering Resources, Inc.

BORING LOG B3

City of Nixa New Police Dept.
Nixa, Missouri
CLIENT: City of Nixa

LOCATION: Nixa, MO
ELEVATION: 1289.0 ft DATUM: Site Topo
DATE DRILLED: 9-18-24

DEPTH (FEET)	ELEVATION	WATER TABLE	GRAPHIC LOG	SAMPLE TYPE	MATERIAL DESCRIPTION	SAMPLE ID DRY DENSITY (pcf) BLOWS PER 6 INCHES RQD= ROCK QUALITY DES. REC= RECOVERY	MOISTURE CONTENT PERCENT BY WEIGHT	SHEAR STRENGTH, tsf △ QU/2 ■ PP □ SV ⊕ TV 1 2 3 STANDARD PENETRATION TEST ▲ N-VALUE (BLOWS PER LAST FOOT) ● MOISTURE CONTENT, % ○ % FINES (PASSING #200 SIEVE) PL 20 40 60 LL
0.0 0.5	1289 1288.5				GRAVELLY SILT: Yellowish brown, dry, soft, friable, root zone. - no roots.			
3.5	1285.5				CLAY: Light red mottled very pale brown, dry, firm, trace coarse sand, some silt.	SS1 5-6-7 REC=114%	22.0	
8.5	1280.5				GRAVELLY CLAY: Dark red mottled yellowish brown and black, hard, dry, trace coarse sand.	SS2 5-10-13 REC=92%	18.9	
13.5	1275.5				SANDY CLAY: Reddish brown, firm, dry to moist, trace gravel, moderately plastic.	SS3 5-9-8 REC=117%	34.6	
18.5	1270.5				GRAVELLY CLAY: Reddish brown mottled black, some sand, dry, hard, moderately plastic.	SS4 4-10-12 REC=78%	35.7	
20.0	1269				Boring terminated at 20.0 feet in Gravelly Clay.			

DRILLING COMPANY: Twehous Excavating Co.
DRILL METHOD: 4" Rotary CFA
DRILL RIG: CME 45C
SPT HAMMER: Auto
LOGGED BY: CM Houts

STRATIFICATION LINES ARE
APPROXIMATE SOIL BOUNDARIES
ONLY; ACTUAL CHANGES MAY BE
GRADUAL OR MAY OCCUR BETWEEN
SAMPLES.

WATER LEVELS: DURING DRILLING: - FEET
AFTER DRILLING: - FEET
COMPLETION DEPTH: 20.0 FEET
BACKFILLED WITH: Cuttings
CHECKED BY: BD REVIEWED BY: BD

Date Printed: 10/8/2024

GREDELL Engineering Resources, Inc.

BORING LOG B4

City of Nixa New Police Dept.
Nixa, Missouri
CLIENT: City of Nixa

LOCATION: Nixa, MO
ELEVATION: 1289.0 ft DATUM: Site Topo
DATE DRILLED: 9-18-24

DEPTH (FEET)	ELEVATION	WATER TABLE	GRAPHIC LOG	SAMPLE TYPE	MATERIAL DESCRIPTION	SAMPLE ID DRY DENSITY (pcf) BLOWS PER 6 INCHES RQD= ROCK QUALITY DES. REC= RECOVERY	MOISTURE CONTENT PERCENT BY WEIGHT	SHEAR STRENGTH, tsf △ QU/2 ■ PP □ SV ⊕ TV 1 2 3 STANDARD PENETRATION TEST ▲ N-VALUE (BLOWS PER LAST FOOT) ● MOISTURE CONTENT, % ○ % FINES (PASSING #200 SIEVE) PL 20 40 60 LL
0.0	1289				SILT: Light brownish yellow, dry, friable, root zone.			
0.5	1288.5				CLAY: Light yellowish brown, dry to moist, firm, some silt.			
3.5	1285.5				GRAVELLY CLAY: Reddish brown mottled yellow, dry, some silt.	SS1 6-32-14 REC=72%	19.4	
8.5	1280.5				SANDY CLAY: Reddish brown mottled pale brown with Mn concretions, dry to moist, hard, trace coarse sand and gravel, low plasticity.	SS2 5-9-14 REC=111%	23.6	
8.8	1280.2							
13.5	1275.5				GRAVELLY CLAY: Reddish brown, dry, hard, trace yellow oxides and Mn concretions, high plasticity.	SS3 6-7-12 REC=72%	22.8	
18.5	1270.5				SANDY CLAY: Reddish brown mottled very pale brown and trace black, dry, firm, some silt, moderately plastic.	SS4 4-5-7 REC=133%	22.5	
20.0	1269				Boring terminated at 20.0 feet in Sandy Clay.			

DRILLING COMPANY: Twehous Excavating Co.
DRILLING METHOD: 4" Rotary CFA
DRILL RIG: CME 45C
SPT HAMMER: Auto
LOGGED BY: CM Houts

STRATIFICATION LINES ARE
APPROXIMATE SOIL BOUNDARIES
ONLY; ACTUAL CHANGES MAY BE
GRADUAL OR MAY OCCUR BETWEEN
SAMPLES.

WATER LEVELS: DURING DRILLING: - FEET
AFTER DRILLING: - FEET
COMPLETION DEPTH: 20.0 FEET
BACKFILLED WITH: Cuttings
CHECKED BY: BD REVIEWED BY: BD

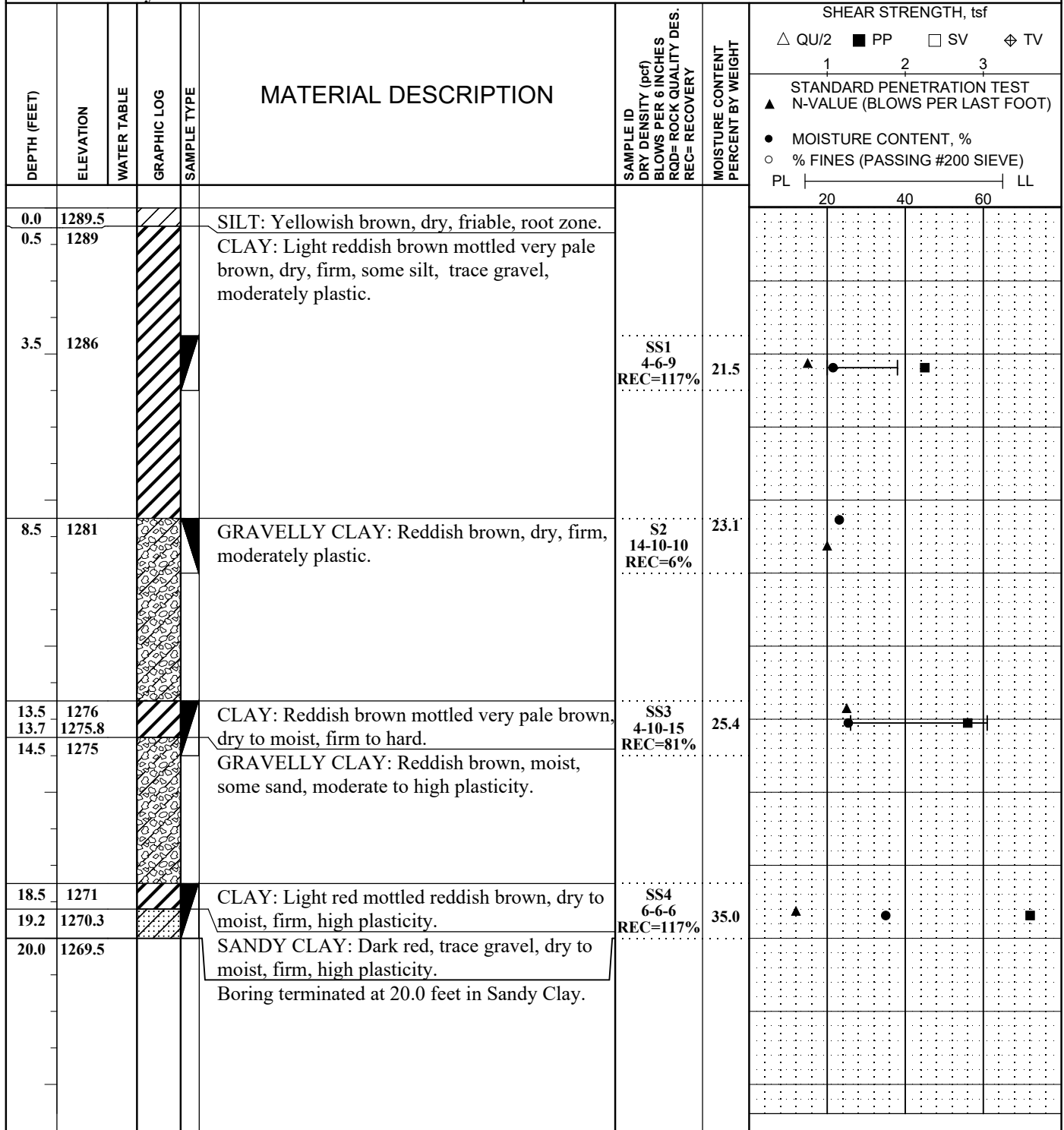
Date Printed: 10/8/2024

GREDELL Engineering Resources, Inc.

BORING LOG B5

City of Nixa New Police Dept.
Nixa, Missouri
CLIENT: City of Nixa

LOCATION: Nixa, MO
ELEVATION: 1289.5 ft DATUM: Site Topo
DATE DRILLED: 9-18-24



DRILLING COMPANY: Twehous Excavating Co.
DRILLING METHOD: 4" Rotary CFA
DRILL RIG: CME 45C
SPT HAMMER: Auto
LOGGED BY: CM Houts

STRATIFICATION LINES ARE
APPROXIMATE SOIL BOUNDARIES
ONLY; ACTUAL CHANGES MAY BE
GRADUAL OR MAY OCCUR BETWEEN
SAMPLES.

WATER LEVELS: DURING DRILLING: - FEET
AFTER DRILLING: - FEET
COMPLETION DEPTH: 20.0 FEET
BACKFILLED WITH: Cuttings
CHECKED BY: BD REVIEWED BY: BD

GREDELL Engineering Resources, Inc.

BORING LOG B6

City of Nixa New Police Dept.
Nixa, Missouri
CLIENT: City of Nixa

LOCATION: Nixa, MO
ELEVATION: 1291.5 ft DATUM: Site Topo
DATE DRILLED: 9-18-24

DEPTH (FEET)	ELEVATION	WATER TABLE	GRAPHIC LOG	SAMPLE TYPE	MATERIAL DESCRIPTION	SAMPLE ID DRY DENSITY (pcf) BLOWS PER 6 INCHES RQD= ROCK QUALITY DES. REC= RECOVERY	MOISTURE CONTENT PERCENT BY WEIGHT	SHEAR STRENGTH, tsf △ QU/2 ■ PP □ SV ⊕ TV 1 2 3 STANDARD PENETRATION TEST ▲ N-VALUE (BLOWS PER LAST FOOT) ● MOISTURE CONTENT, % ○ % FINES (PASSING #200 SIEVE) PL ————— LL
0.0 0.5	1291.5 1291				SILT: Pale brown, dry, friable, root zone. - no roots.			
3.5	1288				CLAY: Yellowish brown mottled very pale brown with Mn concretions, dry to moist, soft, some silt. Boring terminated at 5.0 feet in Clay.	SS1 3-6-9 REC=119%	19.4	
5.0	1286.5							

DRILLING COMPANY: Twehous Excavating Co.
 DRILLING METHOD: 4" Rotary CFA
 DRILL RIG: CME 45C
 SPT HAMMER: Auto
 LOGGED BY: CM Houts

STRATIFICATION LINES ARE
APPROXIMATE SOIL BOUNDARIES
ONLY; ACTUAL CHANGES MAY BE
GRADUAL OR MAY OCCUR BETWEEN
SAMPLES.

WATER LEVELS: DURING DRILLING: - FEET
 AFTER DRILLING: - FEET
 COMPLETION DEPTH: 5.0 FEET
 BACKFILLED WITH: Cuttings
 CHECKED BY: BD REVIEWED BY: BD

Date Printed: 10/8/2024

GREDELL Engineering Resources, Inc.

BORING LOG B7

City of Nixa New Police Dept.
Nixa, Missouri
CLIENT: City of Nixa

LOCATION: Nixa, MO
ELEVATION: 1290.0 ft DATUM: Site Topo
DATE DRILLED: 9-18-24

DEPTH (FEET)	ELEVATION	WATER TABLE	GRAPHIC LOG	SAMPLE TYPE	MATERIAL DESCRIPTION	SAMPLE ID DRY DENSITY (pcf) BLOWS PER 6 INCHES RQD= ROCK QUALITY DES. REC= RECOVERY	MOISTURE CONTENT PERCENT BY WEIGHT	<div>SHEAR STRENGTH, tsf</div> <div> <div>△ QU/2</div> <div>■ PP</div> <div>□ SV</div> <div>⊕ TV</div> </div> <div>123</div> <div>STANDARD PENETRATION TEST</div> <div>▲ N-VALUE (BLOWS PER LAST FOOT)</div> <div>● MOISTURE CONTENT, %</div> <div>○ % FINES (PASSING #200 SIEVE)</div> <div>PL204060LL</div>
0.0 0.5	1290 1289.5				SILT: Brownish yellow, dry, friable, root zone. - no roots.			
3.5	1286.5				CLAY: Brownish yellow mottled very pale brown with Mn concretions, some silt, dry to moist, firm. Boring terminated at 5.0 feet in Clay.	SS1 5-7-10 REC=128%	20.7	
5.0	1285							

DRILLING COMPANY: Twehous Excavating Co.
 DRILLING METHOD: 4" Rotary CFA
 DRILL RIG: CME 45C
 SPT HAMMER: Auto
 LOGGED BY: CM Houts

STRATIFICATION LINES ARE
APPROXIMATE SOIL BOUNDARIES
ONLY; ACTUAL CHANGES MAY BE
GRADUAL OR MAY OCCUR BETWEEN
SAMPLES.

WATER LEVELS: DURING DRILLING: - FEET
 AFTER DRILLING: - FEET
 COMPLETION DEPTH: 5.0 FEET
 BACKFILLED WITH: Cuttings
 CHECKED BY: BD REVIEWED BY: BD

GREDELL Engineering Resources, Inc.

BORING LOG B8

City of Nixa New Police Dept.
Nixa, Missouri
CLIENT: City of Nixa

LOCATION: Nixa, MO
ELEVATION: 1292.0 ft DATUM: Site Topo
DATE DRILLED: 9-18-24

DEPTH (FEET)	ELEVATION	WATER TABLE	GRAPHIC LOG	SAMPLE TYPE	MATERIAL DESCRIPTION	SAMPLE ID DRY DENSITY (pcf) BLOWS PER 6 INCHES RQD= ROCK QUALITY DES. REC= RECOVERY	MOISTURE CONTENT PERCENT BY WEIGHT	SHEAR STRENGTH, tsf △ QU/2 ■ PP □ SV ⊕ TV 1 2 3 STANDARD PENETRATION TEST ▲ N-VALUE (BLOWS PER LAST FOOT) ● MOISTURE CONTENT, % ○ % FINES (PASSING #200 SIEVE) PL ————— LL
0.0 0.5	1292 1291.5				SILT: Pale brown, dry, friable, root zone. - no roots			
3.5	1288.5				CLAY: Pale brown mottled reddish brown with Mn concretions, some silt, trace coarse-grained sand in shoe, dry to moist, firm, low plasticity. Boring terminated at 5.0 feet in Clay.	SS1 3-5-6 REC=0%	13.7	
5.0	1287							

DRILLING COMPANY: Twehous Excavating Co.
 DRILLING METHOD: 4" Rotary CFA
 DRILL RIG: CME 45C
 SPT HAMMER: Auto
 LOGGED BY: CM Houts

STRATIFICATION LINES ARE
APPROXIMATE SOIL BOUNDARIES
ONLY; ACTUAL CHANGES MAY BE
GRADUAL OR MAY OCCUR BETWEEN
SAMPLES.

WATER LEVELS: DURING DRILLING: - FEET
 AFTER DRILLING: - FEET
 COMPLETION DEPTH: 5.0 FEET
 BACKFILLED WITH: Cuttings
 CHECKED BY: BD REVIEWED BY: BD

GREDELL Engineering Resources, Inc.

BORING LOG B9

City of Nixa New Police Dept.
Nixa, Missouri
CLIENT: City of Nixa

LOCATION: Nixa, MO
ELEVATION: 1292.0 ft DATUM: Site Topo
DATE DRILLED: 9-18-24

DEPTH (FEET)	ELEVATION	WATER TABLE	GRAPHIC LOG	SAMPLE TYPE	MATERIAL DESCRIPTION	SAMPLE ID DRY DENSITY (pcf) BLOWS PER 6 INCHES RQD= ROCK QUALITY DES. REC= RECOVERY	MOISTURE CONTENT PERCENT BY WEIGHT	SHEAR STRENGTH, tsf △ QU/2 ■ PP □ SV ⊕ TV 1 2 3 STANDARD PENETRATION TEST ▲ N-VALUE (BLOWS PER LAST FOOT) ● MOISTURE CONTENT, % ○ % FINES (PASSING #200 SIEVE) PL ————— LL
0.0 0.5	1292 1291.5				SILT: Brownish-yellow, dry, friable, root zone. - no roots			
5.5	1286.5				GRAVELLY CLAY: Brownish yellow mottled light grey, some silt, trace fine-grained gravel, Dry to moist, firm, low plasticity. Boring terminated at 7.0 feet in Gravelly Clay.	SS1 5-15-19 REC=147%	19.0	 (Data points: N=1 at 5.5 ft, MC=19.0% at 5.5 ft, F=147% at 5.5 ft)
7.0	1285							

DRILLING COMPANY: Twehous Excavating Co.
 DRILLING METHOD: 4" Rotary CFA
 DRILL RIG: CME 45C
 SPT HAMMER: Auto
 LOGGED BY: CM Houts

STRATIFICATION LINES ARE
APPROXIMATE SOIL BOUNDARIES
ONLY; ACTUAL CHANGES MAY BE
GRADUAL OR MAY OCCUR BETWEEN
SAMPLES.

WATER LEVELS: DURING DRILLING: - FEET
 AFTER DRILLING: - FEET
 COMPLETION DEPTH: 5.0 FEET
 BACKFILLED WITH: Cuttings
 CHECKED BY: BD REVIEWED BY: BD

Date Printed: 10/8/2024

KEY TO SYMBOLS

City of Nixa New Police Dept.

Symbol Description

Strata symbols



As described



Clay



Gravelly Clay



Gravelly Silt



Sandy Clay

Misc. Symbols



Penetrometer

Soil Samplers



Standard penetration test



Bulk/Grab sample

**Phase I
Environmental Site Assessment
For 5-Acre Parcel Located at
1209 West Mount Vernon Street
NE 1/4, SW 1/4, NE 1/4, S-15, T-27N, R-22W
Christian County, Missouri**



Prepared for:



**Mr. Jimmy Liles, City Administrator
City of Nixa
715 West Mt. Vernon Street
Nixa, MO 65714**

Prepared by:

**GREDELL Engineering Resources, Inc.
636 W. Republic Road, Suite D-100
Springfield, Missouri 65807
Phone: (417) 890-6200
www.ger-inc.biz**

July 2024

**Phase I
Environmental Site Assessment
For 5-Acre Parcel Located at
1209 West Mount Vernon Street
NE 1/4, SW 1/4, NE 1/4, S-15, T-27N, R-22W
Christian County, Missouri**

Prepared for:

**Mr. Jimmy Liles, City Administrator
City of Nixa
715 West Mt. Vernon Street
Nixa, MO 65714**

July 2024

Prepared by:

**GREDELL Engineering Resources, Inc.
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Springfield, Missouri 65807
Phone: (417) 890-6200
www.ger-inc.biz**

**Phase I
Environmental Site Assessment
For 5-Acre Parcel Located at
1209 West Mount Vernon Street
NE ¼, SW ¼, NE ¼, S-15, T-27N, R-22W
Christian County, Missouri**

July 2024

TABLE OF CONTENTS

1.0	EXECUTIVE SUMMARY	1
2.0	INTRODUCTION.....	2
2.1	Purpose of the Environmental Site Assessment	2
2.2	Scope of Services.....	2
2.3	Limitations and Exceptions	3
2.4	Commission and Report Use.....	4
2.5	User Reliance	4
3.0	DESCRIPTION OF TARGET PROPERTY AND VICINITY.....	6
3.1	Target Property Location	6
3.2	Target Property Vicinity	6
3.3	Physical Setting	7
4.0	USER PROVIDED AND OTHER INFORMATION	8
4.1	User Questionnaire.....	8
4.2	Title Review and Chain-of-Title	8
4.3	Specialized Knowledge or Experience of the User	9
4.4	Relationship of the Purchase Price to the Value of the Target Property.....	9
4.5	Other Information.....	9
5.0	REGULATORY DATABASE RECORDS REVIEW	10
5.1	Records Summary	10
5.2	Aerial Photographs	11
5.3	Historical Topographic Maps	11
5.4	Sanborn Fire Insurance Maps	11
5.5	City Directories	11
5.6	Vapor Encroachment Screen	11
5.7	E-START and GeoSTRAT.....	11
6.0	SITE RECONNAISSANCE	12
7.0	INTERVIEWS.....	13
8.0	EVALUATION.....	13
8.1	Findings	13
8.2	Opinions.....	13
8.3	Conclusions	14
8.4	Data Gaps and Data Failures.....	14
8.5	Recommendations.....	14
8.6	References	14
8.7	Environmental Professional Statement	15
9.0	NON-SCOPE SERVICES	16

FIGURES

- Figure 1 Overview Map**
- Figure 2 Property Location Map**
- Figure 3 Property Aerial Detail Map**

APPENDICES

- Appendix I Chain of Title and County Assessor's Legal Description of Parcel**
- Appendix II Documents from Environmental Data Resources, Inc. and FEMA**
- (a) The EDR Radius Map™ Report with Geotcheck®
 - (b) The EDR Aerial Photo Decade Package
 - (c) EDR Historical Topographic Map Report
 - (d) Certified Sanborn® Map Report
 - (e) The EDR-City Directory Image Report
 - (f) EDR Vapor Encroachment Screen
 - (g) EDR Ground Water Flow Gradients Map
 - (h) FEMA National Flood Hazard Layer (NFLH) FIRMette, Nixa, MO
- Appendix III Documents from E-START & GeoSTRAT**
- (a) E-START Interactive Map
 - (b) GeoSTRAT Interactive Map
- Appendix IV Questionnaires and Interview Summaries**
- (a) Owner Questionnaire - Xtreme Property Holdings, LLC
 - (b) User Questionnaire – City of Nixa
 - (c) Interview - City of Nixa, Public Works and Code Compliance
 - (d) Interview - City of Nixa, Fire Department
- Appendix V Representative Photographs from Site Visit**
- Appendix VI Qualifications (Resumes) of Environmental Professionals**
- (a) Gary Pendergrass, P.E., R.G.
 - (b) Mike Carlson, R.G.
 - (c) Jacob Fitzpatrick, E.I.
 - (d) Christine Houts
- Appendix VII References**

1.0 EXECUTIVE SUMMARY

GREDELL Engineering Resources, Inc. (GER) performed a Phase I Environmental Site Assessment (ESA) that included onsite observations of the Target Property. The Target Property is an approximate 5-acre tract and is located at the northern end of the parcel at 1209 West Mount Vernon Street, just west of the intersection of North Leeann Drive and Faye Road. The Target Property is in Christian County and just west of the City of Nixa, Missouri city limits. The Target Property is owned by Xtreme Property Holdings, LLC, who is in the process of selling it to the User, City of Nixa. This Phase I ESA was conducted in general conformance with the scope and limitations of the American Society for Testing and Materials Practice E 1527-21 (ASTM E 1527-21).

This report must be read in its entirety to develop a comprehensive understanding of the ESA information process. The following summarizes the findings of the Phase I ESA report.

According to the ASTM E 1527-21, a recognized environmental condition (REC) is “(1) the presence of hazardous substances or petroleum products in, on, or at the subject property due to a release to the environment; (2) the likely presence of hazardous substances or petroleum products in, on, or at the subject property due to a release or likely release to the environment; or (3) the presence of hazardous substances or petroleum products in, on, or at the subject property under conditions that pose a material threat of a future release to the environment.”

It is GER’s opinion that ‘potential’ RECs associated with the Target Property are not present based on the findings identified within this Phase I ESA.

2.0 INTRODUCTION

The Target Property, owned by Xtreme Property Holdings, LLC, is located at the northern end of 1209 West Mount Vernon Street, in the NE ¼, SW ¼, NE 1/4, Section 15, T27N, R22W, Christian County, Missouri 65714. A vicinity Overview Map, which was reproduced from portions of the applicable U.S. Geological Survey (USGS) 7.5-minute series topographic maps, is included as Figure 1. The property is specifically identified and is hereinafter referred to as the “Target Property”.

2.1 Purpose of the Environmental Site Assessment

The purpose of the ESA is to assist the “User”, identified in this report as the City of Nixa, in developing information to identify RECs in connection with the Target Property as defined by the ASTM E 1527-21, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process. This ESA was prepared in a manner consistent with the E 1527-21 procedures. The intent of the ESA is to assist the User in achieving an innocent landowner defense through the completeness of “All Appropriate Inquiry” (AAI) under Section 107 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA, 42 U.S.C. 9607), as modified by the Brownfields Amendment.

ASTM E 1527-21 defines a recognized environmental condition (REC) as “(1) the presence of hazardous substances or petroleum products in, on, or at the subject property due to a release to the environment; (2) the likely presence of hazardous substances or petroleum products in, on, or at the subject property due to a release or likely release to the environment; or (3) the presence of hazardous substances or petroleum products in, on, or at the subject property under conditions that pose a material threat of a future release to the environment.”

ASTM E 1527-21, 3.2.39, also utilizes the term historical recognized environmental condition (HREC) to describe “a previous release of hazardous substances or petroleum products affecting the subject property that has been addressed to the satisfaction of the applicable regulatory authority or authorities and meeting unrestricted use criteria established by the applicable regulatory authority or authorities without subjecting the subject property to any controls (for example, activity and use limitations or other property use limitations). A historical recognized environmental condition is not a recognized environmental condition.”

ASTM E 1527-21, 3.2.17, also utilizes the term controlled recognized environmental condition (CREC) to describe “a recognized environmental condition affecting the subject property that has been addressed to the satisfaction of the applicable regulatory authority or authorities with hazardous substances or petroleum products allowed to remain in place subject to implementation of required controls (for example, activity and use limitations or other property use limitations).

2.2 Scope of Services

A Phase I ESA was performed in accordance with the scope of services dated June 10, 2024, and authorized by the City of Nixa through a June 12, 2024, task order. The assessment was conducted utilizing generally accepted Phase I ESA industry standards using the American Society for Testing and Materials (ASTM) Standard Practice E 1527-21. The scope of services included an evaluation of:

- The Target Property history, to identify possible ownership(s) and/or uses that would suggest an impact to the environmental integrity of the Target Property as identified through review of reasonably ascertainable standard historical sources.
- Physical characteristics of the Target Property, as identified through review of reasonably ascertainable topographic and floodplain data.
- Physical inspection of the Target Property to identify obvious contamination from use of the Target Property.
- An evaluation of information contained in programs such as the NPL, CERCLIS, SHWS, RCRA, SWF, LUST, and other governmental information systems within specific search distances of the Target Property. This evaluation was performed to identify adjacent sites or sites in proximity that would have the potential to affect the environmental integrity of the Target Property.
- Visual observation of the adjacent properties to identify high-risk neighbors and the potential for known or suspected contamination to migrate onto the Target Property.
- Questionnaires completed with the current property Owner and User to identify the potential for known or suspected contamination to migrate onto the Target Property.

The regulatory agency report provided is based on an evaluation of the data collected and compiled by a contracted data research company. The report is based on a radius search, which focuses on both the Target Property and neighboring sites that may affect the Target Property. Neighboring sites listed in governmental environmental records are identified within a specific search distance. The search distance varies depending on the government record being checked. The search is designed to meet the requirements of ASTM E 1527-21. The information provided by others is assumed to be correct and complete.

Limitations and deviations from ASTM E 1527-21 or significant data gaps are presented in the report text.

2.3 Limitations and Exceptions

This ESA is not to be construed as legal interpretation or advice. GER has endeavored to meet the ASTM E 1527-21 standard but may have been limited by property conditions or by the inability to review information not received by the report date. An evaluation of the significance of these limitations and missing information with respect to our findings has been conducted, and where appropriate, significant data failures or data gaps are identified and discussed in Section 8 of the report.

No ESA can wholly eliminate uncertainty regarding the potential for RECs in connection with a property. Performance of an ESA is intended to reduce, but not eliminate, uncertainty regarding the potential for RECs. No warranties, expressed or implied, are intended or made. The limitations herein must be considered when the User of this report formulates opinions as to risks associated with the Target Property or otherwise uses the report for any other purpose.

Based upon the agreed-on scope of services, this ESA did not include subsurface or other invasive assessments, business environmental risk evaluations, or other services not particularly identified and discussed herein. Information obtained for this ESA was received from several sources that we believe to

be reliable; nonetheless, the authenticity or reliability of these sources cannot and is not warranted hereunder.

2.4 Commission and Report Use

GER has completed a Phase I Environmental Site Assessment for the Target Property located on the northern end of 1209 West Mount Vernon Street, in the NE $\frac{1}{4}$, SW $\frac{1}{4}$, NE $\frac{1}{4}$, of S-15, T-27N, R-22W, Christian County, Missouri 65714. This report was prepared at the request of the User, City of Nixa, 715 West Mt. Vernon Street, Nixa, MO 65714

GER completed the assessment at the User's request using the methods and procedures consistent with good commercial and customary practice designed to conform to accepted industry standards in the American Society for Testing and Materials (ASTM) Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process E 1527-21.

This report is provided exclusively for the use and benefit of the Owner and User. The purpose for which this report is used shall be limited to the use as stated in the agreement between the User and GER.

This report is not for the use or benefit of any other person or entity, nor may any other person or entity rely upon it for any purpose without the advance written consent of GER. In expressing the opinions stated in this report, GER has exercised the degree of skill and care ordinarily exercised by a reasonable and prudent Environmental Professional in the same community and in the same time frame given the same or similar facts and circumstances. Documentation and data provided by the Owner and User, designated representatives of the Owner and User, or other interested third parties, or from the public domain, and referred to in the preparation of this assessment, have been used and referenced with the understanding that GER assumes no responsibility or liability for their accuracy.

The independent conclusions provided herein represent our professional judgment based on information and data available during completion of this assignment. Information regarding operations and conditions provided by the Owner and User has been assumed correct and complete. The conclusions presented are based on the data provided, observations, and conditions that existed on the date of the site visit.

The undersigned (Section 8) has performed services and prepared this report in accordance with generally accepted consulting standards and practices for Environmental Professionals including the professional standards of GER. The undersigned makes no warranties, either expressed or implied, as to the character and nature of such services and product.

If you have any questions regarding this report, please contact the Environmental Professional listed below.

Researched by: Gary Pendergrass, P.E., R.G., Senior Project Manager
GREDELL Engineering Resources, Inc.

2.5 User Reliance

The Owner and User may rely on the findings and conclusions of this report. If the ESA will be used by a different (third) party other than those parties for whom the ESA was originally prepared, the third party

must also satisfy the User's responsibilities in Section 6 of ASTM E 1527-21. The effective date of this report is July 15, 2024, the date when the report was finalized. Continued viability of this Phase I ESA is contingent on terms set forth in ASTM E 1527-21, Section 4.6.

3.0 DESCRIPTION OF TARGET PROPERTY AND VICINITY

Chain-of-Title information provided by the Owner's title company, Meridian Title Company, does not include a general survey description of the Target Property since the 5-acre parcel has yet to be separated from the 19.7-acre parent property. The Chain-of-title information and the property report card from the county assessor is provided in Appendix I.

3.1 Target Property Location

The Target Property is located at the northern end of 1209 West Mount Vernon Street, just west of the intersection of North Leeann Drive and Faye Road, in the NE ¼, SW ¼, NE ¼, Section 15, T27N, R22W, Christian County, Missouri 65714. The Target Property is just west of the Nixa City Limits. It has been historically used for agricultural purposes and currently consists of fallow ground.

3.2 Target Property Vicinity

The Target Property is bound by residential land and a church to the west, North Leeann Drive, and residential land to the east, and undeveloped land to the north and south. Access to the site is from North Leeann Drive, which bounds the Target Property to east. Surface runoff and shallow groundwater movement is generally from southwest to northeast (Appendix II(g)).

The adjoining properties to the Target Property are described below with reference to the general direction of groundwater movement.

TABLE 1 – Adjoining Properties to Target Property

Direction	Use(s)	Surficial Aquifer Flow Direction Relative to Target Property
North	The Target Property is bordered to the north by residential property and undeveloped land.	Down-Gradient
East	The Target Property is bordered to the east by North Leeann Drive and residential properties.	Down-Gradient
West	The Target Property is bordered to the west by residential property and church property.	Up-Gradient
South	The Target Property is bordered to the south by undeveloped land.	Up-Gradient

3.3 Physical Setting

This region of Christian County is underlain by the Burlington-Keokuk Limestone; a Mississippian age, coarsely crystalline, crinoidal limestone within which most of the karst features in the county form. Caves, springs and sinkholes commonly develop within this unit, along with pinnacles and cutters, giving rise to a highly irregular soil-bedrock interface. The Burlington-Keokuk typically caps upland areas and can exceed 100 feet (30 m) in thickness. Beneath the Burlington-Keokuk Limestone lies the Elsey-Reeds Spring Formation, a fine-grained, gray limestone with large amounts of chert in the form of nodules and beds. The Elsey-Reeds Spring Formation is generally 50 to 60 feet (15-18 m) thick in this region. The Elsey-Reeds Spring Formation crops out along tributaries of the James River to the north. The shallow karst system developed within the Burlington-Keokuk Limestone does not typically extend into the Elsey-Reeds Spring Formation. Consequently, shallow groundwater in the karst system tends to resurface at springs developed within the vertical extent of the Burlington-Keokuk.

The Target Property and surrounding region is not in an area of potential seismic activity. Additionally, the Target Property is not within the Federal Emergency Management Agency (FEMA) 100-year to 500-year flood boundary based on review of Flood Insurance Rate Map (FIRM), No. 29043C0062D - Zone X, dated November 2, 2023, for Christian County, Missouri. The entire site is within Zone X Area of Minimal Flood Hazard (reference Appendix II(h) for FEMA NFHL FIRM Map).

Based on the review of the USDA Soil Survey for Christian County, Missouri (EDR, 2024), there are three primary mappable soil units located in the vicinity of the Target Property. They consist of the (1) Peridge silt loam, (2) Wilderness gravelly silt loam, and (3) Tonti silt loam. Soil 1 is comprised of moderately well drained and well drained soils with moderately coarse textures. Soil 2 has slow infiltration rates with layers impeding downward movement of water or with moderately fine textures. Soil 3 also has slow infiltration rates and is similar to Soil 2. Additional physical setting information (e.g., geology, soils, etc.) for the Target Property is provided in the EDR Radius Map™ Report with Geocheck® (Appendix II(a)).

4.0 USER PROVIDED AND OTHER INFORMATION

User provided information is intended to help identify the possibility of RECs in connection with the Target Property. The “All Appropriate Inquiries” Final Rule (40 CFR Part 312) requires that these tasks be performed by or on behalf of a party seeking to qualify for an LLP to CERCLA liability. While such information is not required to be provided to the Environmental Professional, the Environmental Professional shall request that the User provide the results of these tasks as such information can assist the Environmental Professional in identifying recognized environmental conditions (ASTM, E 1527-21). GER assumes that information (i.e., qualification of LLPs via All Appropriate Inquiries) provided to the Environmental Professional for incorporation within this report is completed by the User through documentation obtained outside of this Phase I ESA.

4.1 User Questionnaire

In order to qualify for one of the Landowner Liability Protections (LLPs) offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001 (the “Brownfields Amendments”), GER provided the City of Nixa with a User Questionnaire by email on June 21, 2024, consistent with the ASTM E 1527-21, Section X.3, pages 46-47, recommended User Questionnaire example. The City of Nixa completed and submitted answers to the User Questionnaire via electronic mail on July 3, 2024 (Appendix IV(b)). The User noted that a title search has not been performed but an appraisal was to ensure the property is conveyed for a fair market value. All other responses to the questionnaire were “No” except for the following:

Question 4 – “Do you know the past use of the property? The User replied “To our knowledge, the property has only been used for a house and farmland. We have no specialized knowledge or experience related to this property.”

Question 6a. – “Do you know the past use of the property? The User replied: “Farm and Residential.”

4.2 Title Review and Chain-of-Title

The Target Property will be a tract subdivided from a larger parcel of land owned by Xtreme Property Holdings, LLC. It is in the process of being sold to the City of Nixa. The Chain-of-Title was provided by Meridian Title Company on July 8, 2024, and does not include the conveyance of the property to the current owner, Xtreme Property Holdings, LLC. Notable property transfer of ownership dating back to 1949 is provided below:

- The Target Property has not received a parcel number at the time of this report. The Chain-of-Title is for the parent tract with the property number: 10-0.5-15-001-001-014.000.
- On December 14, 1949, Reba and Everette Eoff conveyed the following parcel of land to Max and Ineze White: All of the East Half of the Southwest Quarter of the Northeast Quarter (E ½ SW ¼ NE ¼) of Section 15, Township 27, Range 22, 20 acres, more or less.”
- On January 23, 1992, grantors Max and Ineze White made Sheryl K. Farthing the grantee beneficiary of all of the East Half of the Southwest Quarter of the Northeast Quarter (E ½ SW ¼ NE ¼) of Section 15, Township 27, Range 22, 20 acres, upon the grantors’ death.

- In 2013 the sole survivor of Max White & Ineze White, passed away and the property was conveyed to Sheryl Farthing as the sole heir and beneficiary of the property.
- On September 10, 2018, Sheryl K. Farthing and Dennis L. Farthing conveyed to the State of Missouri, through the Missouri Highways and Transportation Commission, the real estate described as "Parcel 10" which is a 7450 S.F. tract of land lying in the southwest 1/4 of the northeast 1/4 of Section 15, Township 27 north, Range 22 west, Christian county, Missouri, lying on the northerly side of the centerline of Route 14. This conveyance also included the following: a permanent drainage easement containing 200 S.F., a permanent utility easement containing 591 S.F. and a temporary easement containing approximately 859 S.F. to cease and no longer be in effect upon completion and acceptance of the project. The details of this conveyance are recorded in the Christian County Recorder of Deeds Book 282 at Page 4379.
- On October 25, 2018, Sheryl K. Farthing, Grantor, made Chris Edward Farthing and Diana Lynne McCallum the beneficiaries equally of "All of the East Half of the Southwest Quarter of the Northeast Quarter (E 1/2 SW 1/4 NE 1/4) of Section 15, Township 27, Range 22, containing approximately 20 acres.
- On October 14, 2022, Sheryl K. Farthing granted a drainage and utility easement to the City of Nixa, containing approximately 7052 S.F. or 0.16 acres. The Drainage easement and Utility easement are both recorded in the Christian County Recorder of Deeds Book 2018, Page 13885.
- According to the Christian County Assessor database, the property at E 1/2 of the SW 1/4 of the NE 1/4 of Section 15, Township 27, Range 22 was purchased on April 3, 2024, by Xtreme Property Holdings, LLC

GER was not informed by the Chain of Title search of environmental cleanup liens encumbering the Target Property that are filed or recorded under federal, tribal, state, or local law.

4.3 Specialized Knowledge or Experience of the User

The User did not provide information about the Target Property that points to the presence or likely presence of contamination at the Target Property.

4.4 Relationship of the Purchase Price to the Value of the Target Property

Purchase prices that are significantly lower than market value may indicate the presence of hazardous substances or petroleum products. The User indicated that an appraisal was done and the asking price is appropriate for the parcel.

4.5 Other Information

Previous Phase I ESAs were not identified, nor reported during the Phase I ESA and All Appropriate Inquiry process regarding the Target Property

5.0 REGULATORY DATABASE RECORDS REVIEW

GER contracted Environmental Data Resources, Inc. (EDR) to provide available federal, state, and local records to identify sites of known or suspected hazardous waste activity located at or near the Target Property, which could have an adverse impact on the Target Property. GER ordered the EDR Standard Package documents, which include the EDR Radius Map™ Report with Geocheck® (Appendix II(a)), EDR Aerial Photo Decade Package (Appendix II(b)), EDR Historical Topographic Map Report (Appendix II(c)), EDR Certified Sanborn® Map Report (Appendix II(d)), EDR-City Directory Image Report (Appendix II(e)), EDR Vapor Encroachment Screen(Appendix II(f)), and the EDR Ground Water Flow Gradient Map (Appendix II(g)).

5.1 Records Summary

GER obtained the EDR Radius Map™ Report with Geocheck®, included as Appendix II(a), regulatory database report to determine if the Target Property is a listed regulatory site and whether there are mappable regulatory database sites within the specified search radii of the Target Property. The searches of databases of regulatory agencies and the searchable radii, as provided in the Map Findings Summary on pages 4 through 7 in the EDR Radius Map™ Report with Geocheck®, were previously determined by the ASTM Standard Practice E 1527-21 guidance and EDR Standard Package. The acronyms listed in the Map Findings Summary are referenced in the Executive Summary of the same report on pages ES3 through ES6. According to the EDR Radius Map™ Report with Geocheck®, the Target Property was not identified as a mappable site in the mappable regulatory database provided by EDR. The overview and detail maps (Appendix II (a)), confirm mappable sites within the specified search radii, as noted in the table below.

TABLE 2 – EDR Radius Map™ Report with GeoCheck® Identified Mappable Site Types

Standard Environmental Records Mappable Site Type	Total Mapped
UST	1
RCRA NonGen/NLR	1
TOTAL	2

The two mappable features, CASEYS GENERAL STORE #2685 and GIT N GO #128, are both located at 1110 W MT Vernon St, which is 0.215 miles from the target property.

GER did not closely evaluate the mappable sites identified in the EDR Radius Map™ Report with Geocheck® that: 1) were greater than 1/3 of a mile from the Target Property, 2) were determined to be at a lower elevation and/or down-gradient from the Target Property, or 3) a No Further Action (NFA) letter was issued or did not indicate environmental violations indicative of an REC.

Un-mappable sites are environmental risk sites that cannot be plotted with confidence but can be located by zip code or city name. In general, a site cannot be geocoded because of inaccurate or missing location information in the record provided by the agency. There was one un-mapped dry cleaner site identified in the EDR Radius Map™ Report with Geocheck®.

5.2 Aerial Photographs

GER reviewed the EDR Aerial Photo Decade Package (Appendix II(b)), which included aerial photos for the years 1953, 1959, 1964, 1970, 1979, 1985, 1990, 1996, 2006, 2009, 2012, 2016, and 2020. Based on that review, the Target Property has remained undeveloped since 1956 except for farming.

5.3 Historical Topographic Maps

GER reviewed the EDR Historical Topographic Map Report (Appendix II(c)), which contains topographic base maps for the years 1886, 1938, 1960, 1970, 1979, 2015, 2017, and 2021. Buildings, structures, or other evidence of development were not identified on the Target Property through 2021.

5.4 Sanborn Fire Insurance Maps

The Certified Sanborn® Map Report was reviewed to determine past uses of the Target Property and surrounding properties (Appendix II(d)). The report certifies that the complete holdings of the Sanborn Library, LLC collection (i.e., fire insurance maps) were searched based on the supplied Target Property information. Fire insurance maps covering the Target Property were not identified.

5.5 City Directories

GER reviewed the EDR-City Directory Image Report (Appendix II(e)) containing data for 1981, 1985, 1988, 1992, 1995, 2000, 2005, 2010, 2014, 2017, and 2020 to assess the existence of past uses associated with the Target Property. According to the EDR-City Directory Image Report, the Target Property did not indicate previous ownerships that would raise concern for RECs.

5.6 Vapor Encroachment Screen

GER utilized the web based, interactive EDR Vapor Encroachment Screen (Appendix II(f)) to ascertain if vapor migration associated with chemicals of concern is an issue for the Target Property. In general accordance with the ASTM E 2600-10 Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions, only the qualified mappable sites that are located within one-third of a mile of the Target Property are required to be evaluated. Mappable sites were excluded from the EDR Vapor Encroachment Screen that: 1) were greater than 1/3 of a mile from the Target Property, 2) were determined to be at a lower elevation and/or down-gradient from the Target Property, or 3) an NFA letter was issued or did not indicate environmental violations indicative of an REC. The Vapor Encroachment Screen did not identify issues regarding vapor encroachment.

5.7 E-START and GeoSTRAT

GER reviewed the Missouri Environmental Site Tracking and Research Tool (E-START), a web-based program provided by the Missouri Department of Natural Resources, Hazardous Waste Program (Appendix III(a)). The following sites were identified within a 1-mile radius of the Target Property by E-START:

1. One Operating UST Facility with No Known Release is located approximately ¼ mile southeast from the Target Property

2. One Operating UST Facility with No Known Release is located approximately ¼ mile southwest from the Target Property
3. One Operating UST Facility with No Further Action Letter Issued with Restriction is located approximately ¾ mile southeast from the Target Property
4. One Operating UST Facility with No Known Release is located approximately 1 mile east from the Target Property
5. One Completed Hazardous Substance Investigation and Cleanup Site is located approximately 1 mile southwest of the Target Property

Additional types of sites are not identified by E-START.

GER also reviewed the Missouri Geosciences Technical Resource Assessment Tool (GeoSTRAT), a web-based program provided by the Missouri Department of Natural Resources to find locations of springs, losing and gaining streams, mines, sinkholes, and geologic information including geologic maps, drilling records, and well records. This database is also presented in Appendix III(b). The GeoSTRAT database did not document any record of these features on the Target Property. However, there is a record of 53 water wells, 11 abandoned wells, one heat pump well, 44 sinkholes, five losing or gaining streams, and the Sac River Fault within a 1-mile radius of the Target Property. GeoSTRAT does not document mines or prospects on or near the Target Property.

6.0 SITE RECONNAISSANCE

On June 19, 2024, GER environmental staff, Gary Pendergrass, P.E., R.G., Jacob Fitzpatrick, E.I., and Christine Houts visited the Target Property to check for observable recognized environmental conditions (RECs). Access to the Target Property was gained at the northeast corner of the Target Property, where the curb, abutting Leeann Drive, had ended. (Figure 2). GER completed the site visit and did not note any observable RECs. The site was undeveloped and mostly grass (hay) pasture.

The western and northern sides of the Target Property are edged with a tree line and livestock fencing. The east side of the property is bound by North Leeann Drive. The southern perimeter is at the center of the undeveloped parent tract of land, on which the Target Property is located. The tree line was also walked to determine if any RECs were hidden by the foliage. An area of (shallow) ponded water was located at the south edge of the Target Property. There are three curb inlet drains, overhead electric, and a manhole on the east perimeter along North Leeann Drive. A detention basin and outlet structure was identified just west of the Target Property and appears to discharge stormwater onto the Target Property. A brush pile of debris and mattresses was located inside the detention basin, off the Target Property. Appendix V contains Representative Photographs taken from the corners of the Target Property and one to show the detention basin located on the property to the west.

The Target Property is approximately 5 acres in size. The area slopes gently to the northeast. The property to the north is mostly undeveloped with a residence near the end of North Leeann Drive. The properties to the west include a residence, church, and detention basin. The property to the south is undeveloped grass pasture. Properties to the east, across North Leeann Drive, are residential homes.

7.0 INTERVIEWS

On June 21, 2024, GER submitted an electronic mail interview to the City of Nixa Fire Department, Public Works, and Code Compliance. The interview was conducted to meet the requirements of the Phase I ESA and All Appropriate Inquiry process. Mr. Justin Orf, P.E., City of Nixa Project Facilitator, returned the completed interview, on behalf of Public Works and Code Compliance, by electronic mail on July 3, 2024. The respondents did not indicate any knowledge of environmental liens, spills, or chemical releases associated with the Target Property (Appendix IV(b), (c)).

Also on July 3, 2024, Ms. Whitney Weaver, Assistant Fire Chief of the Nixa Fire Department, returned a completed interview by electronic mail (Appendix IV(d)). The interview was conducted to meet the requirements of the Phase I ESA and All Appropriate Inquiry process. The respondent stated that they do not keep records for any property that does not have a 911 address. The respondent stated that they had no records of chemicals, releases, or environmental cleanups.

On June 27, 2024, GER provided questions, in general accordance with *Section 10. Interviews With Past and Present Owners and Occupants* beginning on page 21 of the ASTM E 1527-21, by electronic mail correspondence to Mr. Hunter Lampe, Xtreme Property Holdings, LLC. Mr. Lampe provided responses to the Owner questionnaire (Appendix IV(a)) via phone interview on July 2, 2024. His responses did not indicate knowledge of environmental liens, spills or chemical releases associated with the Target Property.

8.0 EVALUATION

8.1 Findings

No 'notable' findings were identified through the Phase I ESA and All Appropriate Inquiry process for this report. The report must be read in its entirety to develop a comprehensive understanding of the ESA information process.

8.2 Opinions

GER's opinions pertaining to the impact on the Target Property of the conditions identified within this report, and our rationale for concluding whether a condition is or is not a REC, is included in the report where those conditions were originally discussed.

ASTM E 1527-21 section 3.2.73 defines recognized environmental conditions as "(1) the presence of hazardous substances or petroleum products in, on, or at the subject property due to a release to the environment; (2) the likely presence of hazardous substances or petroleum products in, on, or at the subject property due to a release or likely release to the environment; or (3) the presence of hazardous substances or petroleum products in, on, or at the subject property under conditions that pose a material threat of a future release to the environment."

It is GER's opinion that RECs are not associated with the Target Property based on the findings identified within this Phase I ESA report.

8.3 Conclusions

GER has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Standard Practice E 1527-21 of the Target Property at the north end (5 acres) of 1209 W Mt. Vernon St, Nixa MO, in the NE ¼, SW ¼, NE ¼, Section 15, T27N, R22W, Christian County, Missouri 65714. Exceptions to or deletions from this practice are described in this report. This assessment has resulted in no evidence of 'potential' RECs in connection with the Target Property (See Section 1.0 Executive Summary).

8.4 Data Gaps and Data Failures

Data gaps and data failures are defined in the ASTM E 1527-21 as follows:

3.2.18 data failure: failure to achieve the historical research objective in 8.3.1 even after reviewing the standard historical resources in 8.3.4.1 through 8.3.4.8 that are reasonably ascertainable and likely to be useful. Data failure is one type of data gap. See 8.3.6 (ASTM, E 1527-21).

3.2.19 data gap: a lack of or inability to obtain information required by this practice despite good faith efforts by the environmental professional to gather such information. Data gaps may result from incompleteness in any of the activities required by this practice, including, but not limited to, site reconnaissance (for example, an inability to conduct the site visit), and interviews (for example, an inability to interview the key site manager, regulatory officials, etc.). See 12.6 (ASTM, E 1527-21).

The following data failures in the information researched for the Target Property and this Phase I ESA report are listed below:

- Interviews were not conducted with the past owners of the Target Property as it was not reasonably ascertainable.
- A Sunshine Law request to MDNR was not made due to the anticipated response time, which would have extended beyond the time frame dictated for preparation of this Phase I ESA.
- Title records provided to GER do not go back to 1940. There is a data gap from 1940-1949 in the Chain-of-Title.

8.5 Recommendations

GER does not recommend further investigation of the Target Property to detect hazardous substances or petroleum products.

8.6 References

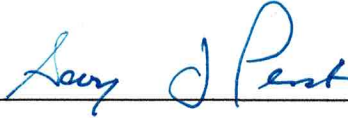
References used in this Phase I ESA report are provided in Appendix VII.

8.7 Environmental Professional Statement

I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in §312.10 of this part.

I have the specific qualifications based on education, training, and experience to assess a property of the nature, history and setting of the subject property. I have developed, provided oversight, and performed the all-appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312. Qualifications (Resumes) of the environmental professionals contributing to this Phase I ESA Report are included in Appendix VI.

Signed: _____



Date: _____

07-15-2024

Gary J. Pendergrass, P.E., R.G., Senior Project Manager
GREDELL Engineering Resources, Inc.
Author of Report

9.0 NON-SCOPE SERVICES

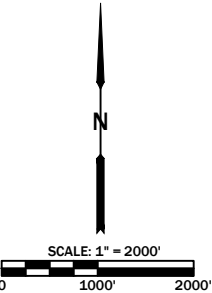
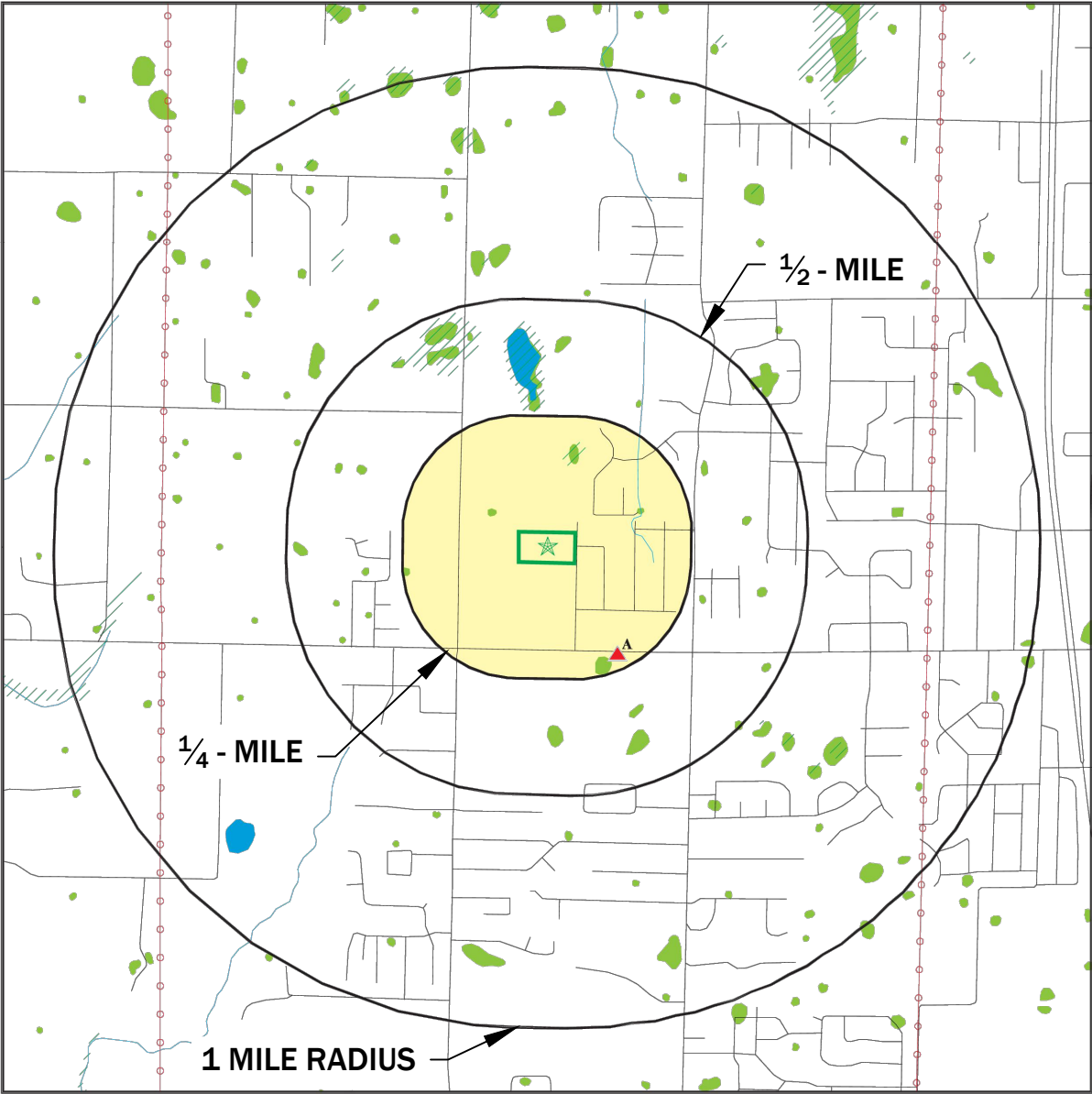
GER did not assess conditions, which are considered 'Non-Scope Services' per the ASTM E 1527-21 standard. These conditions include asbestos, radon, lead-based paint, lead in drinking water, indoor air quality, mold, and requirements of the National Environmental Policy Act (NEPA).

The scope of services did not include verification for Section 404 of the Clean Water Act Nationwide Permit (NWP) 39 – Commercial and Institutional Developments or the preparation of a Section 404 of the Clean Water Act Individual Permit.

The scope of services did not include development of mitigation measures, if required, for potential impacts to Endangered Species or Waters of the United States.

FIGURES

OVERVIEW MAP - 7682213.2S



- LEGEND:**
- Target Property
 - Sites at elevations higher than or equal to the target property
 - Power transmission lines
 - 0.2% Annual Chance Flood Hazard
 - National Wetland Inventory

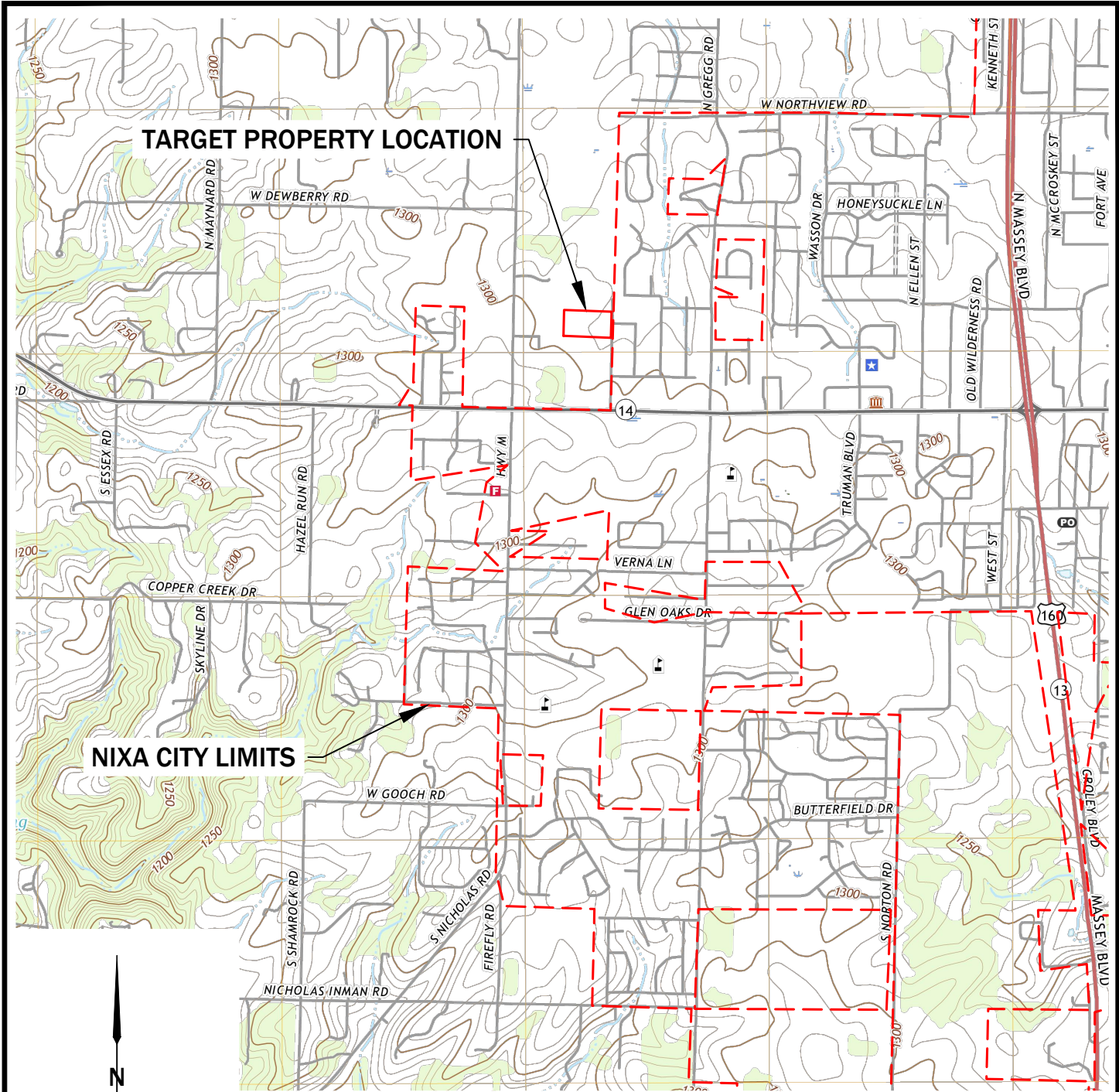
CITY OF NIXA - NEW POLICE STATION
PHASE I ENVIRONMENTAL
SITE ASSESSMENT

FIGURE 1
OVERVIEW MAP



CIVIL • GEOTECHNICAL • ENVIRONMENTAL • GEOLOGY • EARTH SCIENCES
1505 East High Street Telephone: (573) 659-9078
Jefferson City, Missouri Facsimile: (573) 659-9079
MO CORP. ENGINEERING LICENSE NO. E-2001001669-D

DATE 06/2024	SCALE 1" = 2000'	PROJECT NAME CITY OF NIXA - PH1 ESA	REVISION N/A
DRAWN CM	APPROVED GP	FILE NAME SITE-PLAN-PH1-01	SHEET # 1 OF 3



NIXA CITY LIMITS

TARGET PROPERTY LOCATION



SCALE: 1" = 2000'
0 1000' 2000'

**USGS NIXA QUADRANGLE
MISSOURI, 7.5-MINUTE SERIES
NE 1/4, SW 1/4, NE 1/4 SECTION 15 T27N R22W**

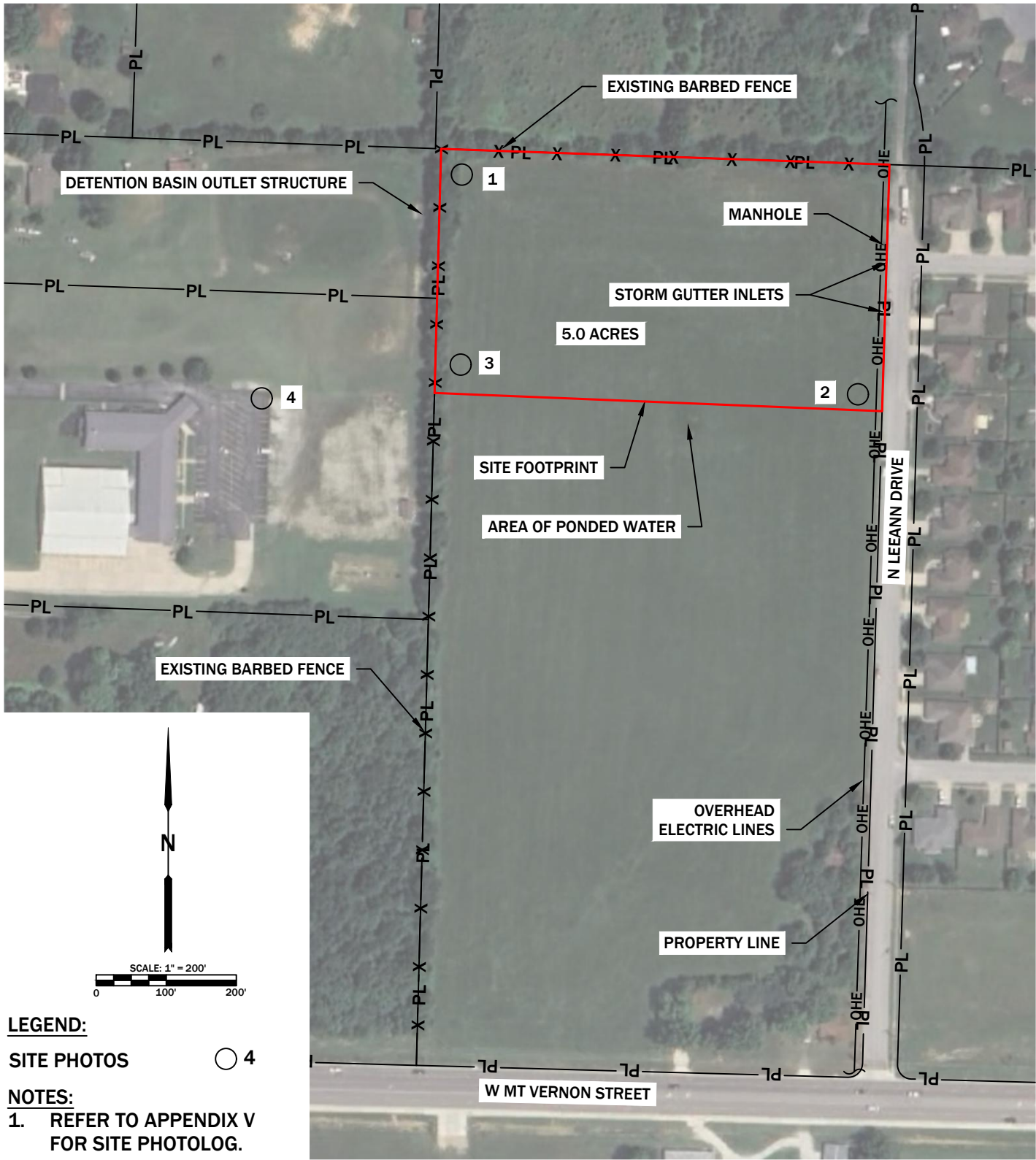
**CITY OF NIXA - NEW POLICE STATION
PHASE I ENVIRONMENTAL
SITE ASSESSMENT**

**FIGURE 2
PROPERTY LOCATION MAP**



CIVIL • GEOTECHNICAL • ENVIRONMENTAL • GEOLOGY • EARTH SCIENCES
1505 East High Street Telephone: (573) 659-9078
Jefferson City, Missouri Facsimile: (573) 659-9079
MO CORP. ENGINEERING LICENSE NO. E-2001001669-D

DATE 06/2024	SCALE 1" = 2000'	PROJECT NAME CITY OF NIXA - PH1 ESA	REVISION N/A
DRAWN CM	APPROVED GP	FILE NAME SITE-PLAN-PH1-02	SHEET # 2 OF 3



CITY OF NIXA - NEW POLICE STATION
PHASE I ENVIRONMENTAL
SITE ASSESSMENT

FIGURE 3
PROPERTY AERIAL DETAIL MAP



CIVIL • GEOTECHNICAL • ENVIRONMENTAL • GEOLOGY • EARTH SCIENCES
1505 East High Street Telephone: (573) 659-9078
Jefferson City, Missouri Facsimile: (573) 659-9079
MO CORP. ENGINEERING LICENSE NO. E-2001001669-D

DATE 06/2024	SCALE 1" = 200'	PROJECT NAME CITY OF NIXA - PH1 ESA	REVISION N/A
DRAWN CM	APPROVED GP	FILE NAME SITE-PLAN-PH1-03	SHEET # 3 OF 3

APPENDICES

Appendix I

Chain of Title and County Assessor's
Legal Description of Parcel

Property Number

10-0.5-15-001-001-014.000

Owner - Mailing Address

XTREME PROPERTY HOLDINGS LLC
C/O:
PO BOX 173

Situs Address

1209 W MT VERNON ST
DBA:

NIXA MO 65714-0000

Property Description

E2 SW4 NE4

Lot Size

Deed Acre

Calc Acre

19.70

0.00

SEC-TWP-RNG

Land Type

Book-Page

Date Acq

City

School

Road

Fire

MCD

15-27-22

RL

2024-003173

2024-04-03

0

2

2

2

9

TYPE	LAND VAL	STRUCT VAL	TOTAL VAL	TOTAL ASSESS
RES	\$20,000	\$66,800	\$86,800	\$16,490
AGR	\$8,900	\$4,800	\$13,700	\$1,640
COMM	\$0	\$0	\$0	\$0
VAC	\$0	\$0	\$0	\$0
TOTALS	\$28,900	\$71,600	\$100,500	\$18,130

#	AG LAND ACRES	GRADE	PER ACRE	VALUATION
1	11.70	3	644.96	7,546
2	7.00	5	191	1,337

LAND DATA

CLASS	TYPE	AVG	DF	SFF	FF/ACRES	DEPTH	UNIT PRICE	DEPTH FAC	ADJ FAC	ADJ AMT	VALUATION
1	8	0	0	0	1.00	0.0	20000.00	0.00	0.00	0.00	20000.00

IMPROVEMENTS

Bldg No.	Struct	Yr Built	Yr Rem	Eff Yr	Stor	Bd Rm	Room	Class RateCd	Class Units	Const Units	Total Units	Base Rate	Adj Rate	Index	SqFt Cost	Base Area	Adj Area	Base Cost	Extra Feat	Replace Cost	Phy Cond	Adj Cond	Appraised Value
1	1-RES	1950	0	0	1	2	4	D/H	0	102	102	19.14	19.52	2.60	50.75	1032	1808	91756.00	11076	102832.00	65	65	66840.00
10	5-GAR	1960	0	0	1	0	1	L4	0	52	52	9.12	9.12	2.00	18.24	572	572	10433.28	0	10433.28	40	40	4170.00
11	21-BARN	1975	0	0	1	0	1	B-42	0	26	26	2.58	2.58	2.00	5.16	832	1152	5944.32	0	5944.32	10	10	590.00

Str#: 1	RES	Yr: 1950	Base: 1,032	Adj: 1,808	CL: D
Str#: 10	GAR	Yr: 1960	Base: 572	Adj: 572	CL: L4
Str#: 11	BARN	Yr: 1975	Base: 832	Adj: 1,152	CL: B-42

Property Number

10-0.5-15-001-001-014.000

Owner - Mailing Address

FARTHING, SHERYL K
C/O:
1115 S NICHOLAS RD

NIXA MO 65714-0000

Situs Address

1209 MT VERNON
DBA:

Property Description

E2 SW4 NE4

Lot Size

Deed Acre

Calc Acre

19.70

0.00

SEC-TWP-RNG

Land Type

Book-Page

Date Acq

City

School

Road

Fire

MCD

15-27-22

RL

0282-004379

1992-02-25

0

2

2

2

9

TYPE	LAND VAL	STRUCT VAL	TOTAL VAL	TOTAL ASSESS
RES	\$20,000	\$66,800	\$86,800	\$16,490
AGR	\$8,900	\$4,800	\$13,700	\$1,640
COMM	\$0	\$0	\$0	\$0
VAC	\$0	\$0	\$0	\$0
TOTALS	\$28,900	\$71,600	\$100,500	\$18,130

#	AG LAND ACRES	GRADE	PER ACRE	VALUATION
1	11.70	3	644.96	7,546
2	7.00	5	191	1,337

LAND DATA

CLASS	TYPE	AVG	DF	SFF	FF/ACRES	DEPTH	UNIT PRICE	DEPTH FAC	ADJ FAC	ADJ AMT	VALUATION
1	8	0	0	0	1.00	0.0	20000.00	0.00	0.00	0.00	20000.00

IMPROVEMENTS

Bldg No.	Struct	Yr Built	Yr Rem	Eff Yr	Stor	Bd Rm	Room	Class RateCd	Class Units	Const Units	Total Units	Base Rate	Adj Rate	Index	SqFt Cost	Base Area	Adj Area	Base Cost	Extra Feat	Replace Cost	Phy Cond	Adj Cond	Appraised Value
1	1-RES	1950	0	0	1	2	4	D/H	0	102	102	19.14	19.52	2.60	50.75	1032	1808	91756.00	11076	102832.00	65	65	66840.00
10	5-GAR	1960	0	0	1	0	1	L4	0	52	52	9.12	9.12	2.00	18.24	572	572	10433.28	0	10433.28	40	40	4170.00
11	21-BARN	1975	0	0	1	0	1	B-42	0	26	26	2.58	2.58	2.00	5.16	832	1152	5944.32	0	5944.32	10	10	590.00

2-25-92

#1471

BENEFICIARY DEED

THIS DEED, made on the 23rd day of January 1992, wherein Max White and Ineze White, husband and wife hereinafter referred to as GRANTOR, and Sheryl K. Farthing hereinafter referred to as GRANTEE BENEFICIARY, whether one or more. The mailing address of said first named GRANTEE BENEFICIARY is Rt. 2, Box 21, Nixa, Mo. 65714.

WITNESSETH, that the said GRANTOR hereby revokes any and all prior beneficiary designations on the real estate hereinafter described, if any, and without consideration, does by these presents, GRANT, ASSIGN, CONVEY, AND CONFIRM unto the said GRANTEE BENEFICIARY, as tenants in common the following described lots, tracts or parcels of land, lying being and situate in the County of Christian and State of Missouri, as tenants in common, to-wit:

All of the East Half of the Southwest Quarter of the Northeast Quarter (E $\frac{1}{2}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$) of Section 15, Township 27, Range 22, containing 20 acres more or less.

P. BRUCE HARRIS
RECORDER OF DEEDS
CHRISTIAN COUNTY

Filed this 25 day
Feb 1992
8:40 A.M.

TO HAVE AND TO HOLD the premises aforesaid, with all and singular the rights, privileges, appurtenances, and immunities thereto belonging or in anywise appertaining, unto the said GRANTEE BENEFICIARY, and unto their heirs and assigns forever.

THIS BENEFICIARY DEED is executed pursuant to Section 461.025 of the Revised Statutes of Missouri. It is not effective to convey title to the above described real estate until GRANTOR'S death.

IN WITNESS WHEREOF, this deed has been executed the day and year first above written.

Max White
Max White
Ineze White

STATE OF MISSOURI
COUNTY OF CHRISTIAN } ss

On this 13th day of February, 1992 before me personally appeared Max White and Ineze White, his wife to me known to be the person sdescribed in and who executed the foregoing instrument, and acknowledged that they executed the same as their free act and deed.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal, at my office in Ozark, MO the day and year first above written.

My Commission expires:
Sept. 30, 1995

Marvin Allen
Marvin Allen Notary Public



Electronically Recorded
Meridian Title Company LLC

Kelly Hall
Recorder of Deeds

RECORDER OF DEEDS CERTIFICATE

EXEMPT DOCUMENT

This document has been recorded under exempt status pursuant to RSMo 59.310.4 and this certificate has been added to your document in compliance with the laws of the State of Missouri.

Kelly Blunt Hall
RECORDER OF DEEDS
Christian County

THIS PAGE HAS BEEN ADDED AS THE FIRST PAGE OF YOUR DOCUMENT
DO NOT REMOVE THIS PAGE

MISSOURI

CERTIFICATION OF DEATH

DATE FILED: MAY 7, 2013

STATE FILE NUMBER: 124-13-013258

DECEDENT NAME: ALICE INEZE WHITE

SEX: FEMALE

DATE OF
DEATH: APRIL 5, 2013

COUNTY
OF DEATH: GREENE

DATE OF
BIRTH: SEPTEMBER 20, 1918

MARITAL
STATUS: WIDOWED

EVER IN
ARMED FORCES: NO

SOCIAL
SECURITY NUMBER: [REDACTED]

RESIDENCE
ADDRESS: 1209 WEST MOUNT VERNON
NIXA, MISSOURI

SURVIVING SPOUSE:
(IF WIFE, MAIDEN NAME):

FUNERAL HOME: ADAMS FUNERAL HOME

UNDERLYING CAUSE (ICD CODE): (F03) MANNER: NATURAL

DEMENTIA

SIG COND: CVA; HTN; CAD

ISSUED ON BEHALF OF MO DEPT HEALTH & SENIOR SERVICES: CHRISTIAN

THIS IS A TRUE CERTIFICATION OF NAME AND DEATH FACTS AS RECORDED BY THE BUREAU OF VITAL RECORDS, JEFFERSON CITY, MISSOURI.

DATE ISSUED: OCTOBER 16, 2018

Craig B. Ward
Craig B. Ward
State Registrar of Vital Statistics



THE REPRODUCTION OF THIS DOCUMENT IS PROHIBITED BY LAW.
ANY ALTERATION OR ERASURE VOIDS THIS CERTIFICATION.



Electronically Recorded
Meridian Title Company LLC

Kelly Hall
Recorder of Deeds

RECORDER OF DEEDS CERTIFICATE

EXEMPT DOCUMENT

This document has been recorded under exempt status pursuant to RSMo 59.310.4 and this certificate has been added to your document in compliance with the laws of the State of Missouri.

Kelly Blunt Hall
RECORDER OF DEEDS
Christian County

**THIS PAGE HAS BEEN ADDED AS THE FIRST PAGE OF YOUR DOCUMENT
DO NOT REMOVE THIS PAGE**

MISSOURI

CERTIFICATION OF DEATH

DATE FILED: NOVEMBER 13, 2000 STATE FILE NUMBER: 124-00-028268

DECEDENT NAME: MAX D WHITE

SEX: MALE

DATE OF
DEATH: OCTOBER 22, 2000

COUNTY
OF DEATH: GREENE

DATE OF
BIRTH: APRIL 1, 1914

MARITAL
STATUS: MARRIED

EVER IN
ARMED FORCES: NO

SOCIAL
SECURITY NUMBER: [REDACTED]

RESIDENCE
ADDRESS: 1209 W MT VERNON
NIXA, MISSOURI

SURVIVING SPOUSE:
(IF WIFE, MAIDEN NAME): INEZE RHEA

UNDERLYING CAUSE (ICD CODE): (X599)
EXPOSURE TO UNSPECIFIED FACTOR

ISSUED ON BEHALF OF MO DEPT HEALTH & SENIOR SERVICES: CHRISTIAN

THIS IS A TRUE CERTIFICATION OF NAME AND DEATH FACTS AS RECORDED BY THE BUREAU OF VITAL RECORDS, JEFFERSON CITY, MISSOURI.

DATE ISSUED: OCTOBER 16, 2018

Craig B. Ward
Craig B. Ward
State Registrar of Vital Statistics



THE REPRODUCTION OF THIS DOCUMENT IS PROHIBITED BY LAW.
ANY ALTERATION OR ERASURE VOIDS THIS CERTIFICATION.

**CHRISTIAN COUNTY
TAX RECEIPT
2022 REAL ESTATE**



TED NICHOLS COLLECTOR
100 WEST CHURCH ROOM 101
OZARK, MO 65721
(417) 582-4330

PAY TAXES/PRINT RECEIPTS ONLINE at:
www.christiancountycollector.com

FARTHING, SHERYL K
1115 S NICHOLAS RD
NIXA MO 65714-0000

PAID

PARCEL ID#: 10-0.5-15-001-001-014.000
SEC, TWN, RNG: 15-27-22
ACRES: 19.70
TAX DISTRICT#:
SITUS ADDRESS: 1209 MT VERNON, NIXA

E2 SW4 NE4	
	SUBTOTALS
Residential	15,110
Agricultural	1,640
Commercial	0
TOTAL VALUATION	16,750

Tax District	Levy per \$100	Total Tax
STATE	0.0300	5.03
COUNTY REVENUE	0.0446	7.47
LIBRARY	0.1875	31.41
HEALTH	0.0416	6.97
SEN. BILL 40 BOARD	0.0749	12.55
SEN.CITZ.SERV.	0.0469	7.86
NIXA SCHOOL	4.5091	755.27
NIXA FIRE DIST.	0.6911	115.76
AMBULANCE DIST.	0.1242	20.80
JUNIOR COLLEGE	0.1911	32.01
		995.13

Non-clearance of payment voids receipt.

**VALIDATED BY TED NICHOLS
CHRISTIAN COUNTY COLLECTOR**

RECEIPT #: 1589

PAID BY: DENNIS

DATE: 12/15/2022

AMOUNT PAID: 995.13

PAYMENT TYPE: CHK#2036

***REAL ESTATE TAX RECEIPTS CANNOT
BE USED TO LICENSE VEHICLES***

Recording Date/Time: 10/18/2018 at 03:17:19 PM

Instr #: 2018L14025

Book: 2018 Page: 13881

Pages: 6

Fee: \$39.00 S



Electronically Recorded
Meridian Title Company LLC

Kelly Hall
Recorder of Deeds

CCO FORM: RW03
Approved: 12/92 (TLP)
Revised: 03/17 (AR)
Modified:

COUNTY: Christian
ROUTE: 14
PROJECT: _____
FED. PROJECT: J8P3093
PARCEL: 10

GENERAL WARRANTY DEED

(1) PARTIES: THIS AGREEMENT, made this 10th day of September, 2018, by and between DENNIS L. FARTHING AND SHERYL K. FARTHING, HUSBAND AND WIFE, (hereinafter, Grantors), of the County of Christian, and State of Missouri and the STATE OF MISSOURI, acting by and through the MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION, (hereinafter, "Grantee"). *Legal pr 5/6*

GRANTORS ADDRESS: 1115 S. NICHOLAS ROAD NIXA, MO 65714

GRANTEE'S ADDRESS: P.O. BOX 868 SPRINGFIELD, MO 65801

(2) CONSIDERATION: Grantor, in consideration of the sum of TWENTY SEVEN THOUSAND ONE HUNDRED FIFTY AND NO/100 DOLLARS (\$27,150.00), to be paid by the Grantee, the receipt of which is hereby acknowledged, does hereby grant, bargain and sell, convey and confirm to the Grantee fee simple title in the property described in this deed.

(3) PROPERTY DESCRIPTION: Grantors convey to the Grantee the real estate and interests in real estate in the County of Christian, State of Missouri, and described as follows:

SEE EXHIBIT A

Sheryl K. Farthing, being duly sworn on her oath according to law, states that she is the sole surviving heir of Ineze White and that Ineze White died on April 05, 2013 and Ineze White was a single person as the surviving spouse of Max White who died on October 22, 2000.

(4) RIGHTS OF GRANTEE: Grantee shall obtain all rights, privileges, appurtenances and immunities belonging to Grantors, their successors and assigns forever.

(5) WARRANTY: Grantors hereby covenant that they are lawfully seized of an indefeasible estate in fee in the premises herein conveyed. Grantors covenant that they have good right to convey the property. Grantors covenant that the said premises are free and clear of any encumbrances done or suffered by them or those under whom they claim; and that they will warrant and defend the title to said premises unto the Grantee and unto its successors and assigns, forever, against the lawful claims and demands of all persons whomsoever.

(6) DATE: IN WITNESS WHEREOF, the said Grantors executed the above the day and year first above written.

Dennis L. Farthing
Dennis L. Farthing

Sheryl K. Farthing
Sheryl K. Farthing

ACKNOWLEDGEMENT BY INDIVIDUALS

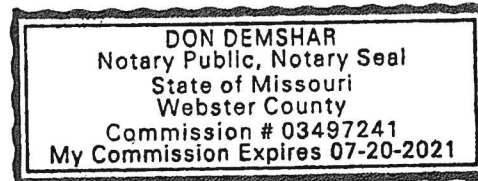
STATE OF Missouri)
COUNTY OF christian)SS

On this 10th day of September, 2018, before me appeared **Dennis L. Farthing and Sheryl K. Farthing**, husband and wife, personally known to me to be the persons who executed the foregoing instrument and acknowledged to me that they executed the same as their free act and deed.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal in the county and state aforesaid the day and year first written above.

Don Demshar
Notary Public Don Demshar



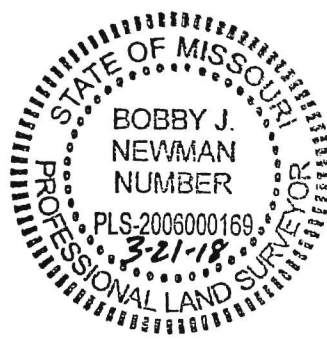
My Commission Expires: _____



Missouri Highways Transportation Commission

Legal Description

Exhibit A

County Christian	Route 14	Project Number J8P3093	Date Prepared 3/20/18
Legal description contained on pages		2 - 3	of 3
Professional Land Surveyor			
Print Name Bobby Newman		MO PLS Number 2006000169	
Signature 		Date 3-21-18	
		Missouri Highways and Transportation Commission 105 West Capital, Jefferson City, MO 65102 888-ASK MODOT (888)275-6636	
			
Only the following legal descriptions contained in this "EXHIBIT A" are authenticated by this seal:			

PARCEL 10

ALL THAT PART OF A TRACT OF LAND LYING IN THE SOUTHWEST ¼ OF THE NORTHEAST ¼ OF SECTION 15, TOWNSHIP 27 NORTH, RANGE 22 WEST, CHRISTIAN COUNTY, MISSOURI, LYING ON THE NORTHERLY OR LEFT SIDE OF THE HEREINAFTER DESCRIBED CENTERLINE OF A HIGHWAY NOW KNOWN AS ROUTE 14 TO WIT:

BEGINNING AT A POINT ON THE EXISTING NORTHERLY BOUNDARY LINE OF ROUTE 14 39.94 FEET LEFT OF ROUTE 14 CENTERLINE STATION 782+50.00; THENCE LEAVING SAID BOUNDARY LINE N 01°32'43" E, A DISTANCE OF 15.06 FEET TO A POINT 55.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 782+50.00; THENCE S 88°27'17" E, A DISTANCE OF 250.00 FEET TO A SET IRON PIN 55.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 785+00.00; THENCE S 01°32'43" W, A DISTANCE OF 5.00 FEET TO A SET IRON PIN 50.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 785+00.00; THENCE S 88°27'17" E, A DISTANCE OF 425.80 FEET TO A SET IRON PIN ON THE WESTERLY BOUNDARY LINE OF LEEANN DRIVE 50.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 789+25.80; THENCE ALONG SAID BOUNDARY LINE S 01°47'39" W, A DISTANCE OF 10.13 FEET TO A POINT ON THE EXISTING NORTHERLY BOUNDARY LINE OF ROUTE 14, 39.87 FEET LEFT OF ROUTE 14 CENTERLINE STATION 789+25.76; THENCE N 88°26'56" W, A DISTANCE OF 675.76 FEET TO THE POINT OF BEGINNING.

THE ABOVE DESCRIBED PARCEL CONTAINS 7450 S.F. MORE OR LESS

ALSO,

PERMANENT DRAINAGE EASEMENT

BEGINNING AT A POINT 55.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 783+65.00; THENCE N 01°32'43" E, A DISTANCE OF 10.00 FEET TO A POINT 65.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 783+65.00; THENCE S 88°27'17" E, A DISTANCE OF 20.00 FEET TO A POINT 65.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 783+85.00; THENCE S 01°32'43" W, A DISTANCE OF 10.00 FEET TO A POINT 55.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 783+85.00; THENCE N 88°27'17" W A DISTANCE OF 20.00 FEET TO THE POINT OF BEGINNING.

THE ABOVE DESCRIBED PARCEL CONTAINS 200 S.F. MORE OR LESS

ALSO,

PERMANENT UTILITY EASEMENT

BEGINNING AT A POINT 50.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 788+66.00; THENCE N 73°06'37" E, A DISTANCE OF 56.92 FEET TO A POINT 68.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 789+20.00; THENCE S 88°27'17" E, A DISTANCE OF 5.88 FEET TO A POINT 68.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 789+25.88; THENCE S 1°47'39" W, A DISTANCE OF 18.00 FEET TO A POINT 50.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 789+25.80; THENCE N 88°27'17" W, A DISTANCE OF 59.80 FEET TO THE POINT OF BEGINNING.

THE ABOVE DESCRIBED PARCEL CONTAINS 591 S.F. MORE OR LESS OF PERMANENT UTILITY EASEMENT.

ALSO,

TEMPORARY EASEMENT

BEGINNING AT A POINT 50.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 786+55.00; THENCE N 01°32'43" E, A DISTANCE OF 20.00 FEET TO A POINT 70.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 786+55.00; THENCE S 88°27'17" E, A DISTANCE OF 30.00 FEET TO A POINT 70.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 786+85.00; THENCE S 01°32'43" W, A DISTANCE OF 20.00 FEET TO A POINT 50.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 786+85.00; THENCE N 88°27'17" W, A DISTANCE OF 30.00 FEET TO THE POINT OF BEGINNING.

P85

ALSO,

BEGINNING AT A POINT 50.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 788+35.00; THENCE N 01°32'43" E, A DISTANCE OF 10.00 FEET TO A POINT 60.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 788+35.00; THENCE S 88°27'17" E, A DISTANCE OF 20.00 FEET TO A POINT 60.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 788+55.00; THENCE S 01°32'43" W, A DISTANCE OF 10.00 FEET TO A POINT 50.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 788+55.00; THENCE N 88°27'17" W, A DISTANCE OF 20.00 FEET TO THE POINT OF BEGINNING.

ALSO,

BEGINNING AT A POINT 50.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 789+20.00; THENCE N 01°32'43" E, A DISTANCE OF 10.00 FEET TO A POINT 60.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 789+20.00; THENCE S 88°27'17" E, A DISTANCE OF 5.85 FEET TO A POINT 60.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 789+25.85; THENCE S 01°47'39" W, A DISTANCE OF 10.00 FEET TO A POINT 50.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 789+25.80; THENCE N 88°27'17" W, A DISTANCE OF 5.80 FEET TO THE POINT OF BEGINNING.

THE ABOVE DESCRIBED PARCELS CONTAIN 859 S.F. MORE OR LESS

UPON COMPLETION AND ACCEPTANCE OF THE PROJECT, THE TEMPORARY EASEMENT RIGHTS IN THE LAST DESCRIBED TRACTS SHALL CEASE AND BE NO LONGER IN EFFECT.

ROUTE 14 CENTERLINE

BEGINNING AT A POINT AT ROUTE 14 CENTERLINE STATION 765+00.00; THENCE ALONG SAID CENTERLINE ON A MISSOURI CENTRAL ZONE GRID BEARING S 88°22'49" E, A DISTANCE OF 1113.60 FEET TO A POINT AT ROUTE 14 CENTERLINE PI EQUATION STATION 776+13.60 BACK EQUALS 776+20.00 AHEAD (SAID POINT ALSO BEING AT THE CENTER OF SECTION 15, TOWNSHIP 27 NORTH, RANGE 22 WEST); THENCE CONTINUING ALONG SAID CENTERLINE S 88°27'17" E, A DISTANCE OF 2669.87 FEET TO A POINT AT ROUTE 14 CENTERLINE PI EQUATION STATION 802+89.87 BACK EQUALS 802+82.50 AHEAD; THENCE CONTINUING ALONG SAID CENTERLINE N 89°58'08" E, A DISTANCE OF 2662.02 FEET TO A POINT AT ROUTE 14 CENTERLINE PI STATION 829+44.52; THENCE CONTINUING ALONG SAID CENTERLINE S 89°52'53" E, A DISTANCE OF 755.48 FEET TO THE POINT OF CENTERLINE TERMINATION AT ROUTE 14 CENTERLINE STATION 837+00.00. (SAID POINT BEING S 28°42'34" E, A DISTANCE OF 1506.18 FEET FROM AN EXISTING LIMESTONE AT THE NORTHEAST CORNER OF THE SOUTHEAST ¼ OF THE NORTHWEST ¼ OF SECTION 14, TOWNSHIP 27 NORTH, RANGE 22 WEST.

THIS CONVEYANCE INCLUDES ALL THE REALTY AND REALTY RIGHTS DESCRIBED IN THE PRECEDING PARAGRAPHS THAT LIE WITHIN THE LIMITS OF A TRACT OF LAND DESCRIBED AND RECORDED WITH THE CHRISTIAN COUNTY RECORDER OF DEEDS IN BOOK 282 AT PAGE 4379.

pg 6



Recording Date/Time: 11/22/2022 at 08:58:31 AM

Instr #: 2022L17221

Book: 2022 Page: 17044

Pages: 6

Fee: \$39.00 S 20220016865

CITY OF NIXA



(SPACE ABOVE RESERVED FOR RECORDER OF DEEDS CERTIFICATION)

Title of Document: Utility Easement

Date of Document: 10/14/2022

Grantor(s): Sheryl K. Farthing

Grantee(s): City of Nixa

Mailing Address: P.O. Box 395 Nixa, MO. 65714

Legal Description: See legal description attached-Exhibit A & Exhibit B

(IF THERE IS NOT SUFFICIENT SPACE ON THIS PAGE FOR THE INFORMATION REQUIRED, STATE THE PAGE REFERENCE WHERE IT IS CONTAINED WITHIN THE DOCUMENT)

Please return to: The City of Nixa
Attn: Bekka Coffey
PO Box 395
Nixa, MO. 65714

**CITY OF NIXA
UTILITY EASEMENT**

THIS AGREEMENT, made on October 14, 2022, by and between **Sheryl K. Farthing**, (GRANTOR), and the **City of Nixa**, a Constitutional Charter City organized under the laws of the State of Missouri, (GRANTEE, with GRANTEE'S mailing address being Route 2, Box 26, Nixa, MO 65714), and GRANTOR does Grant, Bargain, Convey and Confirm unto GRANTEE a perpetual easement (Easement), with the right, privilege, and authority of GRANTEE to excavate, place, bury, construct, operate, patrol, inspect, repair, maintain, relocate, and replace on, in, through or under said Easement, utilities including but not limited to water lines, sewer lines and electric transmission or distribution facilities. These utilities may include, but are not limited to, pipes, risers, manholes, valves, hydrants, poles, structures, crossarms, guys, anchors, wires, cables, conduits, markers, and other components or appurtenances. The Easement is located on lots, tracts, or parcels of land (Property) located in Christian County, Missouri and are described as follows:

See Attachment Exhibit "A" for Legal Description

GRANTOR does grant, bargain, and convey to GRANTEE the right of ingress and egress to, from, and over the Property and the Easement for the purpose of conducting necessary or useful activities for the reasonable operation and maintenance of the utilities place thereon, and the right to assign or grant partially or wholly to others the rights or license to use all or any part of the Easement for the purpose outlined above. GRANTOR covenants that GRANTOR is lawfully seized of an indefeasible estate in fee in the Property; has good right to convey this Easement; and that the Property is free and clear of any encumbrance which will limit or interfere with the right granted to GRANTEE, except as follows:

1. Drainage Easement set forth in instrument recorded in Book 2018, Page 13885.
2. Utility Easement set forth in instrument recorded in Book 2018, Page 13885.

GRANTOR further does convey to GRANTEE the right to remove, using any means typically used, including, but not limited to, machinery, cutting, trimming, or chemical means, trees, shrubbery, brush or other vegetation within 20 feet of the centerline of any Electric System placed within the Easement; and to cut down and remove from time to time all dead, weak, leaning or dangerous trees and other obstructions that are tall enough to strike or endanger the Electric System, or any lines, wires or components thereof.

GRANTOR covenants and agrees that no structure, building, or fixture shall be placed over underground conduits, wires or lines and no structure, building, or fixture shall be constructed, erected, or maintained within the Easement.

Signatures on next page.

IN WITNESS WHEREOF, GRANTOR has set GRANTOR'S hand.

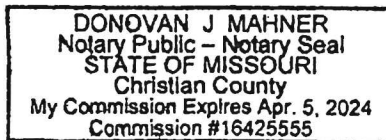
GRANTOR(S)

Sheryl K. Farthing
Sheryl K. Farthing

ACKNOWLEDGEMENT

STATE OF MISSOURI)
) SS
COUNTY OF CHRISTIAN)

THIS CERTIFIES that on this 14 day of October, 2022, before me
the undersigned personally appeared the above-named Sheryl K. Farthing, known to me to be the
person(s) who executed the foregoing instrument.



Donovan J Mahner
Notary Public

EXHIBIT "A"

LEGAL DESCRIPTION
UTILITY EASEMENT
SHERYL K. FARTHING
PARCEL ID 10-0.5-15-001-001-014.000

A TRACT OF LAND LOCATED IN THE NORTHEAST QUARTER OF SECTION 15, TOWNSHIP 27 NORTH, RANGE 22 EAST OF THE 5TH PRINCIPAL MERIDIAN, CHRISTIAN COUNTY, STATE OF MISSOURI, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHWEST CORNER OF THE NORTHEAST QUARTER OF SECTION 15, THENCE ALONG THE WEST LINE OF SAID NORTHEAST QUARTER NORTH 02°00'13" EAST, 55.01 FEET; THENCE SOUTH 88°27'13" EAST, 667.34 FEET TO A POINT MARKING THE INTERSECTION OF THE NORTH RIGHT-OF-WAY LINE OF STATE HIGHWAY 14 WITH THE WEST LINE OF A PROPERTY DESCRIBED IN BOOK 282, PAGE 4379 OF THE CHRISTIAN COUNTY DEED RECORDS AND THE **POINT OF BEGINNING**; THENCE ALONG SAID WEST PROPERTY LINE NORTH 02°01'24" EAST, 10.00 FEET; THENCE SOUTH 88°27'13" EAST, 222.07 FEET; THENCE SOUTH 82°38'15" EAST, 49.36 FEET; THENCE SOUTH 88°27'46" EAST, 366.66 FEET; THENCE SOUTH 88°25'16" EAST, 49.97 FEET; THENCE SOUTH 01°34'44" WEST, 10.00 FEET TO AN ALUMINUM RIGHT-OF-WAY MONUMENT; THENCE ALONG THE NORTH RIGHT-OF-WAY OF STATE HIGHWAY 14 FOR THE FOLLOWING 4 COURSES; NORTH 88°25'16" WEST, 49.97 FEET; THENCE NORTH 88°27'46" WEST, 425.79 FEET; THENCE NORTH 01°38'27" EAST, 5.01 FEET; THENCE NORTH 88°27'13" WEST, 212.14 FEET TO THE POINT OF BEGINNING.

CONTAINING APPROXIMATELY 7,052 SQUARE FEET OR 0.16 ACRES, MORE OR LESS.

THE BASIS OF BEARINGS FOR THIS DESCRIPTION IS PER MISSOURI STATE PLANE COORDINATES, CENTRAL ZONE (2402), NAD 83.

THE PARENT TRACT FOR THE ABOVE DESCRIBED PARCEL IS RECORDED IN BOOK 282, PAGE 4379 OF THE CHRISTIAN COUNTY DEED RECORDS.



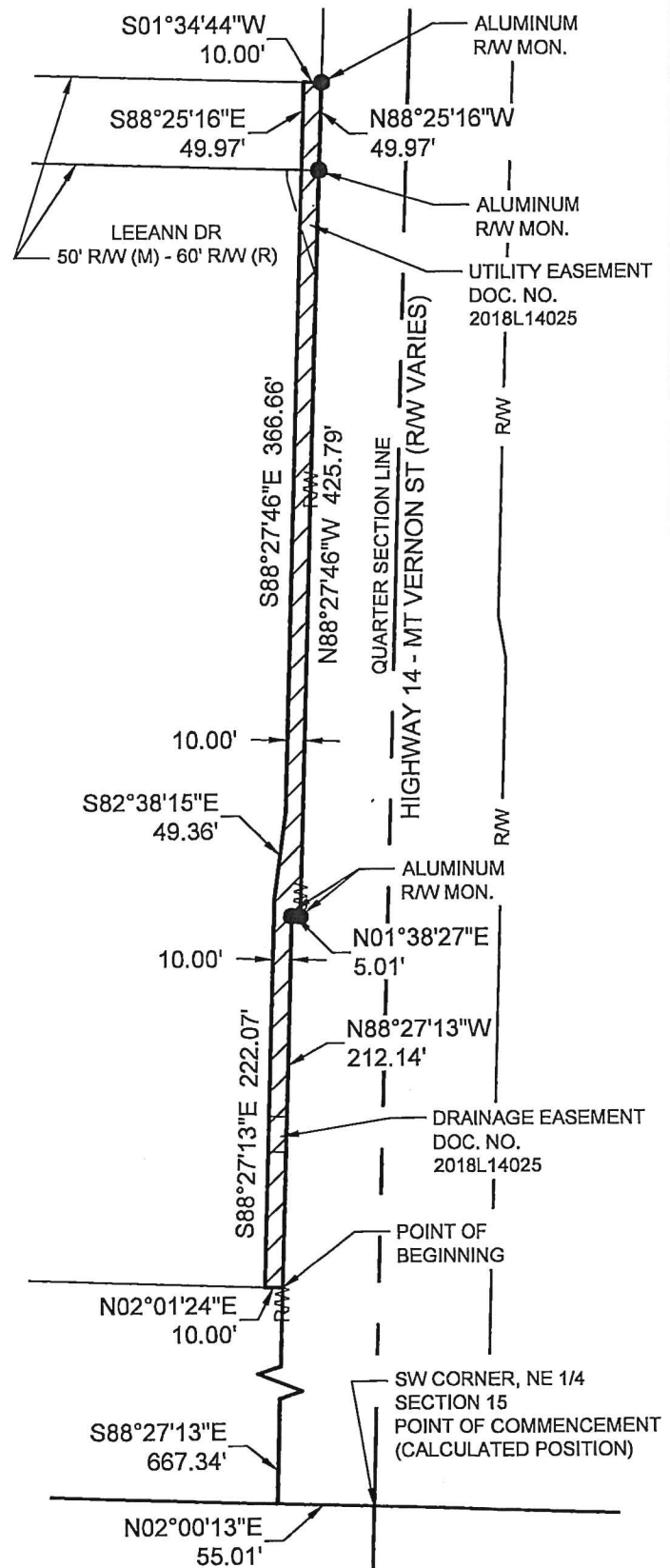
JOSEPH R. PULLIAM - LAND SURVEYOR
MO# PLS-2006016641

SECTION 15
TWP. 27N, RNG. 22E
CHRISTIAN CO., MISSOURI



TOTH
 & ASSOCIATES

1 OF 1



Recording Date/Time: 10/25/2018 at 12:16:04 PM

Instr #: 2018L14320

Book: 2018 Page: 14173

Pages: 5
Fee: \$36.00 S



Electronically Recorded
Meridian Title Company LLC

Kelly Hall
Recorder of Deeds

BENEFICIARY DEED

This Beneficiary Deed, made this 25th day of October, 2018, by Sheryl Kay Farthing, A Married Person, whose address is 1115 S Nicholas Road, Nixa, MO 65714, GRANTOR, party of the first part; of the county of Christian and state of Missouri, for good and valuable consideration, does by these presents GRANT, AND ASSIGN, CONVEY AND CONFIRM, unto Grantor's Beneficiary:

** Grantee*

Chris Edward Farthing, A Married Person, whose address is 511 Hightower, Nixa, MO 65714 and Diana Lynne McCallum, A Married Person, whose address is 4318 Northwest Commons, Pasco, WA 99301, equally, Grantees.

all of the following described real estate situated in the County of Christian and State of Missouri, to wit: See Attached

p8 3-5

TO HAVE AND TO HOLD, but subject to the provisions as set forth herein below, the same, together with all rights and appurtenances to the same belonging, unto the said Grantee Beneficiaries, and to their heirs and assigns forever.

THIS BENEFICIARY DEED is executed pursuant to Section 461.025, Mo. Rev. Stat. Supp. 1991, and shall not take effect to convey title to the above described real estate until Grantor's death, or the death of the last to die of two or more Grantors. This deed will not become

effective unless recorded before Grantor's death, and it is subject to revocation and change in the manner provided by law.

IN WITNESS WHEREOF, Grantor has executed this Beneficiary Deed on the day and year first above written.

Grantor:

✓ Sheryl Kay Farthing

Sheryl Kay Farthing

NOTARY ACKNOWLEDGEMENT

STATE OF MISSOURI

COUNTY OF GREENE

On this 25 day of October, 2018, before me personally appeared Sheryl Kay Farthing, known to me to be the persons described in and who executed the foregoing Beneficiary Deed as Grantor, and acknowledged to me that he executed the same as his voluntary, free act and deed for the purposes therein stated.

IN TESTIMONY WHEREOF, I set my hand and affixed my official seal in the county and state aforesaid, on the day and year first above written.

Jonna M Steinert
Notary Public

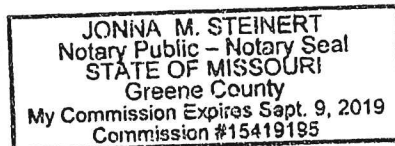
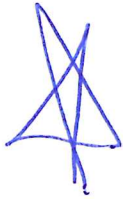


Exhibit A



All of the East Half of the Southwest Quarter of the Northeast Quarter (E1/2 SW1/4 NE1/4) of Section 15, Township 27, Range 22, containing 20 acres more or less

Less and Except

PARCEL 10

ALL THAT PART OF A TRACT OF LAND LYING IN THE SOUTHWEST ¼ OF THE NORTHEAST ¼ OF SECTION 15, TOWNSHIP 27 NORTH, RANGE 22 WEST, CHRISTIAN COUNTY, MISSOURI, LYING ON THE NORTHERLY OR LEFT SIDE OF THE HEREINAFTER DESCRIBED CENTERLINE OF A HIGHWAY NOW KNOWN AS ROUTE 14 TO WIT:

BEGINNING AT A POINT ON THE EXISTING NORTHERLY BOUNDARY LINE OF ROUTE 14 39.94 FEET LEFT OF ROUTE 14 CENTERLINE STATION 782+50.00; THENCE LEAVING SAID BOUNDARY LINE N 01°32'43" E, A DISTANCE OF 15.06 FEET TO A POINT 55.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 782+50.00; THENCE S 88°27'17" E, A DISTANCE OF 250.00 FEET TO A SET IRON PIN 55.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 785+00.00; THENCE S 01°32'43" W, A DISTANCE OF 5.00 FEET TO A SET IRON PIN 50.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 785+00.00; THENCE S 88°27'17" E, A DISTANCE OF 425.80 FEET TO A SET IRON PIN ON THE WESTERLY BOUNDARY LINE OF LEEANN DRIVE 50.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 789+25.80; THENCE ALONG SAID BOUNDARY LINE S 01°47'39" W, A DISTANCE OF 10.13 FEET TO A POINT ON THE EXISTING NORTHERLY BOUNDARY LINE OF ROUTE 14, 39.87 FEET LEFT OF ROUTE 14 CENTERLINE STATION 789+25.76; THENCE N 88°26'56" W, A DISTANCE OF 675.76 FEET TO THE POINT OF BEGINNING.

THE ABOVE DESCRIBED PARCEL CONTAINS 7450 S.F. MORE OR LESS

ALSO,

PERMANENT DRAINAGE EASEMENT

BEGINNING AT A POINT 55.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 783+65.00; THENCE N 01°32'43" E, A DISTANCE OF 10.00 FEET TO A POINT 65.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 783+65.00; THENCE S 88°27'17" E, A DISTANCE OF 20.00 FEET TO A POINT 65.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 783+85.00; THENCE S 01°32'43" W, A DISTANCE OF 10.00 FEET TO A POINT 55.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 783+85.00; THENCE N 88°27'17" W A DISTANCE OF 20.00 FEET TO THE POINT OF BEGINNING.

THE ABOVE DESCRIBED PARCEL CONTAINS 200 S.F. MORE OR LESS

ALSO,

ps 3

PERMANENT UTILITY EASEMENT

BEGINNING AT A POINT 50.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 788+66.00; THENCE N 73°06'37" E, A DISTANCE OF 56.92 FEET TO A POINT 68.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 789+20.00; THENCE S 88°27'17" E, A DISTANCE OF 5.88 FEET TO A POINT 68.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 789+25.88; THENCE S 1°47'39" W, A DISTANCE OF 18.00 FEET TO A POINT 50.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 789+25.80; THENCE N 88°27'17" W, A DISTANCE OF 59.80 FEET TO THE POINT OF BEGINNING.

THE ABOVE DESCRIBED PARCEL CONTAINS 591 S.F. MORE OR LESS OF PERMANENT UTILITY EASEMENT.

ALSO,

TEMPORARY EASEMENT

BEGINNING AT A POINT 50.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 786+55.00; THENCE N 01°32'43" E, A DISTANCE OF 20.00 FEET TO A POINT 70.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 786+55.00; THENCE S 88°27'17" E, A DISTANCE OF 30.00 FEET TO A POINT 70.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 786+85.00; THENCE S 01°32'43" W, A DISTANCE OF 20.00 FEET TO A POINT 50.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 786+85.00; THENCE N 88°27'17" W, A DISTANCE OF 30.00 FEET TO THE POINT OF BEGINNING.

ALSO,

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ALSO,

BEGINNING AT A POINT 50.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 789+20.00; THENCE N 01°32'43" E, A DISTANCE OF 10.00 FEET TO A POINT 60.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 789+20.00; THENCE S 88°27'17" E, A DISTANCE OF 5.85 FEET TO A POINT 60.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 789+25.85; THENCE S 01°47'39" W, A DISTANCE OF 10.00 FEET TO A POINT 50.00 FEET LEFT OF ROUTE 14 CENTERLINE STATION 789+25.80; THENCE N 88°27'17" W, A DISTANCE OF 5.80 FEET TO THE POINT OF BEGINNING.

THE ABOVE DESCRIBED PARCELS CONTAIN 859 S.F. MORE OR LESS

UPON COMPLETION AND ACCEPTANCE OF THE PROJECT, THE TEMPORARY EASEMENT RIGHTS IN THE LAST DESCRIBED TRACTS SHALL CEASE AND BE NO LONGER IN EFFECT.

PS 4

ROUTE 14 CENTERLINE

BEGINNING AT A POINT AT ROUTE 14 CENTERLINE STATION 765+00.00; THENCE ALONG SAID CENTERLINE ON A MISSOURI CENTRAL ZONE GRID BEARING S 88°22'49" E, A DISTANCE OF 1113.60 FEET TO A POINT AT ROUTE 14 CENTERLINE PI EQUATION STATION 776+13.60 BACK EQUALS 776+20.00 AHEAD (SAID POINT ALSO BEING AT THE CENTER OF SECTION 15, TOWNSHIP 27 NORTH, RANGE 22 WEST); THENCE CONTINUING ALONG SAID CENTERLINE S 88°27'17" E, A DISTANCE OF 2669.87 FEET TO A POINT AT ROUTE 14 CENTERLINE PI EQUATION STATION 802+89.87 BACK EQUALS 802+82.50 AHEAD; THENCE CONTINUING ALONG SAID CENTERLINE N 89°58'08" E, A DISTANCE OF 2662.02 FEET TO A POINT AT ROUTE 14 CENTERLINE PI STATION 829+44.52; THENCE CONTINUING ALONG SAID CENTERLINE S 89°52'53" E, A DISTANCE OF 755.48 FEET TO THE POINT OF CENTERLINE TERMINATION AT ROUTE 14 CENTERLINE STATION 837+00.00. (SAID POINT BEING S 28°42'34" E, A DISTANCE OF 1506.18 FEET FROM AN EXISTING LIMESTONE AT THE NORTHEAST CORNER OF THE SOUTHEAST ¼ OF THE NORTHWEST ¼ OF SECTION 14, TOWNSHIP 27 NORTH, RANGE 22 WEST.

THIS CONVEYANCE INCLUDES ALL THE REALTY AND REALTY RIGHTS DESCRIBED IN THE PRECEDING PARAGRAPHS THAT LIE WITHIN THE LIMITS OF A TRACT OF LAND DESCRIBED AND RECORDED WITH THE CHRISTIAN COUNTY RECORDER OF DEEDS IN BOOK 282 AT PAGE 4379.

ps

118-504
12-14-49

This Indenture, Made on the 14th day of December, A. D. One Thousand Nine Hundred and Forty-nine, by and between Reba Eoff and Everett Eoff, her husband of the County of Christian and State of Missouri, parties of the first part, and Max White and Ineze White, husband and wife of the County of Christian in the State of Missouri, parties of the second part:

WITNESSETH, That the said parties of the first part, in consideration of the sum of Three Thousand (\$3000.00) DOLLARS, to them paid by the said parties of the second part, the receipt of which is hereby acknowledged, do by these presents GRANT, BARGAIN AND SELL, CONVEY AND CONFIRM, unto the said parties of the second part, their heirs and assigns, the following described Lots, Tracts or Parcels of Land lying, being and situate in the County of Christian, and State of Missouri, to-wit:

All of the East Half of the Southwest Quarter of the Northeast Quarter (E $\frac{1}{2}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$) of Section 15, Township 27, Range 22, containing 20 acres, more or less.

13.30 documentary taxes paid on 12-14-49 E.K.P.

TO HAVE AND TO HOLD the premises aforesaid, with all and singular the rights, privileges, appurtenances and immunities thereto belonging or in anywise appertaining unto the said parties of the second part, and unto their heirs and assigns forever; the said Reba Eoff and Everett Eoff hereby covenanting that they are lawfully seized of an indefeasible estate in fee in the premises herein conveyed; that they have good right to convey the same; that the said premises are free and clear of any incumbrances done or suffered by them or those under whom they claim; and that they will Warrant and Defend the title to the said premises unto said parties of the second part, and unto their heirs and assigns, forever, against the lawful claims and demands of all persons, whomsoever.

IN WITNESS WHEREOF, The said parties of the first part have hereunto set their hand and seal, the day and year first above written.

Signed, Sealed and Delivered in the Presence of Us:

}	/s/ Reba Eoff	(SEAL)
	/s/ Everett Eoff	(SEAL)
		(SEAL)
		(SEAL)

STATE OF MISSOURI, } ss. On this 14th day of December, A. D. 1949, before me personally appeared Reba Eoff and Everett Eoff, her husband, his wife, to me known to be the persons described in and who executed the foregoing instrument, and acknowledged that they executed the same as their free act and deed.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal, at my office in Ozark, Mo., the day and year first above written.

My term of office as a Notary Public will expire March 28, 1952, (SEAL) /s/ Claud W. Boone Notary Public.

STATE OF MISSOURI, } ss. On this day of A. D. 19, before me personally appeared, to me known to be the person described in and who executed the foregoing instrument, and acknowledged that executed the same as free act and deed. And the said further declared to be single and unmarried.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal, at my office in, the day and year first above written.

My term of office as a Notary Public will expire 19, (SEAL) Notary Public.

The foregoing Deed was Filed for Record in this office on the 14th day of Dec., 1949, at 1 o'clock 00 minutes P.M. By Deputy, E. K. Peebles, Recorder.

REMARKS:

Appendix II

Documents from Environmental Data Resources, Inc. and FEMA

- (a) The EDR Radius Map™ Report with Geotrack®
- (b) The EDR Aerial Photo Decade Package
- (c) EDR Historical Topographic Map Report
- (d) Certified Sanborn® Map Report
- (e) The EDR-City Directory Image Report
- (f) EDR Vapor Encroachment Screen
- (g) EDR Ground Water Flow Gradients Map
- (h) FEMA National Flood Hazard Layer (NFLH) FIRMette,
Nixa, MO.

Appendix II(a)

The EDR Radius Map Report
with GeoCheck®

New Police Station

1209 W MOUNT VERNON ST
NIXA, MO 65714

Inquiry Number: 7682213.2s
June 14, 2024

The EDR Radius Map™ Report with GeoCheck®



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

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
Executive Summary	ES1
Overview Map	2
Detail Map	3
Map Findings Summary	4
Map Findings	8
Orphan Summary	16
Government Records Searched/Data Currency Tracking	GR-1
 <u>GEOCHECK ADDENDUM</u>	
Physical Setting Source Addendum	A-1
Physical Setting Source Summary	A-2
Physical Setting SSURGO Soil Map	A-5
Physical Setting Source Map	A-9
Physical Setting Source Map Findings	A-11
Physical Setting Source Records Searched	PSGR-1

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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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 - 16), 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

1209 W MOUNT VERNON ST
NIXA, MO 65714

COORDINATES

Latitude (North):	37.0468400 - 37° 2' 48.62"
Longitude (West):	93.3231810 - 93° 19' 23.45"
Universal Transverse Mercator:	Zone 15
UTM X (Meters):	471261.5
UTM Y (Meters):	4099914.0
Elevation:	1290 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	24320775 NIXA, MO
Version Date:	2021

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20200708, 20200816
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
1209 W MOUNT VERNON ST
NIXA, MO 65714

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
A1	CASEYS GENERAL STORE	1110 W MT VERNON	UST FINDER	Higher	1134, 0.215, SSE
A2	GIT N GO #128	1110 W MT VERNON ST	RCRA NonGen / NLR	Higher	1134, 0.215, SSE

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

EXECUTIVE SUMMARY

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

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

EXECUTIVE SUMMARY

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

FUDS..... Formerly Used Defense Sites
 DOD..... Department of Defense Sites
 SCR 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
 MINES MRDS..... Mineral Resources Data System
 ABANDONED MINES..... Abandoned Mines

EXECUTIVE SUMMARY

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 TSCA.....	PFAS Manufacture and Imports Information
PFAS TRIS.....	List of PFAS Added to the TRI
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 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
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
PFAS PROJECT.....	NORTHEASTERN UNIVERSITY PFAS PROJECT
E MANIFEST.....	Hazardous Waste Electronic Manifest System
UST FINDER RELEASE.....	UST Finder Releases 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 identified in the following databases.

EXECUTIVE SUMMARY

Elevations have been determined from the USGS 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. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.

Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

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

ADDITIONAL ENVIRONMENTAL RECORDS

Other Ascertainable Records

RCRA NonGen / NLR: 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.

A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 12/04/2023 has revealed that there is 1 RCRA NonGen / NLR site within approximately 0.25 miles of the target property.

<u>Equal/Higher Elevation</u>	<u>Address</u>	<u>Direction / Distance</u>	<u>Map ID</u>	<u>Page</u>
GIT N GO #128 EPA ID:: MOR000501080	1110 W MT VERNON ST	SSE 1/8 - 1/4 (0.215 mi.)	A2	9

UST FINDER: 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.

A review of the UST FINDER list, as provided by EDR, and dated 06/08/2023 has revealed that there is 1 UST FINDER site within approximately 0.25 miles of the target property.

<u>Equal/Higher Elevation</u>	<u>Address</u>	<u>Direction / Distance</u>	<u>Map ID</u>	<u>Page</u>
CASEYS GENERAL STORE	1110 W MT VERNON	SSE 1/8 - 1/4 (0.215 mi.)	A1	8

EXECUTIVE SUMMARY

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

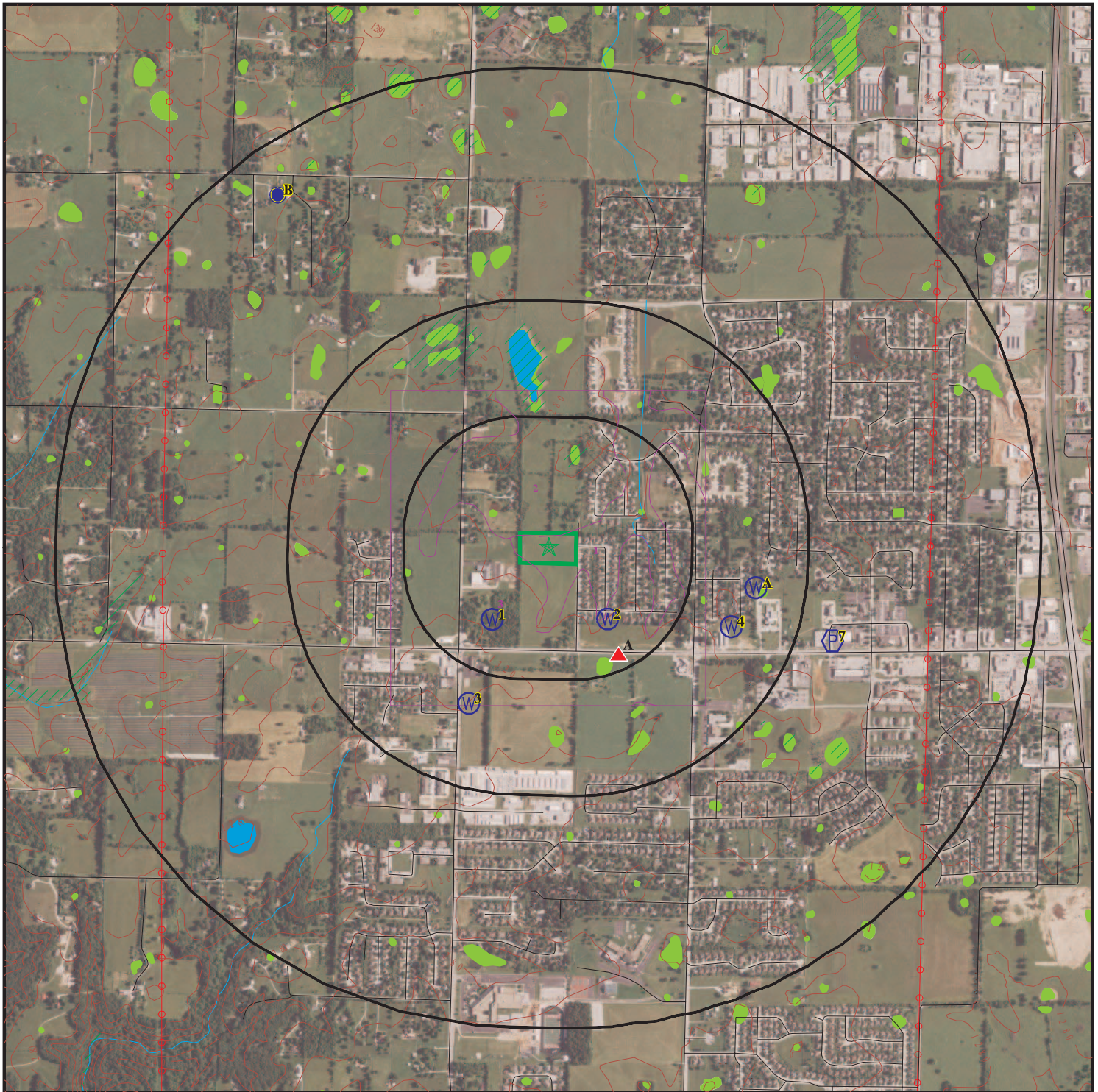
Site Name

MR CLEAN JEANS

Database(s)

DRYCLEANERS

OVERVIEW MAP - 7682213.2S



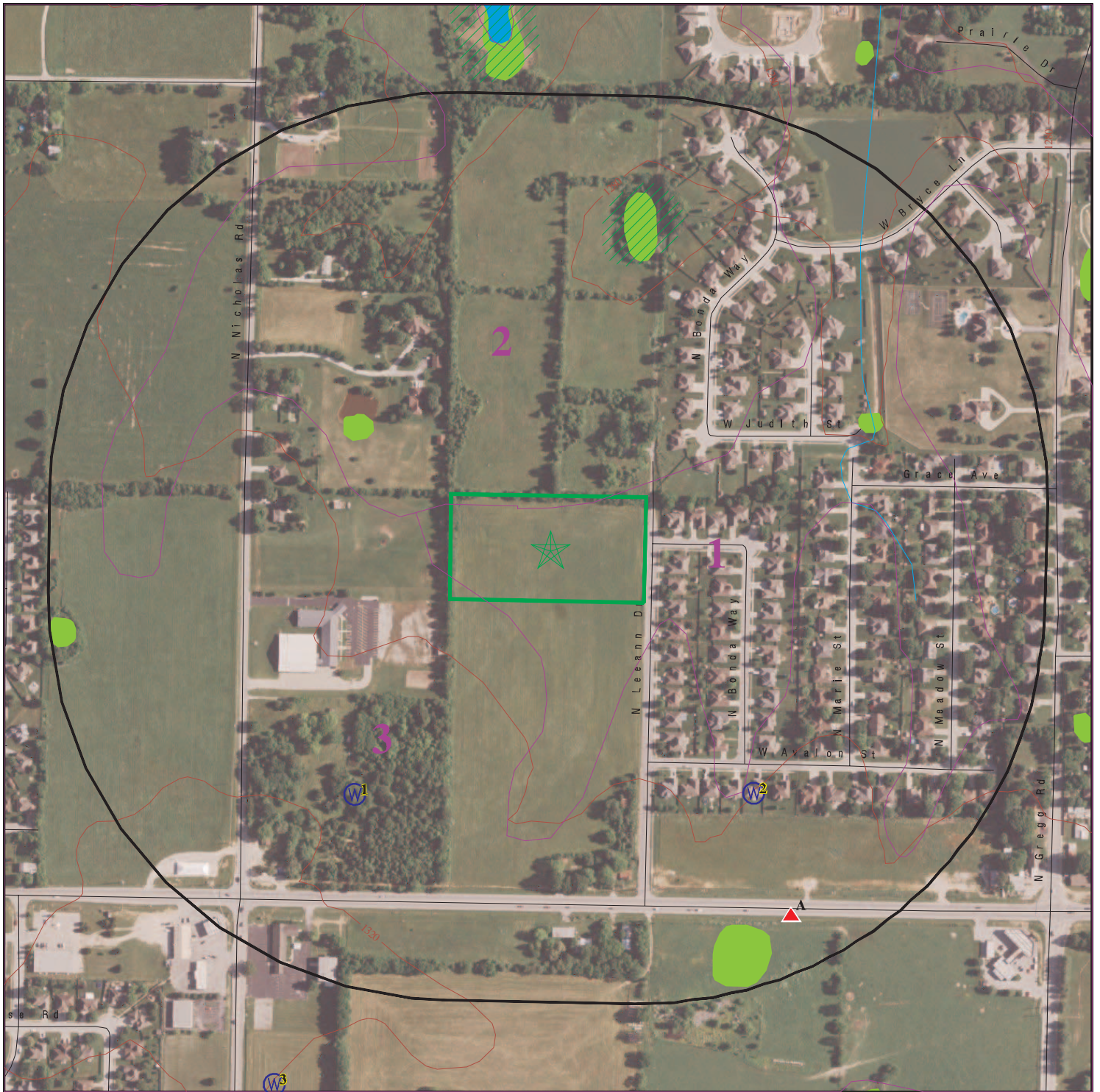
- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Special Flood Hazard Area (1%)
- 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: New Police Station
 ADDRESS: 1209 W MOUNT VERNON ST
 NIXA MO 65714
 LAT/LONG: 37.04684 / 93.323181

CLIENT: Gredell Engineering Resources, Inc.
 CONTACT: Jacob Fitzpatrick
 INQUIRY #: 7682213.2s
 DATE: June 14, 2024 11:52 am

DETAIL MAP - 7682213.2S



-  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

-  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.

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 CONTACT: Jacob Fitzpatrick
 INQUIRY #: 7682213.2s
 DATE: June 14, 2024 11:53 am

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								
<i>Lists of Federal NPL (Superfund) sites</i>								
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
<i>Lists of Federal Delisted NPL sites</i>								
Delisted NPL	1.000		0	0	0	0	NR	0
<i>Lists of Federal sites subject to CERCLA removals and CERCLA orders</i>								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
<i>Lists of Federal CERCLA sites with NFRAP</i>								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
<i>Lists of Federal RCRA facilities undergoing Corrective Action</i>								
CORRACTS	1.000		0	0	0	0	NR	0
<i>Lists of Federal RCRA TSD facilities</i>								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
<i>Lists of Federal RCRA generators</i>								
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
<i>Federal institutional controls / engineering controls registries</i>								
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
<i>Federal ERNS list</i>								
ERNS	0.001		0	NR	NR	NR	NR	0
<i>Lists of state- and tribal hazardous waste facilities</i>								
SHWS	1.000		0	0	0	0	NR	0
<i>Lists of state and tribal landfills and solid waste disposal facilities</i>								
SWF/LF	0.500		0	0	0	NR	NR	0
<i>Lists of state and tribal leaking storage tanks</i>								
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
<i>Lists of state and tribal registered storage tanks</i>								
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
<i>State and tribal institutional control / engineering control registries</i>								
AUL	0.500		0	0	0	NR	NR	0
<i>Lists of state and tribal voluntary cleanup sites</i>								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
<i>Lists of state and tribal brownfield sites</i>								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
<u>ADDITIONAL ENVIRONMENTAL RECORDS</u>								
<i>Local Brownfield lists</i>								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
<i>Local Lists of Landfill / Solid Waste Disposal Sites</i>								
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
<i>Local Lists of Hazardous waste / Contaminated Sites</i>								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
CDL	0.001		0	NR	NR	NR	NR	0
DEL SHWS	1.000		0	0	0	0	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
<i>Local Land Records</i>								
LIENS 2	0.001		0	NR	NR	NR	NR	0
<i>Records of Emergency Release Reports</i>								
HMIRS	0.001		0	NR	NR	NR	NR	0
SPILLS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
<i>Other Ascertainable Records</i>								
RCRA NonGen / NLR	0.250		0	1	NR	NR	NR	1

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	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	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	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
MINES MRDS	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	0.001		0	NR	NR	NR	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
ECHO	0.001		0	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 TSCA	0.250		0	0	NR	NR	NR	0
PFAS TRIS	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 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	0.001		0	NR	NR	NR	NR	0
PFAS	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
AIRS	0.001		0	NR	NR	NR	NR	0
ASBESTOS	0.001		0	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	0.001		0	NR	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
NPDES	0.001		0	NR	NR	NR	NR	0
MO RRC	0.001		0	NR	NR	NR	NR	0
SMARS	0.500		0	0	0	NR	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
PFAS PROJECT	0.500		0	0	0	NR	NR	0
E MANIFEST	0.250		0	0	NR	NR	NR	0
UST FINDER	0.250		0	1	NR	NR	NR	1
UST FINDER RELEASE	0.500		0	0	0	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	0.001		0	NR	NR	NR	NR	0
RGA LF	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001		0	NR	NR	NR	NR	0

- Totals --		0	0	2	0	0	0	2
-------------	--	---	---	---	---	---	---	---

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

A1
SSE
1/8-1/4
0.215 mi.
1134 ft.
CASEYS GENERAL STORE #2685
1110 W MT VERNON
NIXA, MO 65714
Site 1 of 2 in cluster A

UST FINDER **1028476253**
N/A

Relative:
Higher

Actual:
1304 ft.

UST FINDER:
Object ID: 259151
Facility ID: MOST0020826
Name: CASEYS GENERAL STORE #2685
Address: 1110 W MT VERNON
City,State,Zip: NIXA, MO 65714
Address Match Type: Not reported
Open USTs: 3
Closed USTs: 0
TOS USTs: 0
Population 1500ft: 472
Private Wells 1500ft: 46
Within 100yr Floodplain: No
Land Use: Developed, Medium Intensity
Within SPA: No
SPA PWS Facility ID: Not reported
SPA Water Type: Not reported
SPA Facility Type: Not reported
SPA HUC12: Not reported
Within WHPA: Yes
WHPA PWS Facility ID: MO5172506_82314
WHPA Water Type: GW - Ground water
WHPA Facility Type: WL - Well
WHPA HUC12: 110100020304
Facility Status: Open UST(s)
Date of Last Inspection: Not reported
EPA Region: 7
Tribe: Not reported
Coordinate Source: State
X Coord: -93.31776999999999
Y Coord: 37.04312
Latitude: 37.04312
Longitude: -93.31777

UST FINDER:
Object ID: 917690
Facility ID: MOST0020826
Tank ID: MO38036
Tank Status: Open
Installation Date: 2000/08/17 15:59:59+00
Removal Date: Not reported
Tank Capacity: 12000
Substances: Regular Gas
Tank Wall Type: Single

Object ID: 917691
Facility ID: MOST0020826
Tank ID: MO38037
Tank Status: Open
Installation Date: 2000/08/17 15:59:59+00
Removal Date: Not reported
Tank Capacity: 12000
Substances: Midgrade Gas
Tank Wall Type: Single

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

CASEYS GENERAL STORE #2685 (Continued)

1028476253

Object ID: 917692
Facility ID: MOST0020826
Tank ID: MO38038
Tank Status: Open
Installation Date: 2000/08/17 15:59:59+00
Removal Date: Not reported
Tank Capacity: 4000
Substances: Diesel
Tank Wall Type: Single

A2
SSE
1/8-1/4
0.215 mi.
1134 ft.

GIT N GO #128
1110 W MT VERNON ST
NIXA, MO 65714

RCRA NonGen / NLR

1010786374
MOR000501080

Site 2 of 2 in cluster A

Relative:
Higher

Actual:
1304 ft.

RCRA Listings:
Date Form Received by Agency: 20201026
Handler Name: Git N Go #128
Handler Address: 1110 W Mt Vernon St
Handler City,State,Zip: NIXA, MO 65714-8380
EPA ID: MOR000501080
Contact Name: DAVID WILLIS
Contact Address: 1831 E 71ST ST SUITE 131
Contact City,State,Zip: TULSA, OK 74136-3922
Contact Telephone: 918-877-2750
Contact Fax: Not reported
Contact Email: Not reported
Contact Title: MANAGER
EPA Region: 07
Land Type: Private
Federal Waste Generator Description: Not a generator, verified
Non-Notifier: Not reported
Biennial Report Cycle: Not reported
Accessibility: Not reported
Active Site Indicator: Not reported
State District Owner: Not reported
State District: Not reported
Mailing Address: 1831 E 71ST ST SUITE 131
Mailing City,State,Zip: TULSA, OK 74136-3922
Owner Name: Git N Go Inc
Owner Type: Private
Operator Name: Git N Go Inc
Operator Type: Private
Short-Term Generator Activity: No
Importer Activity: No
Mixed Waste Generator: No
Transporter Activity: No
Transfer Facility Activity: No
Recycler Activity with Storage: No
Small Quantity On-Site Burner Exemption: No
Smelting Melting and Refining Furnace Exemption: No
Underground Injection Control: No
Off-Site Waste Receipt: No
Universal Waste Indicator: No
Universal Waste Destination Facility: No
Federal Universal Waste: No

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

GIT N GO #128 (Continued)

1010786374

Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
202 GPRA Corrective Action Baseline:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	20210107
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No
Sub-Part P Indicator:	No

Hazardous Waste Summary:

Waste Code:	D001
Waste Description:	Ignitable Waste

Waste Code:	D018
Waste Description:	Benzene

Handler - Owner Operator:

Owner/Operator Indicator:	Owner
Owner/Operator Name:	GIT N GO INC
Legal Status:	Private
Date Became Current:	20021212
Date Ended Current:	Not reported
Owner/Operator Address:	E CHERRY
Owner/Operator City,State,Zip:	SPRINGFIELD, MO 65802
Owner/Operator Telephone:	417-831-0991
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Owner
Owner/Operator Name:	GIT-N-GO INC
Legal Status:	Private
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	3021 E CHERRY
Owner/Operator City,State,Zip:	SPRINGFIELD, MO 65802

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

GIT N GO #128 (Continued)

1010786374

Owner/Operator Telephone:	417-831-0991
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported
Owner/Operator Indicator:	Operator
Owner/Operator Name: GIT N GO INC	
Legal Status:	Private
Date Became Current:	20020318
Date Ended Current:	Not reported
Owner/Operator Address:	3021 E CHERRY ST
Owner/Operator City,State,Zip:	SPRINGFIELD, MO 65802-2624
Owner/Operator Telephone:	417-831-0991
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported
Owner/Operator Indicator:	Owner
Owner/Operator Name: GIT N GO INC	
Legal Status:	Private
Date Became Current:	20021212
Date Ended Current:	Not reported
Owner/Operator Address:	E CHERRY
Owner/Operator City,State,Zip:	SPRINGFIELD, MO 65802
Owner/Operator Telephone:	417-831-0991
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported
Owner/Operator Indicator:	Owner
Owner/Operator Name: GIT N GO INC	
Legal Status:	Private
Date Became Current:	20020318
Date Ended Current:	Not reported
Owner/Operator Address:	3021 E CHERRY ST
Owner/Operator City,State,Zip:	SPRINGFIELD, MO 65802-2624
Owner/Operator Telephone:	417-831-0991
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported
Owner/Operator Indicator:	Owner
Owner/Operator Name: GIT-N-GO INC	
Legal Status:	Private
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	3021 E CHERRY
Owner/Operator City,State,Zip:	SPRINGFIELD, MO 65802
Owner/Operator Telephone:	417-831-0991
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported
Owner/Operator Indicator:	Operator
Owner/Operator Name: GIT N GO INC	
Legal Status:	Private
Date Became Current:	20030815

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

GIT N GO #128 (Continued)

1010786374

Date Ended Current:	Not reported
Owner/Operator Address:	3021 E CHERRY
Owner/Operator City,State,Zip:	SPRINGFIELD, MO 65802
Owner/Operator Telephone:	417-831-0991
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported
Owner/Operator Indicator:	Owner
Owner/Operator Name: GIT-N-GO INC	
Legal Status:	Private
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	3021 E CHERRY
Owner/Operator City,State,Zip:	SPRINGFIELD, MO 65802
Owner/Operator Telephone:	417-831-0991
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported
Owner/Operator Indicator:	Owner
Owner/Operator Name: GIT N GO INC	
Legal Status:	Private
Date Became Current:	20020318
Date Ended Current:	Not reported
Owner/Operator Address:	3021 E CHERRY ST
Owner/Operator City,State,Zip:	SPRINGFIELD, MO 65802-2624
Owner/Operator Telephone:	417-831-0991
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported
Owner/Operator Indicator:	Operator
Owner/Operator Name: GIT N GO INC	
Legal Status:	Private
Date Became Current:	20021212
Date Ended Current:	Not reported
Owner/Operator Address:	E CHERRY
Owner/Operator City,State,Zip:	SPRINGFIELD, MO 65802
Owner/Operator Telephone:	417-831-0991
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported
Owner/Operator Indicator:	Owner
Owner/Operator Name: GIT-N-GO INC	
Legal Status:	Private
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	3021 E CHERRY
Owner/Operator City,State,Zip:	SPRINGFIELD, MO 65802
Owner/Operator Telephone:	417-831-0991
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported
Owner/Operator Indicator:	Operator

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

GIT N GO #128 (Continued)

1010786374

Owner/Operator Name: GIT N GO INC	
Legal Status:	Private
Date Became Current:	20021212
Date Ended Current:	Not reported
Owner/Operator Address:	E CHERRY
Owner/Operator City,State,Zip:	SPRINGFIELD, MO 65802
Owner/Operator Telephone:	417-831-0991
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported
Owner/Operator Indicator:	Operator
Owner/Operator Name: GIT N GO INC	
Legal Status:	Private
Date Became Current:	20020318
Date Ended Current:	Not reported
Owner/Operator Address:	3021 E CHERRY ST
Owner/Operator City,State,Zip:	SPRINGFIELD, MO 65802-2624
Owner/Operator Telephone:	417-831-0991
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported
Owner/Operator Indicator:	Operator
Owner/Operator Name: GIT N GO INC	
Legal Status:	Private
Date Became Current:	20021212
Date Ended Current:	Not reported
Owner/Operator Address:	E CHERRY
Owner/Operator City,State,Zip:	SPRINGFIELD, MO 65802
Owner/Operator Telephone:	417-831-0991
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported
Owner/Operator Indicator:	Owner
Owner/Operator Name: GIT N GO INC	
Legal Status:	Private
Date Became Current:	20021212
Date Ended Current:	Not reported
Owner/Operator Address:	E CHERRY
Owner/Operator City,State,Zip:	SPRINGFIELD, MO 65802
Owner/Operator Telephone:	417-831-0991
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Historic Generators:

Receive Date:	20200924
Handler Name:	GIT N GO #128
Federal Waste Generator Description:	Not a generator, verified
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

GIT N GO #128 (Continued)

1010786374

Current Record: No
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

Receive Date: 20201026
Handler Name: GIT N GO #128
Federal Waste Generator Description: Not a generator, verified
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: Yes
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

Receive Date: 20020318
Handler Name: GIT N GO #128
Federal Waste Generator Description: Small Quantity Generator
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: No
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

Receive Date: 20020815
Handler Name: GIT N GO #128
Federal Waste Generator Description: Not a generator, verified
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: No
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

Receive Date: 20021212
Handler Name: GIT N GO #128
Federal Waste Generator Description: Small Quantity Generator
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: No
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

Receive Date: 20030213

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

GIT N GO #128 (Continued)

1010786374

Handler Name: GIT N GO #128
Federal Waste Generator Description: Small Quantity Generator
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: No
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

Receive Date: 20040813
Handler Name: GIT N GO #128
Federal Waste Generator Description: Not a generator, verified
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: No
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

List of NAICS Codes and Descriptions:

NAICS Code: 44711
NAICS Description: GASOLINE STATIONS WITH CONVENIENCE STORES

Facility Has Received Notices of Violations:

Violations: No Violations Found

Evaluation Action Summary:

Evaluations: No Evaluations Found

Count: 1 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
NIXA	S106877390	MR CLEAN JEANS	30 W MOUNT VERNON ST	65714	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: 02/29/2024	Source: EPA
Date Data Arrived at EDR: 03/01/2024	Telephone: N/A
Date Made Active in Reports: 03/27/2024	Last EDR Contact: 06/03/2024
Number of Days to Update: 26	Next Scheduled EDR Contact: 07/08/2024
	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 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

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: 02/29/2024	Source: EPA
Date Data Arrived at EDR: 03/01/2024	Telephone: N/A
Date Made Active in Reports: 03/27/2024	Last EDR Contact: 06/03/2024
Number of Days to Update: 26	Next Scheduled EDR Contact: 07/08/2024
	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.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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: 02/29/2024
Date Data Arrived at EDR: 03/01/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 26

Source: EPA
Telephone: N/A
Last EDR Contact: 06/03/2024
Next Scheduled EDR Contact: 07/08/2024
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: 12/20/2023
Date Data Arrived at EDR: 12/20/2023
Date Made Active in Reports: 01/24/2024
Number of Days to Update: 35

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 03/26/2024
Next Scheduled EDR Contact: 07/08/2024
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 known 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: 04/22/2024
Date Data Arrived at EDR: 05/01/2024
Date Made Active in Reports: 05/24/2024
Number of Days to Update: 23

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 06/03/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: Quarterly

Lists of Federal CERCLA sites with NFRAP

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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: 04/22/2024	Source: EPA
Date Data Arrived at EDR: 05/01/2024	Telephone: 800-424-9346
Date Made Active in Reports: 05/24/2024	Last EDR Contact: 06/03/2024
Number of Days to Update: 23	Next Scheduled EDR Contact: 07/22/2024
	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: 12/04/2023	Source: EPA
Date Data Arrived at EDR: 12/06/2023	Telephone: 800-424-9346
Date Made Active in Reports: 12/12/2023	Last EDR Contact: 06/07/2024
Number of Days to Update: 6	Next Scheduled EDR Contact: 09/30/2024
	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: 12/04/2023	Source: Environmental Protection Agency
Date Data Arrived at EDR: 12/06/2023	Telephone: 913-551-7003
Date Made Active in Reports: 12/12/2023	Last EDR Contact: 06/07/2024
Number of Days to Update: 6	Next Scheduled EDR Contact: 07/01/2024
	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: 12/04/2023	Source: Environmental Protection Agency
Date Data Arrived at EDR: 12/06/2023	Telephone: 913-551-7003
Date Made Active in Reports: 12/12/2023	Last EDR Contact: 06/07/2024
Number of Days to Update: 6	Next Scheduled EDR Contact: 07/01/2024
	Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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: 12/04/2023	Source: Environmental Protection Agency
Date Data Arrived at EDR: 12/06/2023	Telephone: 913-551-7003
Date Made Active in Reports: 12/12/2023	Last EDR Contact: 06/07/2024
Number of Days to Update: 6	Next Scheduled EDR Contact: 07/01/2024
	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: 12/04/2023	Source: Environmental Protection Agency
Date Data Arrived at EDR: 12/06/2023	Telephone: 913-551-7003
Date Made Active in Reports: 12/12/2023	Last EDR Contact: 06/07/2024
Number of Days to Update: 6	Next Scheduled EDR Contact: 07/01/2024
	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: 02/14/2024	Source: Department of the Navy
Date Data Arrived at EDR: 02/16/2024	Telephone: 843-820-7326
Date Made Active in Reports: 04/04/2024	Last EDR Contact: 05/17/2024
Number of Days to Update: 48	Next Scheduled EDR Contact: 08/19/2024
	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: 02/13/2024	Source: Environmental Protection Agency
Date Data Arrived at EDR: 02/21/2024	Telephone: 703-603-0695
Date Made Active in Reports: 04/04/2024	Last EDR Contact: 05/21/2024
Number of Days to Update: 43	Next Scheduled EDR Contact: 09/02/2024
	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: 02/13/2024	Source: Environmental Protection Agency
Date Data Arrived at EDR: 02/21/2024	Telephone: 703-603-0695
Date Made Active in Reports: 04/04/2024	Last EDR Contact: 05/21/2024
Number of Days to Update: 43	Next Scheduled EDR Contact: 09/02/2024
	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: 12/12/2023
Date Data Arrived at EDR: 12/13/2023
Date Made Active in Reports: 02/28/2024
Number of Days to Update: 77

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
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 includes 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: 06/30/2023
Date Data Arrived at EDR: 02/29/2024
Date Made Active in Reports: 05/21/2024
Number of Days to Update: 82

Source: Department of Natural Resources
Telephone: 573-751-3176
Last EDR Contact: 05/17/2024
Next Scheduled EDR Contact: 09/02/2024
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: 07/24/2023
Date Data Arrived at EDR: 10/03/2023
Date Made Active in Reports: 12/19/2023
Number of Days to Update: 77

Source: Department of Natural Resources
Telephone: 573-751-1990
Last EDR Contact: 05/31/2024
Next Scheduled EDR Contact: 09/16/2024
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: 02/21/2024
Date Data Arrived at EDR: 02/22/2024
Date Made Active in Reports: 05/10/2024
Number of Days to Update: 78

Source: Department of Natural Resources
Telephone: 573-751-5401
Last EDR Contact: 05/21/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: Varies

Lists of state and tribal leaking storage tanks

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: 02/26/2024
Date Data Arrived at EDR: 03/06/2024
Date Made Active in Reports: 05/29/2024
Number of Days to Update: 84

Source: Department of Natural Resources
Telephone: 573-751-0135
Last EDR Contact: 06/05/2024
Next Scheduled EDR Contact: 09/16/2024
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

LAST: Leaking Aboveground Storage Tanks

A listing of leaking aboveground storage tanks.

Date of Government Version: 02/26/2024

Date Data Arrived at EDR: 03/06/2024

Date Made Active in Reports: 05/29/2024

Number of Days to Update: 84

Source: Department of Natural Resources

Telephone: 573-751-6822

Last EDR Contact: 06/05/2024

Next Scheduled EDR Contact: 09/16/2024

Data Release Frequency: Quarterly

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 10/25/2023

Date Data Arrived at EDR: 01/17/2024

Date Made Active in Reports: 03/13/2024

Number of Days to Update: 56

Source: EPA Region 10

Telephone: 206-553-2857

Last EDR Contact: 05/30/2024

Next Scheduled EDR Contact: 07/29/2024

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: 10/04/2023

Date Data Arrived at EDR: 01/17/2024

Date Made Active in Reports: 03/13/2024

Number of Days to Update: 56

Source: EPA, Region 5

Telephone: 312-886-7439

Last EDR Contact: 05/30/2024

Next Scheduled EDR Contact: 07/29/2024

Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 10/25/2023

Date Data Arrived at EDR: 01/17/2024

Date Made Active in Reports: 03/13/2024

Number of Days to Update: 56

Source: EPA Region 6

Telephone: 214-665-6597

Last EDR Contact: 05/30/2024

Next Scheduled EDR Contact: 07/29/2024

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: 10/25/2023

Date Data Arrived at EDR: 01/17/2024

Date Made Active in Reports: 03/13/2024

Number of Days to Update: 56

Source: EPA Region 1

Telephone: 617-918-1313

Last EDR Contact: 05/30/2024

Next Scheduled EDR Contact: 07/29/2024

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: 10/25/2023

Date Data Arrived at EDR: 01/17/2024

Date Made Active in Reports: 03/13/2024

Number of Days to Update: 56

Source: EPA Region 4

Telephone: 404-562-8677

Last EDR Contact: 05/30/2024

Next Scheduled EDR Contact: 07/29/2024

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: 10/25/2023

Date Data Arrived at EDR: 01/17/2024

Date Made Active in Reports: 03/13/2024

Number of Days to Update: 56

Source: Environmental Protection Agency

Telephone: 415-972-3372

Last EDR Contact: 05/30/2024

Next Scheduled EDR Contact: 07/29/2024

Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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: 10/25/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 07/29/2024
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: 10/25/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 07/29/2024
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: 11/16/2023
Date Data Arrived at EDR: 11/16/2023
Date Made Active in Reports: 02/13/2024
Number of Days to Update: 89

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/15/2024
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: 02/26/2024
Date Data Arrived at EDR: 03/06/2024
Date Made Active in Reports: 05/29/2024
Number of Days to Update: 84

Source: Department of Natural Resources
Telephone: 573-751-0135
Last EDR Contact: 06/05/2024
Next Scheduled EDR Contact: 09/16/2024
Data Release Frequency: Quarterly

AST: Aboveground Petroleum Storage Tanks

Registered Aboveground Storage Tanks.

Date of Government Version: 03/05/2024
Date Data Arrived at EDR: 03/08/2024
Date Made Active in Reports: 05/29/2024
Number of Days to Update: 82

Source: Department of Agriculture
Telephone: 573-751-7062
Last EDR Contact: 05/23/2024
Next Scheduled EDR Contact: 09/09/2024
Data Release Frequency: Semi-Annually

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: 10/24/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 04/17/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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: 10/24/2023	Source: EPA Region 8
Date Data Arrived at EDR: 01/17/2024	Telephone: 303-312-6137
Date Made Active in Reports: 03/13/2024	Last EDR Contact: 05/30/2024
Number of Days to Update: 56	Next Scheduled EDR Contact: 07/29/2024
	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: 10/24/2023	Source: EPA Region 7
Date Data Arrived at EDR: 01/17/2024	Telephone: 913-551-7003
Date Made Active in Reports: 03/13/2024	Last EDR Contact: 05/30/2024
Number of Days to Update: 56	Next Scheduled EDR Contact: 07/29/2024
	Data Release Frequency: Varies

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: 10/24/2023	Source: EPA, Region 1
Date Data Arrived at EDR: 01/17/2024	Telephone: 617-918-1313
Date Made Active in Reports: 03/13/2024	Last EDR Contact: 05/30/2024
Number of Days to Update: 56	Next Scheduled EDR Contact: 07/29/2024
	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: 10/17/2023	Source: EPA Region 5
Date Data Arrived at EDR: 01/17/2024	Telephone: 312-886-6136
Date Made Active in Reports: 03/13/2024	Last EDR Contact: 04/17/2024
Number of Days to Update: 56	Next Scheduled EDR Contact: 07/29/2024
	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: 10/24/2023	Source: EPA Region 6
Date Data Arrived at EDR: 01/17/2024	Telephone: 214-665-7591
Date Made Active in Reports: 03/13/2024	Last EDR Contact: 05/30/2024
Number of Days to Update: 56	Next Scheduled EDR Contact: 07/29/2024
	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: 10/24/2023	Source: EPA Region 10
Date Data Arrived at EDR: 01/17/2024	Telephone: 206-553-2857
Date Made Active in Reports: 03/13/2024	Last EDR Contact: 05/30/2024
Number of Days to Update: 56	Next Scheduled EDR Contact: 07/29/2024
	Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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: 10/24/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 05/30/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

TANKS: Underground Storage Tank Database Storage tank sites

Date of Government Version: 02/26/2024
Date Data Arrived at EDR: 03/06/2024
Date Made Active in Reports: 05/29/2024
Number of Days to Update: 84

Source: Department of Natural Resources
Telephone: 573-526-2058
Last EDR Contact: 06/05/2024
Next Scheduled EDR Contact: 09/16/2024
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: 02/01/2024
Date Data Arrived at EDR: 02/07/2024
Date Made Active in Reports: 04/30/2024
Number of Days to Update: 83

Source: Department of Natural Resources
Telephone: 573-751-3176
Last EDR Contact: 05/07/2024
Next Scheduled EDR Contact: 08/19/2024
Data Release Frequency: Quarterly

Lists of state and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Listing

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

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: 03/18/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Varies

VCP: Sites Participating in the Voluntary Cleanup Program

Sites participating in the Voluntary Cleanup Program.

Date of Government Version: 02/01/2024
Date Data Arrived at EDR: 02/07/2024
Date Made Active in Reports: 04/30/2024
Number of Days to Update: 83

Source: Department of Natural Resources
Telephone: 573-526-8913
Last EDR Contact: 05/07/2024
Next Scheduled EDR Contact: 08/19/2024
Data Release Frequency: Quarterly

Lists of state and tribal brownfield sites

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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: 02/01/2024
Date Data Arrived at EDR: 02/07/2024
Date Made Active in Reports: 04/30/2024
Number of Days to Update: 83

Source: Department of Natural Resources
Telephone: 573-526-8913
Last EDR Contact: 05/07/2024
Next Scheduled EDR Contact: 08/19/2024
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: 03/11/2024
Date Data Arrived at EDR: 03/12/2024
Date Made Active in Reports: 05/10/2024
Number of Days to Update: 59

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 06/11/2024
Next Scheduled EDR Contact: 09/23/2024
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: 02/20/2024
Date Data Arrived at EDR: 02/21/2024
Date Made Active in Reports: 05/10/2024
Number of Days to Update: 79

Source: Department of Natural Resources
Telephone: 573-526-3944
Last EDR Contact: 05/17/2024
Next Scheduled EDR Contact: 09/02/2024
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: 04/22/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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: 04/15/2024
Next Scheduled EDR Contact: 07/29/2024
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: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Services, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 04/19/2024
Next Scheduled EDR Contact: 08/04/2024
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: 12/31/2023
Date Data Arrived at EDR: 02/21/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 43

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/21/2024
Next Scheduled EDR Contact: 09/02/2024
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: 05/31/2024
Next Scheduled EDR Contact: 09/16/2024
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: 07/24/2023
Date Data Arrived at EDR: 10/03/2023
Date Made Active in Reports: 12/19/2023
Number of Days to Update: 77

Source: Department of Natural Resources
Telephone: 573-522-3710
Last EDR Contact: 05/31/2024
Next Scheduled EDR Contact: 09/16/2024
Data Release Frequency: Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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: 12/31/2023
Date Data Arrived at EDR: 02/21/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 43

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/21/2024
Next Scheduled EDR Contact: 09/02/2024
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: 02/29/2024
Date Data Arrived at EDR: 03/01/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 26

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 06/03/2024
Next Scheduled EDR Contact: 07/08/2024
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: 12/12/2023
Date Data Arrived at EDR: 12/13/2023
Date Made Active in Reports: 02/28/2024
Number of Days to Update: 77

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 03/20/2024
Next Scheduled EDR Contact: 07/01/2024
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: 05/31/2024
Next Scheduled EDR Contact: 09/16/2024
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

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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: 12/04/2023	Source: Environmental Protection Agency
Date Data Arrived at EDR: 12/06/2023	Telephone: 913-551-7003
Date Made Active in Reports: 12/12/2023	Last EDR Contact: 06/07/2024
Number of Days to Update: 6	Next Scheduled EDR Contact: 07/01/2024
	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: 01/30/2024	Source: U.S. Army Corps of Engineers
Date Data Arrived at EDR: 02/13/2024	Telephone: 202-528-4285
Date Made Active in Reports: 04/04/2024	Last EDR Contact: 05/14/2024
Number of Days to Update: 51	Next Scheduled EDR Contact: 08/26/2024
	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	Source: USGS
Date Data Arrived at EDR: 07/13/2021	Telephone: 888-275-8747
Date Made Active in Reports: 03/09/2022	Last EDR Contact: 04/11/2024
Number of Days to Update: 239	Next Scheduled EDR Contact: 07/22/2024
	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	Source: U.S. Geological Survey
Date Data Arrived at EDR: 04/11/2018	Telephone: 888-275-8747
Date Made Active in Reports: 11/06/2019	Last EDR Contact: 04/04/2024
Number of Days to Update: 574	Next Scheduled EDR Contact: 07/15/2024
	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	Source: Environmental Protection Agency
Date Data Arrived at EDR: 02/03/2023	Telephone: 615-532-8599
Date Made Active in Reports: 02/10/2023	Last EDR Contact: 05/09/2024
Number of Days to Update: 7	Next Scheduled EDR Contact: 08/19/2024
	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.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 12/11/2023
Date Data Arrived at EDR: 12/13/2023
Date Made Active in Reports: 02/28/2024
Number of Days to Update: 77

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 03/13/2024
Next Scheduled EDR Contact: 07/01/2024
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: 04/29/2024
Next Scheduled EDR Contact: 08/12/2024
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: 05/02/2024
Next Scheduled EDR Contact: 08/12/2024
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: 06/13/2024
Next Scheduled EDR Contact: 09/23/2024
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: 12/31/2022
Date Data Arrived at EDR: 11/13/2023
Date Made Active in Reports: 02/07/2024
Number of Days to Update: 86

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 05/16/2024
Next Scheduled EDR Contact: 08/26/2024
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.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 01/16/2024
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 70

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 04/17/2024
Next Scheduled EDR Contact: 07/29/2024
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: 02/29/2024
Date Data Arrived at EDR: 03/01/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 26

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 06/03/2024
Next Scheduled EDR Contact: 09/09/2024
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: 02/01/2024
Date Data Arrived at EDR: 02/08/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 56

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 04/15/2024
Next Scheduled EDR Contact: 07/29/2024
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: 09/19/2023
Date Data Arrived at EDR: 10/03/2023
Date Made Active in Reports: 10/19/2023
Number of Days to Update: 16

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 06/03/2024
Next Scheduled EDR Contact: 08/12/2024
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.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 03/20/2023
Date Data Arrived at EDR: 04/04/2023
Date Made Active in Reports: 06/09/2023
Number of Days to Update: 66

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/04/2024
Next Scheduled EDR Contact: 07/15/2024
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: 03/28/2024
Next Scheduled EDR Contact: 07/15/2024
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: 01/02/2024
Date Data Arrived at EDR: 01/16/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 57

Source: Nuclear Regulatory Commission
Telephone: 301-415-0717
Last EDR Contact: 04/15/2024
Next Scheduled EDR Contact: 07/29/2024
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: 12/31/2022
Date Data Arrived at EDR: 11/27/2023
Date Made Active in Reports: 02/22/2024
Number of Days to Update: 87

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 05/28/2024
Next Scheduled EDR Contact: 09/09/2024
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.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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: 05/28/2024
Next Scheduled EDR Contact: 09/09/2024
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: 05/02/2024
Next Scheduled EDR Contact: 08/12/2024
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: 03/25/2024
Next Scheduled EDR Contact: 07/08/2024
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 Transportation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/02/2020
Date Data Arrived at EDR: 01/28/2020
Date Made Active in Reports: 04/17/2020
Number of Days to Update: 80

Source: Department of Transportation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 04/23/2024
Next Scheduled EDR Contact: 08/05/2024
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: 12/31/2023
Date Data Arrived at EDR: 01/11/2024
Date Made Active in Reports: 01/16/2024
Number of Days to Update: 5

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 03/28/2024
Next Scheduled EDR Contact: 07/15/2024
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: 12/31/2021
Date Data Arrived at EDR: 03/09/2023
Date Made Active in Reports: 03/20/2023
Number of Days to Update: 11

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 06/07/2024
Next Scheduled EDR Contact: 09/30/2024
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: 04/04/2024
Next Scheduled EDR Contact: 07/15/2024
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: 04/26/2024
Next Scheduled EDR Contact: 08/12/2024
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: 08/30/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 74

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 05/16/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 02/29/2024
Date Data Arrived at EDR: 03/01/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 26

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 06/03/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931 and 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

MINES VIOLATIONS: MSHA Violation Assessment Data

Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 01/02/2024
Date Data Arrived at EDR: 01/03/2024
Date Made Active in Reports: 01/04/2024
Number of Days to Update: 1

Source: DOL, Mine Safety & Health Administration
Telephone: 202-693-9424
Last EDR Contact: 04/04/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: Quarterly

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: 02/05/2024
Date Data Arrived at EDR: 02/21/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 43

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 05/21/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: Semi-Annually

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: 01/07/2022
Date Data Arrived at EDR: 02/24/2023
Date Made Active in Reports: 05/17/2023
Number of Days to Update: 82

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 05/22/2024
Next Scheduled EDR Contact: 09/02/2024
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	Source: USGS
Date Data Arrived at EDR: 06/08/2011	Telephone: 703-648-7709
Date Made Active in Reports: 09/13/2011	Last EDR Contact: 05/23/2024
Number of Days to Update: 97	Next Scheduled EDR Contact: 09/02/2024
	Data Release Frequency: Varies

MINES MRDS: Mineral Resources Data System Mineral Resources Data System

Date of Government Version: 08/23/2022	Source: USGS
Date Data Arrived at EDR: 11/22/2022	Telephone: 703-648-6533
Date Made Active in Reports: 02/28/2023	Last EDR Contact: 05/22/2024
Number of Days to Update: 98	Next Scheduled EDR Contact: 09/02/2024
	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: 03/18/2024	Source: Department of Interior
Date Data Arrived at EDR: 03/19/2024	Telephone: 202-208-2609
Date Made Active in Reports: 06/06/2024	Last EDR Contact: 06/13/2024
Number of Days to Update: 79	Next Scheduled EDR Contact: 09/16/2024
	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: 02/09/2024	Source: EPA
Date Data Arrived at EDR: 02/27/2024	Telephone: (913) 551-7003
Date Made Active in Reports: 05/24/2024	Last EDR Contact: 05/29/2024
Number of Days to Update: 87	Next Scheduled EDR Contact: 09/09/2024
	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: 12/17/2023	Source: Environmental Protection Agency
Date Data Arrived at EDR: 12/28/2023	Telephone: 202-564-2280
Date Made Active in Reports: 03/04/2024	Last EDR Contact: 04/04/2024
Number of Days to Update: 67	Next Scheduled EDR Contact: 07/15/2024
	Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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: 05/17/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: Varies

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 09/06/2023
Date Data Arrived at EDR: 09/13/2023
Date Made Active in Reports: 12/11/2023
Number of Days to Update: 89

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 04/08/2024
Next Scheduled EDR Contact: 07/22/2024
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: 02/12/2024
Date Data Arrived at EDR: 02/13/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 51

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 05/14/2024
Next Scheduled EDR Contact: 08/26/2024
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: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 703-603-8895
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
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: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
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: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 01/04/2024
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 202-566-0250
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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: 12/28/2023	Source: Environmental Protection Agency
Date Data Arrived at EDR: 12/28/2023	Telephone: 202-272-0167
Date Made Active in Reports: 01/04/2024	Last EDR Contact: 04/05/2024
Number of Days to Update: 7	Next Scheduled EDR Contact: 07/15/2024
	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: 12/28/2023	Source: Environmental Protection Agency
Date Data Arrived at EDR: 12/28/2023	Telephone: 202-272-0167
Date Made Active in Reports: 01/04/2024	Last EDR Contact: 04/05/2024
Number of Days to Update: 7	Next Scheduled EDR Contact: 07/15/2024
	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: 06/24/2020	Source: Department of Health & Human Services
Date Data Arrived at EDR: 03/17/2021	Telephone: 202-741-5770
Date Made Active in Reports: 11/08/2022	Last EDR Contact: 04/22/2024
Number of Days to Update: 601	Next Scheduled EDR Contact: 08/05/2024
	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: 12/28/2023	Source: Environmental Protection Agency
Date Data Arrived at EDR: 12/28/2023	Telephone: 202-272-0167
Date Made Active in Reports: 03/04/2024	Last EDR Contact: 04/05/2024
Number of Days to Update: 67	Next Scheduled EDR Contact: 07/15/2024
	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.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
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: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
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 facility's 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: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
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: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

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: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-267-2675
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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: 03/29/2024
Next Scheduled EDR Contact: 07/15/2024
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: 03/29/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: No Update Planned

BIOSOLIDS: ICIS-NPDES Biosolids Facility Data

The data reflects compliance information about facilities in the biosolids program.

Date of Government Version: 12/31/2023
Date Data Arrived at EDR: 01/03/2024
Date Made Active in Reports: 01/16/2024
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 202-564-4700
Last EDR Contact: 04/16/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

PFAS: PFAS Detections

PFAS detection list

Date of Government Version: 01/02/2024
Date Data Arrived at EDR: 01/10/2024
Date Made Active in Reports: 01/17/2024
Number of Days to Update: 7

Source: Department of Natural Resources
Telephone: 517-751-9857
Last EDR Contact: 03/29/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

AIRS: Permit Facility Listing

A listing of Air Pollution Control Program permits.

Date of Government Version: 06/06/2024
Date Data Arrived at EDR: 06/06/2024
Date Made Active in Reports: 06/07/2024
Number of Days to Update: 1

Source: Department of Natural Resources
Telephone: 573-751-4817
Last EDR Contact: 05/31/2024
Next Scheduled EDR Contact: 09/16/2024
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: 12/29/2023
Date Data Arrived at EDR: 01/03/2024
Date Made Active in Reports: 03/25/2024
Number of Days to Update: 82

Source: Department of Natural Resources
Telephone: 573-751-4817
Last EDR Contact: 04/04/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

COAL ASH: Coal Ash Disposal Sites

A listing of power plants with coal ash ponds.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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: 03/25/2024
Next Scheduled EDR Contact: 07/08/2024
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: 11/30/2017
Date Data Arrived at EDR: 12/13/2017
Date Made Active in Reports: 01/18/2018
Number of Days to Update: 36

Source: Department of Natural Resources
Telephone: 573-526-8913
Last EDR Contact: 05/31/2024
Next Scheduled EDR Contact: 09/16/2024
Data Release Frequency: Quarterly

FIN ASSURANCE 1: Financial Assurance Information Listing

Financial Assurance information.

Date of Government Version: 11/23/2023
Date Data Arrived at EDR: 12/13/2023
Date Made Active in Reports: 03/08/2024
Number of Days to Update: 86

Source: Department of Natural Resources
Telephone: 573-751-3553
Last EDR Contact: 05/16/2024
Next Scheduled EDR Contact: 09/09/2024
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: 05/30/2024
Next Scheduled EDR Contact: 09/09/2024
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: 04/11/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: Varies

NPDES: Permitted Facility Listing

A listing of permitted facilities from the Water Pollution Branch.

Date of Government Version: 12/19/2023
Date Data Arrived at EDR: 12/27/2023
Date Made Active in Reports: 12/28/2023
Number of Days to Update: 1

Source: Department of Natural Resources
Telephone: 573-751-7023
Last EDR Contact: 03/25/2024
Next Scheduled EDR Contact: 07/08/2024
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.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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: 05/31/2024
Next Scheduled EDR Contact: 09/16/2024
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: 01/02/2024
Date Data Arrived at EDR: 01/23/2024
Date Made Active in Reports: 04/09/2024
Number of Days to Update: 77

Source: Department of Natural Resources
Telephone: 573-751-3043
Last EDR Contact: 04/24/2024
Next Scheduled EDR Contact: 08/05/2024
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: 05/10/2024
Date Data Arrived at EDR: 05/30/2024
Date Made Active in Reports: 06/10/2024
Number of Days to Update: 11

Source: Department of Natural Resources
Telephone: 573-368-2183
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/26/2024
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: 07/24/2023
Date Data Arrived at EDR: 04/18/2024
Date Made Active in Reports: 06/06/2024
Number of Days to Update: 49

Source: Environmental Protection Agency
Telephone: 833-501-6826
Last EDR Contact: 06/07/2024
Next Scheduled EDR Contact: 09/30/2024
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 Protection Agency
Telephone: 202-564-0394
Last EDR Contact: 05/08/2024
Next Scheduled EDR Contact: 08/19/2024
Data Release Frequency: Semi-Annually

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: 05/08/2024
Next Scheduled EDR Contact: 08/19/2024
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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: 05/19/2023
Date Data Arrived at EDR: 04/05/2024
Date Made Active in Reports: 06/06/2024
Number of Days to Update: 62

Source: Social Science Environmental Health Research Institute
Telephone: N/A
Last EDR Contact: 06/04/2024
Next Scheduled EDR Contact: 09/16/2024
Data Release Frequency: Varies

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 (oil 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	Source: Department of Natural Resources
Date Data Arrived at EDR: 07/01/2013	Telephone: N/A
Date Made Active in Reports: 01/03/2014	Last EDR Contact: 06/01/2012
Number of Days to Update: 186	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	Source: Department of Natural Resources
Date Data Arrived at EDR: 07/01/2013	Telephone: N/A
Date Made Active in Reports: 01/15/2014	Last EDR Contact: 06/01/2012
Number of Days to Update: 198	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	Source: Department of Natural Resources
Date Data Arrived at EDR: 07/01/2013	Telephone: N/A
Date Made Active in Reports: 01/03/2014	Last EDR Contact: 06/01/2012
Number of Days to Update: 186	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: 02/05/2024	Source: Department of Energy & Environmental Protection
Date Data Arrived at EDR: 02/06/2024	Telephone: 860-424-3375
Date Made Active in Reports: 04/25/2024	Last EDR Contact: 05/07/2024
Number of Days to Update: 79	Next Scheduled EDR Contact: 08/19/2024
	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.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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: 04/25/2024
Next Scheduled EDR Contact: 08/05/2024
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: 04/08/2024
Next Scheduled EDR Contact: 07/22/2024
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: 05/13/2024
Next Scheduled EDR Contact: 08/26/2024
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: 06/03/2024
Next Scheduled EDR Contact: 09/16/2024
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.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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

NEW POLICE STATION
1209 W MOUNT VERNON ST
NIXA, MO 65714

TARGET PROPERTY COORDINATES

Latitude (North):	37.04684 - 37° 2' 48.62"
Longitude (West):	93.323181 - 93° 19' 23.45"
Universal Transverse Mercator:	Zone 15
UTM X (Meters):	471261.5
UTM Y (Meters):	4099914.0
Elevation:	1290 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	24320775 NIXA, 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).

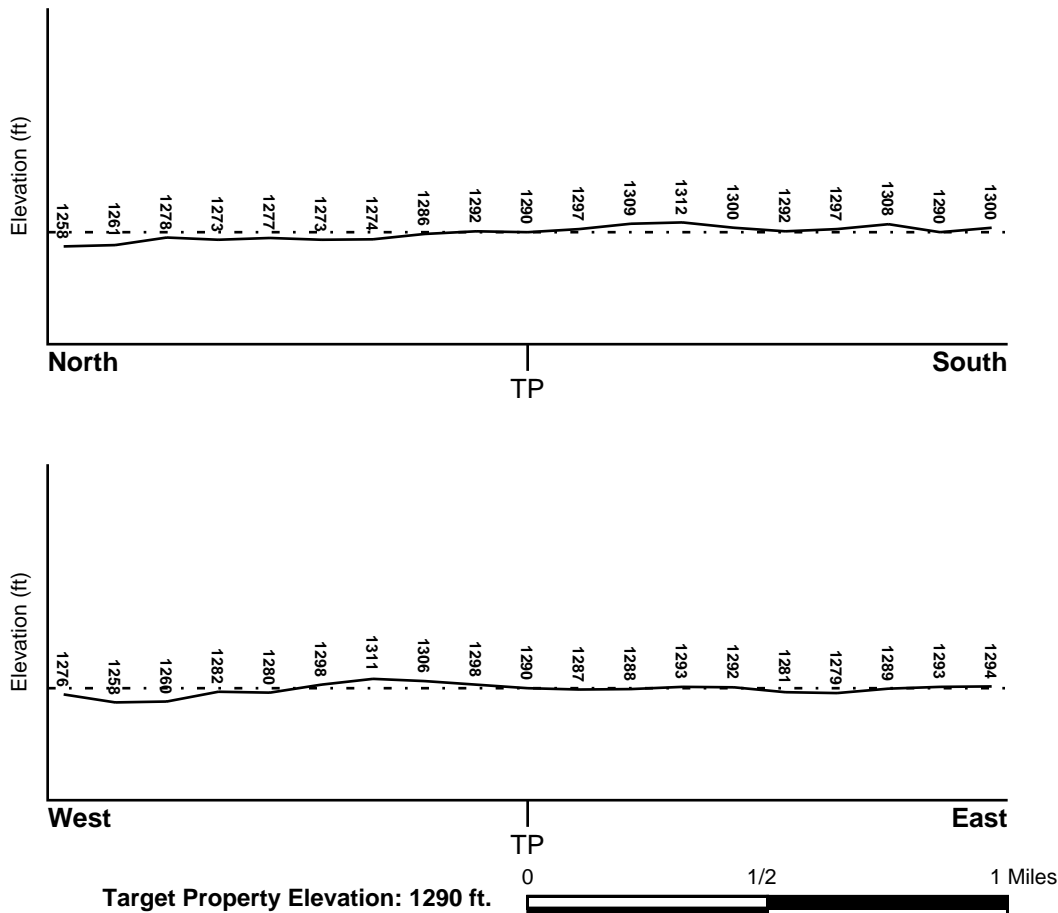
TOPOGRAPHIC INFORMATION

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 NNE

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

<u>Flood Plain Panel at Target Property</u>	<u>FEMA Source Type</u>
29043C0065C	FEMA FIRM Flood data
<u>Additional Panels in search area:</u>	<u>FEMA Source Type</u>
29043C0070C	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

<u>NWI Quad at Target Property</u>	<u>NWI Electronic Data Coverage</u>
NIXA	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.

<u>MAP ID</u>	<u>LOCATION</u>	<u>GENERAL DIRECTION</u>
Not Reported	<u>FROM TP</u>	<u>GROUNDWATER FLOW</u>

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

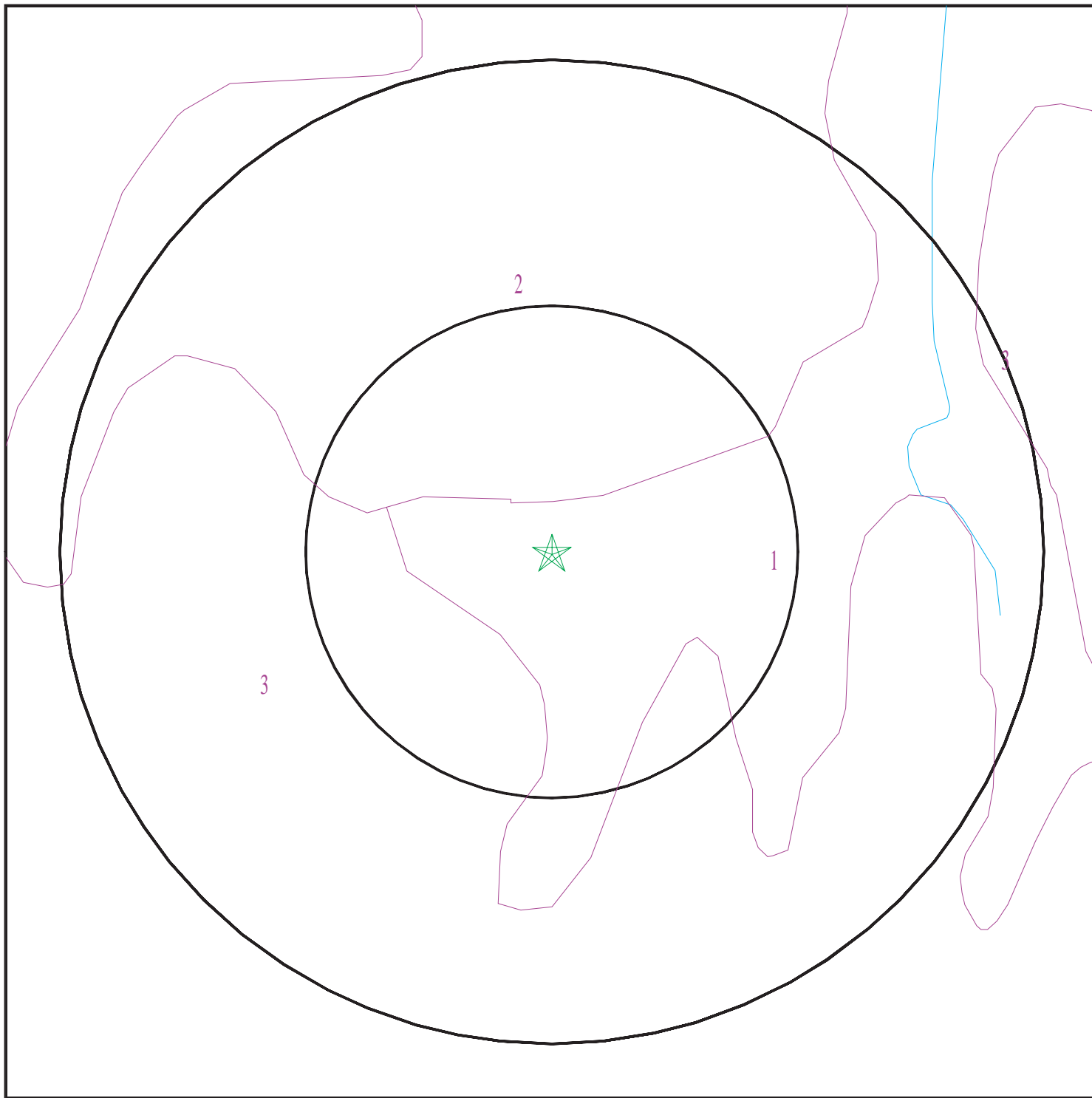
Era:	Paleozoic
System:	Mississippian
Series:	Osagean and Kinderhookian Series
Code:	M1 (<i>decoded above as Era, System & Series</i>)

GEOLOGIC AGE IDENTIFICATION

Category: Stratified Sequence

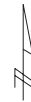
Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 7682213.2s



- ★ Target Property
- ∕ SSURGO Soil
- ∕ Water

0 1/16 1/8 1/4 Miles



SITE NAME: New Police Station
ADDRESS: 1209 W MOUNT VERNON ST
NIXA MO 65714
LAT/LONG: 37.04684 / 93.323181

CLIENT: Gredell Engineering Resources, Inc.
CONTACT: Jacob Fitzpatrick
INQUIRY #: 7682213.2s
DATE: June 14, 2024 11:53 am

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: Peridge

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: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
Layer	Boundary		Soil Texture Class	Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
	Upper	Lower		AASHTO Group	Unified Soil		
1	0 inches	5 inches	silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 6 Min: 4.5
2	5 inches	14 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 6 Min: 4.5
3	14 inches	64 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 6 Min: 4.5

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Map ID: 2

Soil Component Name: Wilderness

Soil Surface Texture: gravelly silt loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine 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: > 46 inches

Soil Layer Information							
Layer	Boundary		Soil Texture Class	Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
	Upper	Lower		AASHTO Group	Unified Soil		
1	0 inches	5 inches	gravelly silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 4 Min: 1.4	Max: 6 Min: 4.5
2	5 inches	16 inches	very gravelly silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 4 Min: 1.4	Max: 6 Min: 4.5
3	16 inches	31 inches	extremely gravelly silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 4 Min: 1.4	Max: 6 Min: 4.5
4	31 inches	59 inches	very gravelly clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 4 Min: 1.4	Max: 6 Min: 4.5

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Map ID: 3

Soil Component Name: Tonti

Soil Surface Texture: silt loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Moderately well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 61 inches

Soil Layer Information							
Layer	Boundary		Soil Texture Class	Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
	Upper	Lower		AASHTO Group	Unified Soil		
1	0 inches	11 inches	silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 14 Min: 4	Max: 5.5 Min: 4.5
2	11 inches	22 inches	gravelly silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 14 Min: 4	Max: 5.5 Min: 4.5
3	22 inches	40 inches	very gravelly silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 14 Min: 4	Max: 5.5 Min: 4.5
4	40 inches	61 inches	extremely gravelly clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Gravels, Gravels with fines, Clayey Gravel	Max: 14 Min: 4	Max: 5.5 Min: 4.5

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

<u>DATABASE</u>	<u>SEARCH DISTANCE (miles)</u>
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

<u>MAP ID</u>	<u>WELL ID</u>	<u>LOCATION FROM TP</u>
3	USGS40000687026	1/4 - 1/2 Mile SSW
B9	USGS40000687129	1/2 - 1 Mile NW

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

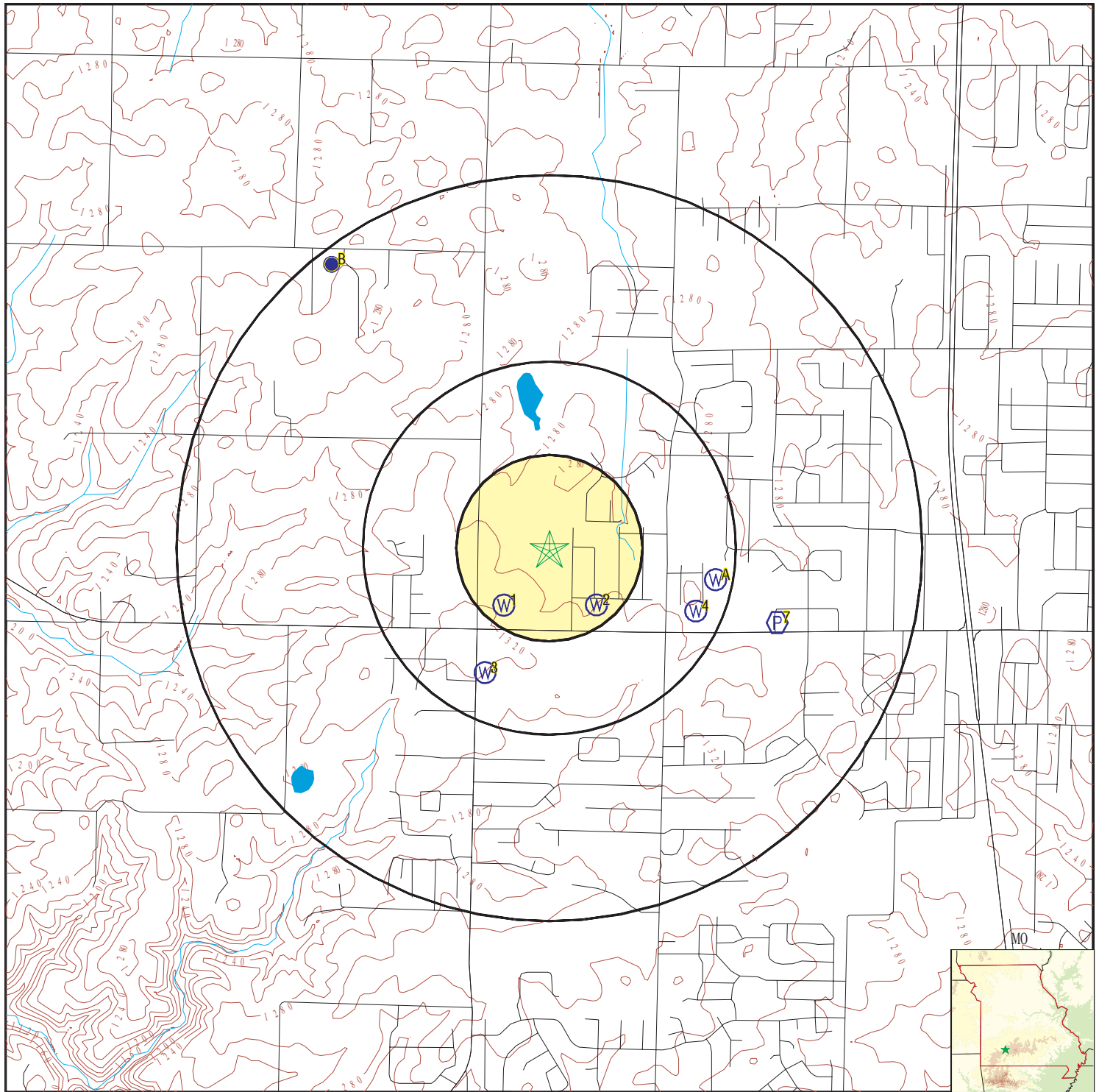
<u>MAP ID</u>	<u>WELL ID</u>	<u>LOCATION FROM TP</u>
7	MO5010576	1/2 - 1 Mile ESE

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

<u>MAP ID</u>	<u>WELL ID</u>	<u>LOCATION FROM TP</u>
1	MOLOG3000020321	1/8 - 1/4 Mile SW
2	MOLOG3000020322	1/8 - 1/4 Mile SE
4	MOLOG3000020320	1/4 - 1/2 Mile ESE
A5	MO7000000002341	1/4 - 1/2 Mile East
A6	MOLOG3000020329	1/4 - 1/2 Mile East
B8	MOLOG3000020394	1/2 - 1 Mile NW

PHYSICAL SETTING SOURCE MAP - 7682213.2s



- 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
- Indeterminate Groundwater Flow at Location
- Groundwater Flow Varies at Location
- Oil, gas or related wells

SITE NAME: New Police Station
 ADDRESS: 1209 W MOUNT VERNON ST
 NIXA MO 65714
 LAT/LONG: 37.04684 / 93.323181

CLIENT: Gredell Engineering Resources, Inc.
 CONTACT: Jacob Fitzpatrick
 INQUIRY #: 7682213.2s
 DATE: June 14, 2024 11:53 am

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

Database EDR ID Number

1
SW
1/8 - 1/4 Mile
Higher
MO WELLS **MOLOG3000020321**

WELLS LOG:

Database:	Geologic Well Log Database		
ID:	0010872	Owner:	Goddard, Floyd
Well Type:	Private Well	Stratigraphy Log:	Yes
Driller Log:	No	Other Log:	No
Samples Retained:	Yes	Elevation (ft):	1315
Total Depth (ft):	405	Depth to Bedrock (ft):	50
SWL After Casing Set:	200	SWL Before Casing Set:	-9999
SWL After Casing Grouting (ft):	1115	SWL Before Casing Grouting (ft):	-9999
Water Noted by Driller (ft):	Not Reported	Draw Down (ft):	-9999
Well Yield (gpm):	3		
Surface Formation:	(NO SAMPLES or NOT LOGGED)		
First Bedrock Form:	BURLINGTON-KEOKUK LIMESTONE 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:	19490301	Driller:	Shelton Brothers
Logger:	McNeal	Log Date:	19490715
Geological Structures:	No	Interval Core Top (ft):	0
Interval Core Bottom (ft):	0		
Remarks:	1 Mi W Of Nixa		
URL:	https://info.mo.gov/dnr/DNR_GIS/geology/wrc/logmain/striplogs/0010872.pdf		

2
SE
1/8 - 1/4 Mile
Higher
MO WELLS **MOLOG3000020322**

WELLS LOG:

Database:	Geologic Well Log Database		
ID:	0009180	Owner:	Keltner, B.E. - Well #2
Well Type:	Private Well	Stratigraphy Log:	Yes
Driller Log:	No	Other Log:	No
Samples Retained:	Yes	Elevation (ft):	1300
Total Depth (ft):	325	Depth to Bedrock (ft):	30
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):	0		
Surface Formation:	(NO SAMPLES or NOT LOGGED)		
First Bedrock Form:	BURLINGTON-KEOKUK LIMESTONE 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:	19460501	Driller:	Block, G.C.
Logger:	Pierce, Tom	Log Date:	194606
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/0009180.pdf		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

Database EDR ID Number

3

SSW
1/4 - 1/2 Mile
Higher

FED USGS USGS40000687026

Organization ID:	USGS-MO	Organization Name:	USGS Missouri Water Science Center
Monitor Location:	T27N R22W 15ACC1	Type:	Well
Description:	Not Reported	HUC:	11010002
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Units:	Not Reported
Aquifer:	Ozark Plateaus aquifer system		
Formation Type:	Cotter Dolomite	Aquifer Type:	Not Reported
Construction Date:	19410401	Well Depth:	406
Well Depth Units:	ft	Well Hole Depth:	406
Well Hole Depth Units:	ft		

Ground water levels, Number of Measurements:	1	Level reading date:	1949-04-01
Feet below surface:	200	Feet to sea level:	Not Reported
Note:	Not Reported		

4

ESE
1/4 - 1/2 Mile
Higher

MO WELLS MOLOG3000020320

WELLS LOG:

Database:	Geologic Well Log Database		
ID:	0009179	Owner:	Inman, Earl
Well Type:	Private Well	Stratigraphy Log:	Yes
Driller Log:	No	Other Log:	No
Samples Retained:	Yes	Elevation (ft):	1297
Total Depth (ft):	120	Depth to Bedrock (ft):	55
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):	0		
Surface Formation:	(NO SAMPLES or NOT LOGGED)		
First Bedrock Form:	BURLINGTON-KEOKUK LIMESTONE 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:	19460501	Driller:	Block, G.C.
Logger:	Pierce, Tom	Log Date:	194606
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/0009179.pdf		

A5

East
1/4 - 1/2 Mile
Higher

MO WELLS MO7000000002341

Database:	Missouri Public Drinking Water Wells		
DGLS ID:	100800	LOGMAIN ID:	0028721

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Well Certification #:	00079618	PWSS Name:	Nixa
PWSS ID:	5010576	IPWS ID:	MO5010576
Well #:	5	Local Name:	Well #5
Well ID:	14478	Facility Type:	City
Federal Water System Type:	Community	Status:	Active
Drill Date:	1993	Abandoned:	0
Plugged:	0	Material Type:	Consolidated
Formation at Casing Depth:	Jefferson City	Formation at Total Depth:	Elvins
Total Depth:	1675	Ground Elevation:	1285
Top Seal Type:	Cement Grout	Bottom Seal Type:	Cement Grout
Casing Depth:	603	Casing Diameter:	10
Casing Type:	Steel	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:	245
Max Yield (gal/min):	650	Dynamic Head of Pump:	0
Drawdown:	35	Year of Pump Test:	0
Pump Type:	Vertical Turbine		
Pump Manufacturer:	Not Reported	Pump Depth:	0
Pump Capacity:	530	Has Pump Meter:	Y
Has Stand-by Power:	Y	VOC detections:	N
Nitrates Detected:	N	Chlorination Used:	N
Filtration Used:	N	GWUDISW:	N
Meets Construction Requirements:	Not Reported	Surface Drainage:	Satisfactory
Water System Entry Point ID:	Y	SWIP Wellhead Status:	Verified

A6
East
1/4 - 1/2 Mile
Higher

MO WELLS MOLOG3000020329

WELLS LOG:

Database:	Geologic Well Log Database		
ID:	0028721	Owner:	City Of Nixa Well #5
Well Type:	Public Well - Community		
Stratigraphy Log:	Yes	Driller Log:	No
Other Log:	No	Samples Retained:	Yes
Elevation (ft):	1285	Total Depth (ft):	1675
Depth to Bedrock (ft):	25	SWL After Casing Set:	240
SWL Before Casing Set:	140	SWL After Casing Grouting (ft):	1045
SWL Before Casing Grouting (ft):	1145	Water Noted by Driller (ft):	Not Reported
Draw Down (ft):	25	Well Yield (gpm):	650
Surface Formation:	SOIL-RESIDUUM		
First Bedrock Form:	BURLINGTON-KEOKUK LIMESTONE UNDIFFERENTIATED		
Alternate ID 1:	None	Alternate ID 3:	None
SDWIS ID:	14478	WIMS ID:	00079618
Oil and Gas ID:	None	Other Database ID:	None
Mineral Bore Hole ID:	None	Additional Databases Linked:	PUBLIC DRINKING WATER
Drill Date:	19921221	Driller:	Flynn Drilling
Logger:	Bohm, Rex	Log Date:	19930106
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/0028721.pdf		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

Database EDR ID Number

7

ESE

1/2 - 1 Mile

Lower

FRDS PWS

MO5010576

Epa region:	07	State:	MO
Pwsid:	MO5010576	Pwsname:	NIXA
Cityserved:	Not Reported	Stateserved:	MO
Ziperved:	Not Reported	Fipscounty:	29043
Status:	Active	Retpopsrvd:	18000
Pwssvconn:	7780	Psource longname:	Groundwater
Pwstype:	CWS	Owner:	Local_Govt
Contact:	BINGLE, BRIAN	Contactorgname:	BINGLE, BRIAN
Contactphone:	417-725-3785	Contactaddress1:	Not Reported
Contactaddress2:	PO BOX 395	Contactcity:	NIXA
Contactstate:	MO	Contactzip:	65714-0000
Pwsactivitycode:	A		
Pwsid:	MO5010576	Facid:	100359
Facname:	WELL # 8- TRACKER RD TREATMENT		
Factype:	Treatment_plant	Facactivitycode:	A
Trtobjective:	other	Trtprocess:	fluoridation
Factypecode:	TP		
Pwsid:	MO5010576	Facid:	101495
Facname:	WELL #9 HIGH POINTE TREATMENT		
Factype:	Treatment_plant	Facactivitycode:	A
Trtobjective:	other	Trtprocess:	fluoridation
Factypecode:	TP		
Pwsid:	MO5010576	Facid:	71635
Facname:	WELL # 1	Factype:	Treatment_plant
Facactivitycode:	A	Trtobjective:	other
Trtprocess:	fluoridation	Factypecode:	TP
Pwsid:	MO5010576	Facid:	71636
Facname:	WELL # 3	Factype:	Treatment_plant
Facactivitycode:	A	Trtobjective:	other
Trtprocess:	fluoridation	Factypecode:	TP
Pwsid:	MO5010576	Facid:	71637
Facname:	WELL # 4	Factype:	Treatment_plant
Facactivitycode:	A	Trtobjective:	other
Trtprocess:	fluoridation	Factypecode:	TP
Pwsid:	MO5010576	Facid:	71638
Facname:	WELL # 5	Factype:	Treatment_plant
Facactivitycode:	A	Trtobjective:	other
Trtprocess:	fluoridation	Factypecode:	TP
Pwsid:	MO5010576	Facid:	74076
Facname:	WELL # 6	Factype:	Treatment_plant
Facactivitycode:	A	Trtobjective:	other
Trtprocess:	fluoridation	Factypecode:	TP
Pwsid:	MO5010576	Facid:	74577
Facname:	WELL # 7	Factype:	Treatment_plant
Facactivitycode:	A	Trtobjective:	other
Trtprocess:	fluoridation	Factypecode:	TP

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

PWS ID:	MO5010576	PWS name:	NIXA
Address:	BOX 395	Care of:	106 E. MT. VERNON
City:	NIXA	State:	MO
Zip:	65714	Owner:	NIXA
Source code:	Ground water	Population:	6000
PWS ID:	MO5010576	PWS type:	Not Reported
PWS name:	Not Reported	PWS address:	Not Reported
PWS city:	Not Reported	PWS state:	Not Reported
PWS zip:	Not Reported	County:	CHRISTIAN
Source:	Ground water	Treatment Objective:	Z
Process:	FLUORIDATION	Population:	6000
PWS ID:	MO5010576	Activity status:	Active
Date system activated:	4201	Date system deactivated:	Not Reported
Retail population:	00006000	System name:	NIXA
System address:	CITY HALL	System address:	106 E. MT. VERNON, BOX 395
System city:	NIXA	System state:	MO
System zip:	65714		
County FIPS:	Not Reported	City served:	NIXA
Population served:	5,001 - 10,000 Persons	Treatment:	Untreated
Latitude:	370235	Longitude:	0931730
Latitude:	370238	Longitude:	0931843
Latitude:	370302	Longitude:	0931800
Latitude:	370311	Longitude:	0931731
Latitude:	370231	Longitude:	0931733
State:	MO	Latitude degrees:	37
Latitude minutes:	2	Latitude seconds:	31.0000
Longitude degrees:	93	Longitude minutes:	17
Longitude seconds:	33.0000		
State:	MO	Latitude degrees:	37
Latitude minutes:	2	Latitude seconds:	38.0000
Longitude degrees:	93	Longitude minutes:	18
Longitude seconds:	43.0000		
State:	MO	Latitude degrees:	37
Latitude minutes:	3	Latitude seconds:	2.0000
Longitude degrees:	93	Longitude minutes:	18
Longitude seconds:	0.0000		
State:	MO	Latitude degrees:	37
Latitude minutes:	3	Latitude seconds:	11.0000
Longitude degrees:	93	Longitude minutes:	17
Longitude seconds:	31.0000		
Violation id:	7109211	Orig code:	S
State:	MO	Violation Year:	2009
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:	12/01/2009
Cmp edt:	12/31/2009		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Violation id:	7109230	Orig code:	S
State:	MO	Violation Year:	2010
Contamination code:	0700	Contamination Name:	GROUNDWATER RULE
Violation code:	45	Violation name:	Failure To Address Deficiency
Rule code:	140	Rule name:	GWR
Violation measur:	Not Reported	Unit of measure:	Not Reported
State mcl:	Not Reported	Cmp bdt:	06/19/2010
Cmp edt:	Not Reported		
Violation id:	7109241	Orig code:	S
State:	MO	Violation Year:	2011
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:	06/01/2011
Cmp edt:	06/30/2011		
Violation id:	7109252	Orig code:	S
State:	MO	Violation Year:	2011
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:	09/01/2011
Cmp edt:	09/30/2011		
Violation id:	7109266	Orig code:	S
State:	MO	Violation Year:	2013
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:	07/01/2013
Cmp edt:	07/31/2013		
Violation id:	7109267	Orig code:	S
State:	MO	Violation Year:	2013
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:	10/01/2013
Cmp edt:	10/31/2013		
Violation id:	7109268	Orig code:	S
State:	MO	Violation Year:	2013
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:	11/01/2013
Cmp edt:	11/30/2013		
Violation id:	7109269	Orig code:	S
State:	MO	Violation Year:	2014
Contamination code:	7500	Contamination Name:	Public Notice
Violation code:	75	Violation name:	PN Violation for NPDWR Violation
Rule code:	410	Rule name:	PN rule
Violation measur:	Not Reported	Unit of measure:	Not Reported
State mcl:	Not Reported	Cmp bdt:	01/16/2014
Cmp edt:	Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Violation ID:	10595	Orig Code:	S
Enforcemnt FY:	2014	Enforcement Action:	01/22/2014
Enforcement Detail:	St Compliance achieved	Enforcement Category:	Resolving
Violation ID:	7109211	Orig Code:	S
Enforcemnt FY:	2010	Enforcement Action:	01/06/2010
Enforcement Detail:	St Public Notif requested	Enforcement Category:	Informal
Violation ID:	7109211	Orig Code:	S
Enforcemnt FY:	2010	Enforcement Action:	01/06/2010
Enforcement Detail:	St Violation/Reminder Notice		
Enforcement Category:	Informal		
Violation ID:	7109211	Orig Code:	S
Enforcemnt FY:	2010	Enforcement Action:	02/08/2010
Enforcement Detail:	St Public Notif received	Enforcement Category:	Informal
Violation ID:	7109211	Orig Code:	S
Enforcemnt FY:	2014	Enforcement Action:	01/22/2014
Enforcement Detail:	St Compliance achieved	Enforcement Category:	Resolving
Violation ID:	7109230	Orig Code:	S
Enforcemnt FY:	2010	Enforcement Action:	08/25/2010
Enforcement Detail:	St Compliance achieved	Enforcement Category:	Resolving
Violation ID:	7109241	Orig Code:	S
Enforcemnt FY:	2012	Enforcement Action:	10/25/2011
Enforcement Detail:	St Public Notif received	Enforcement Category:	Informal
Violation ID:	7109241	Orig Code:	S
Enforcemnt FY:	2012	Enforcement Action:	06/30/2012
Enforcement Detail:	St Compliance achieved	Enforcement Category:	Resolving
Violation ID:	7109241	Orig Code:	S
Enforcemnt FY:	2011	Enforcement Action:	06/30/2011
Enforcement Detail:	St Violation/Reminder Notice		
Enforcement Category:	Informal		
Violation ID:	7109241	Orig Code:	S
Enforcemnt FY:	2011	Enforcement Action:	06/30/2011
Enforcement Detail:	St Public Notif requested	Enforcement Category:	Informal
Violation ID:	7109252	Orig Code:	S
Enforcemnt FY:	2012	Enforcement Action:	10/07/2011
Enforcement Detail:	St Public Notif requested	Enforcement Category:	Informal
Violation ID:	7109252	Orig Code:	S
Enforcemnt FY:	2012	Enforcement Action:	11/03/2011
Enforcement Detail:	St Public Notif received	Enforcement Category:	Informal
Violation ID:	7109252	Orig Code:	S
Enforcemnt FY:	2012	Enforcement Action:	06/30/2012
Enforcement Detail:	St Compliance achieved	Enforcement Category:	Resolving
Violation ID:	7109252	Orig Code:	S
Enforcemnt FY:	2012	Enforcement Action:	10/07/2011
Enforcement Detail:	St Violation/Reminder Notice		
Enforcement Category:	Informal		
Violation ID:	7109266	Orig Code:	S
Enforcemnt FY:	2014	Enforcement Action:	01/22/2014
Enforcement Detail:	St Compliance achieved	Enforcement Category:	Resolving

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Violation ID:	7109266	Orig Code:	S
Enforcement FY:	2014	Enforcement Action:	12/30/2013
Enforcement Detail:	St Violation/Reminder Notice		
Enforcement Category:	Informal		
Violation ID:	7109266	Orig Code:	S
Enforcement FY:	2013	Enforcement Action:	07/19/2013
Enforcement Detail:	St Public Notif requested	Enforcement Category:	Informal
Violation ID:	7109266	Orig Code:	S
Enforcement FY:	2013	Enforcement Action:	07/19/2013
Enforcement Detail:	St Formal NOV issued	Enforcement Category:	Informal
Violation ID:	7109266	Orig Code:	S
Enforcement FY:	2013	Enforcement Action:	08/22/2013
Enforcement Detail:	St Public Notif received	Enforcement Category:	Informal
Violation ID:	7109267	Orig Code:	S
Enforcement FY:	2014	Enforcement Action:	12/30/2013
Enforcement Detail:	St Violation/Reminder Notice		
Enforcement Category:	Informal		
Violation ID:	7109267	Orig Code:	S
Enforcement FY:	2014	Enforcement Action:	10/24/2013
Enforcement Detail:	St Formal NOV issued	Enforcement Category:	Informal
Violation ID:	7109267	Orig Code:	S
Enforcement FY:	2014	Enforcement Action:	10/24/2013
Enforcement Detail:	St Public Notif requested	Enforcement Category:	Informal
Violation ID:	7109267	Orig Code:	S
Enforcement FY:	2014	Enforcement Action:	12/09/2013
Enforcement Detail:	St Public Notif received	Enforcement Category:	Informal
Violation ID:	7109268	Orig Code:	S
Enforcement FY:	2014	Enforcement Action:	12/06/2013
Enforcement Detail:	St Public Notif requested	Enforcement Category:	Informal
Violation ID:	7109268	Orig Code:	S
Enforcement FY:	2014	Enforcement Action:	12/30/2013
Enforcement Detail:	St Violation/Reminder Notice		
Enforcement Category:	Informal		
Violation ID:	7109268	Orig Code:	S
Enforcement FY:	2014	Enforcement Action:	12/06/2013
Enforcement Detail:	St Formal NOV issued	Enforcement Category:	Informal
Violation ID:	7109269	Orig Code:	S
Enforcement FY:	2014	Enforcement Action:	12/31/2013
Enforcement Detail:	St Compliance achieved	Enforcement Category:	Resolving
Violation ID:	811496	Orig Code:	S
Enforcement FY:	2014	Enforcement Action:	01/22/2014
Enforcement Detail:	St Compliance achieved	Enforcement Category:	Resolving
Violation ID:	811596	Orig Code:	S
Enforcement FY:	2014	Enforcement Action:	01/22/2014
Enforcement Detail:	St Compliance achieved	Enforcement Category:	Resolving

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

Database EDR ID Number

B8
NW
1/2 - 1 Mile
Higher

MO WELLS **MOLOG3000020394**

WELLS LOG:

Database:	Geologic Well Log Database		
ID:	0016614	Owner:	Pope, E.T.
Well Type:	Private Well	Stratigraphy Log:	Yes
Driller Log:	No	Other Log:	No
Samples Retained:	No	Elevation (ft):	1288
Total Depth (ft):	131	Depth to Bedrock (ft):	50
SWL After Casing Set:	70	SWL Before Casing Set:	-9999
SWL After Casing Grouting (ft):	1218	SWL Before Casing Grouting (ft):	-9999
Water Noted by Driller (ft):	100'	Draw Down (ft):	-9999
Well Yield (gpm):	20		
Surface Formation:	(NO SAMPLES or NOT LOGGED)		
First Bedrock Form:	BURLINGTON 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:	19570417	Driller:	Berg, Joe
Logger:	Wells, J.	Log Date:	19570917
Geological Structures:	No	Interval Core Top (ft):	0
Interval Core Bottom (ft):	0		
Remarks:	3 Mi Nw Of Nixa, 0.25 Mi E Of Union Chapel		
URL:	https://info.mo.gov/dnr/DNR_GIS/geology/wrc/logmain/striplogs/0016614.pdf		

B9
NW
1/2 - 1 Mile
Higher

FED USGS **USGS40000687129**

Organization ID:	USGS-MO	Organization Name:	USGS Missouri Water Science Center
Monitor Location:	T27N R22W 10CBB1	Type:	Well
Description:	Not Reported	HUC:	11010002
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:	Osagean Series	Aquifer Type:	Confined multiple aquifer
Construction Date:	19570417	Well Depth:	131
Well Depth Units:	ft	Well Hole Depth:	131
Well Hole Depth Units:	ft		

Ground water levels, Number of Measurements:	1	Level reading date:	1957-04-17
Feet below surface:	70	Feet to sea level:	Not Reported
Note:	Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

RADON

AREA RADON INFORMATION

State Database: MO Radon

Radon Test Results

Zipcode	Test Date	Result
65714	10/30/08	9.1
65714	11/03/07	4
65714	11/16/07	1.7
65714	11/30/07	3.8
65714	12/03/07	2.3
65714	12/03/07	9.2
65714	12/05/07	2.3
65714	12/08/07	1.2
65714	12/12/07	5.5
65714	12/17/07	2.4
65714	12/19/07	6.5
65714	02/18/08	32.6
65714	02/22/07	????
65714	01/25/08	1.8
65714	02/02/09	5.7
65714	02/04/08	2.1
65714	02/04/08	19.5
65714	02/07/08	0.8
65714	04/01/08	6
65714	04/09/08	11.2
65714	03/07/08	6.4
65714	03/17/07	0.6
65714	05/19/07	????
65714	05/23/06	< 0.3
65714	05/30/08	< 0.3
65714	06/09/07	4.6
65714	06/27/08	1.2
65714	06/30/08	< 0.3
65714	05/03/08	????
65714	05/03/08	????
65714	05/07/05	0.9
65714	05/07/05	7.6

Federal EPA Radon Zone for CHRISTIAN 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: 65714

Number of sites tested: 2

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	1.250 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	1.200 pCi/L	100%	0%	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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Appendix II(b)

The EDR Aerial Photo Decade Package



New Police Station

1209 W MOUNT VERNON ST

NIXA, MO 65714

Inquiry Number: 7682213.8

June 17, 2024

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

06/17/24

Site Name:

New Police Station
1209 W MOUNT VERNON ST
NIXA, MO 65714
EDR Inquiry # 7682213.8

Client Name:

Gredell Engineering Resources, Inc.
1505 East High Street
Jefferson City, MO 65101
Contact: Jacob Fitzpatrick



Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

<u>Year</u>	<u>Scale</u>	<u>Details</u>	<u>Source</u>
2020	1"=500'	Flight Year: 2020	USDA/NAIP
2016	1"=500'	Flight Year: 2016	USDA/NAIP
2012	1"=500'	Flight Year: 2012	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2006	1"=500'	Flight Year: 2006	USDA/NAIP
1996	1"=500'	Acquisition Date: January 01, 1996	USGS/DOQQ
1990	1"=500'	Acquisition Date: February 17, 1990	USGS/DOQQ
1985	1"=500'	Flight Date: February 28, 1985	USDA
1979	1"=500'	Flight Date: September 16, 1979	USDA
1970	1"=500'	Flight Date: September 30, 1970	USGS
1964	1"=500'	Flight Date: May 01, 1964	USGS
1959	1"=500'	Flight Date: March 21, 1959	USGS
1953	1"=500'	Flight Date: September 20, 1953	USDA

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INQUIRY #: 7682213.8

YEAR: 2020

— = 500'





INQUIRY #: 7682213.8

YEAR: 2016

— = 500'





INQUIRY #: 7682213.8

YEAR: 2012

— = 500'





INQUIRY #: 7682213.8

YEAR: 2009

— = 500'





INQUIRY #: 7682213.8

YEAR: 2006

— = 500'





INQUIRY #: 7682213.8

YEAR: 1996

— = 500'





INQUIRY #: 7682213.8

YEAR: 1990

— = 500'





INQUIRY #: 7682213.8

YEAR: 1985

— = 500'





INQUIRY #: 7682213.8

YEAR: 1979

— = 500'





INQUIRY #: 7682213.8

YEAR: 1970

— = 500'



Subject boundary not shown because it exceeds image extent or image is not georeferenced.



INQUIRY #: 7682213.8

YEAR: 1964

— = 500'



Subject boundary not shown because it exceeds image extent or image is not georeferenced.



INQUIRY #: 7682213.8

YEAR: 1959

— = 500'



Subject boundary not shown because it exceeds image extent or image is not georeferenced.



INQUIRY #: 7682213.8


YEAR: 1953

— = 500'



Appendix II(c)

EDR Historical Topographic Map Report



New Police Station
1209 W MOUNT VERNON ST
NIXA, MO 65714

Inquiry Number: 7682213.4

June 14, 2024

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

06/14/24

Site Name:

New Police Station
1209 W MOUNT VERNON ST
NIXA, MO 65714
EDR Inquiry # 7682213.4

Client Name:

Gredell Engineering Resources, Inc.
1505 East High Street
Jefferson City, MO 65101
Contact: Jacob Fitzpatrick



EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Gredell Engineering Resources, Inc. were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDR's Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:**Coordinates:**

P.O.#	Task Order 24-002	Latitude:	37.04684 37° 2' 49" North
Project:	New Police Station	Longitude:	-93.323181 -93° 19' 23" West
		UTM Zone:	Zone 15 North
		UTM X Meters:	471262.23
		UTM Y Meters:	4100117.33
		Elevation:	1290.00' above sea level

Maps Provided:

2021	1886
2017	
2015	
1979	
1975	
1970	
1960	
1938	

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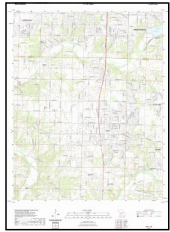
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Topo Sheet Key

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

2021 Source Sheets



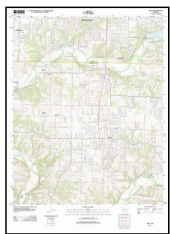
Nixa
2021
7.5-minute, 24000

2017 Source Sheets



Nixa
2017
7.5-minute, 24000

2015 Source Sheets



Nixa
2015
7.5-minute, 24000

1979 Source Sheets



Nixa
1979
7.5-minute, 24000
Aerial Photo Revised 1979

Topo Sheet Key

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

1975 Source Sheets



Nixa
1975
7.5-minute, 24000
Aerial Photo Revised 1975

1970 Source Sheets



Nixa
1970
7.5-minute, 24000
Aerial Photo Revised 1970

1960 Source Sheets



Nixa
1960
7.5-minute, 24000
Aerial Photo Revised 1959

1938 Source Sheets



Republic
1938
15-minute, 48000

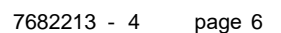
Topo Sheet Key

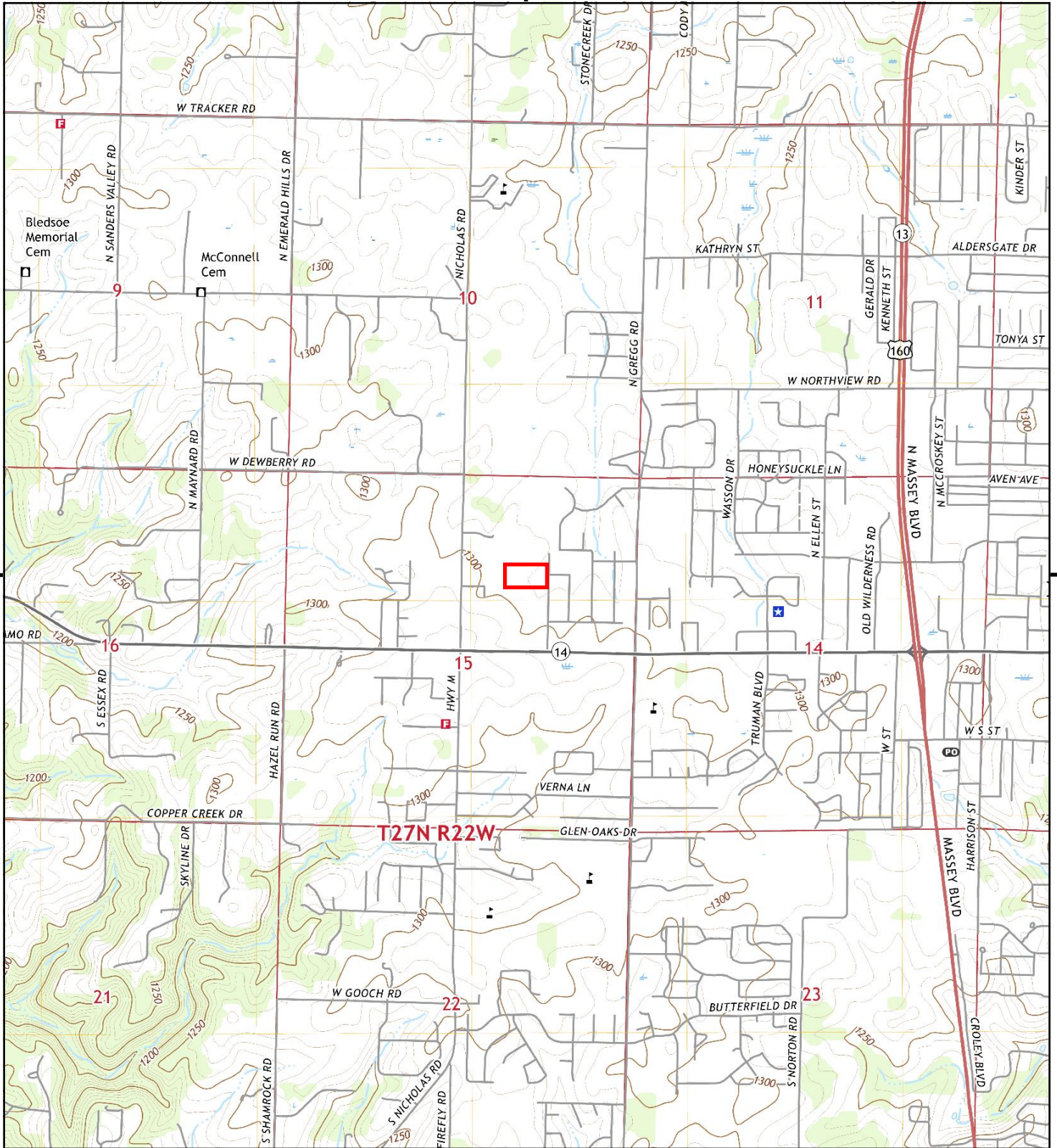
This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1886 Source Sheets

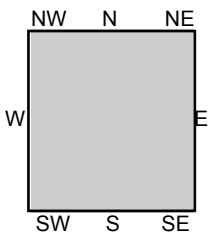
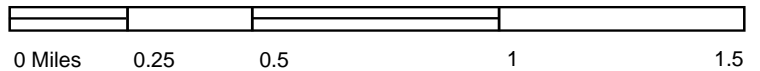


Springfield
1886
30-minute, 125000





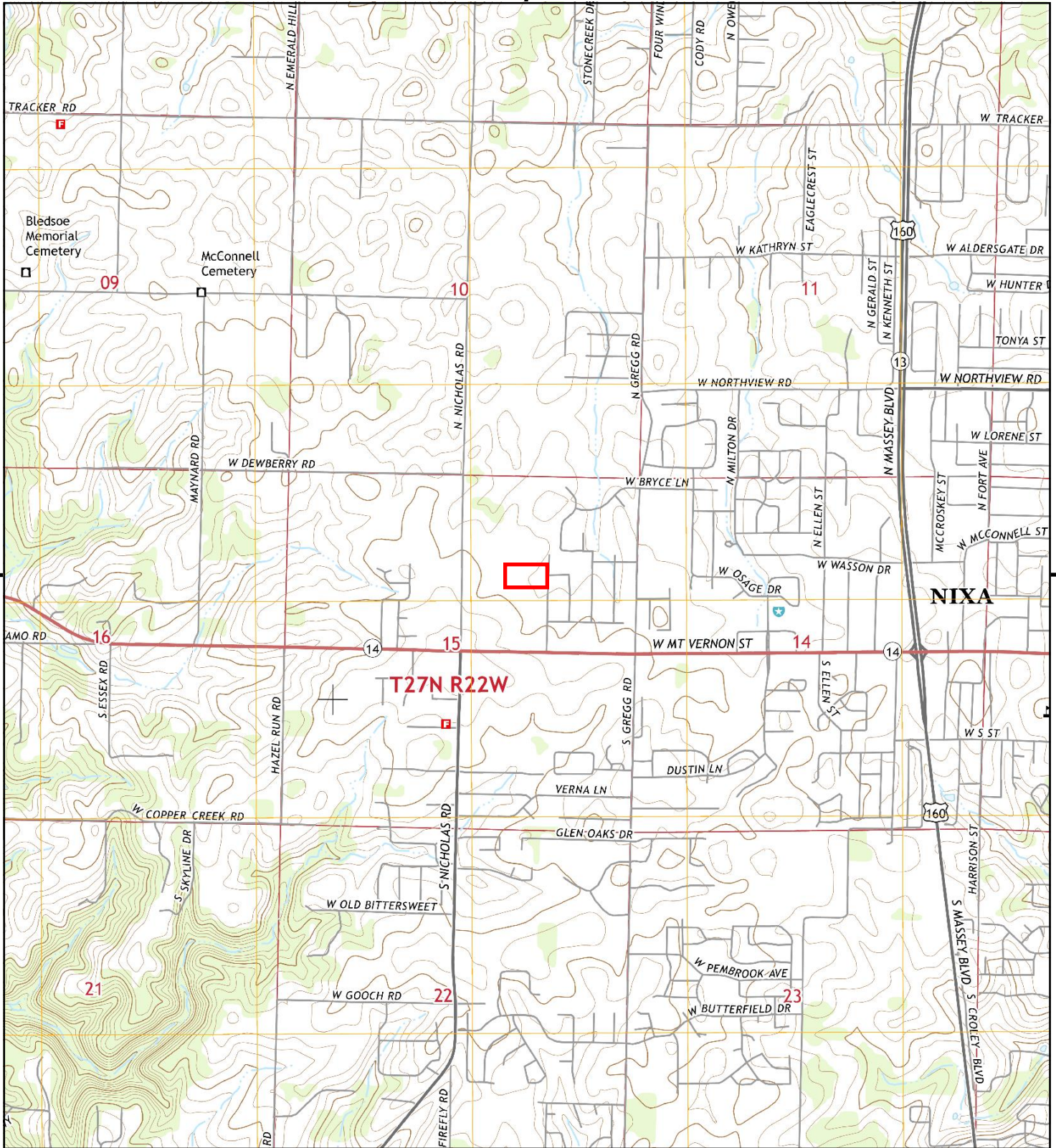
This report includes information from the following map sheet(s).



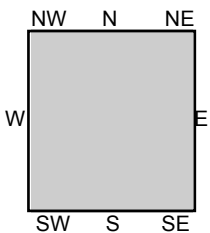
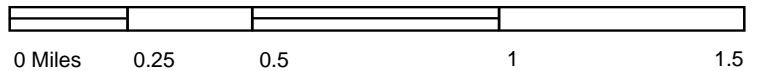
TP, Nixa, 2017, 7.5-minute

SITE NAME: New Police Station
ADDRESS: 1209 W MOUNT VERNON ST
NIXA, MO 65714
CLIENT: Gredell Engineering Resources, Inc.





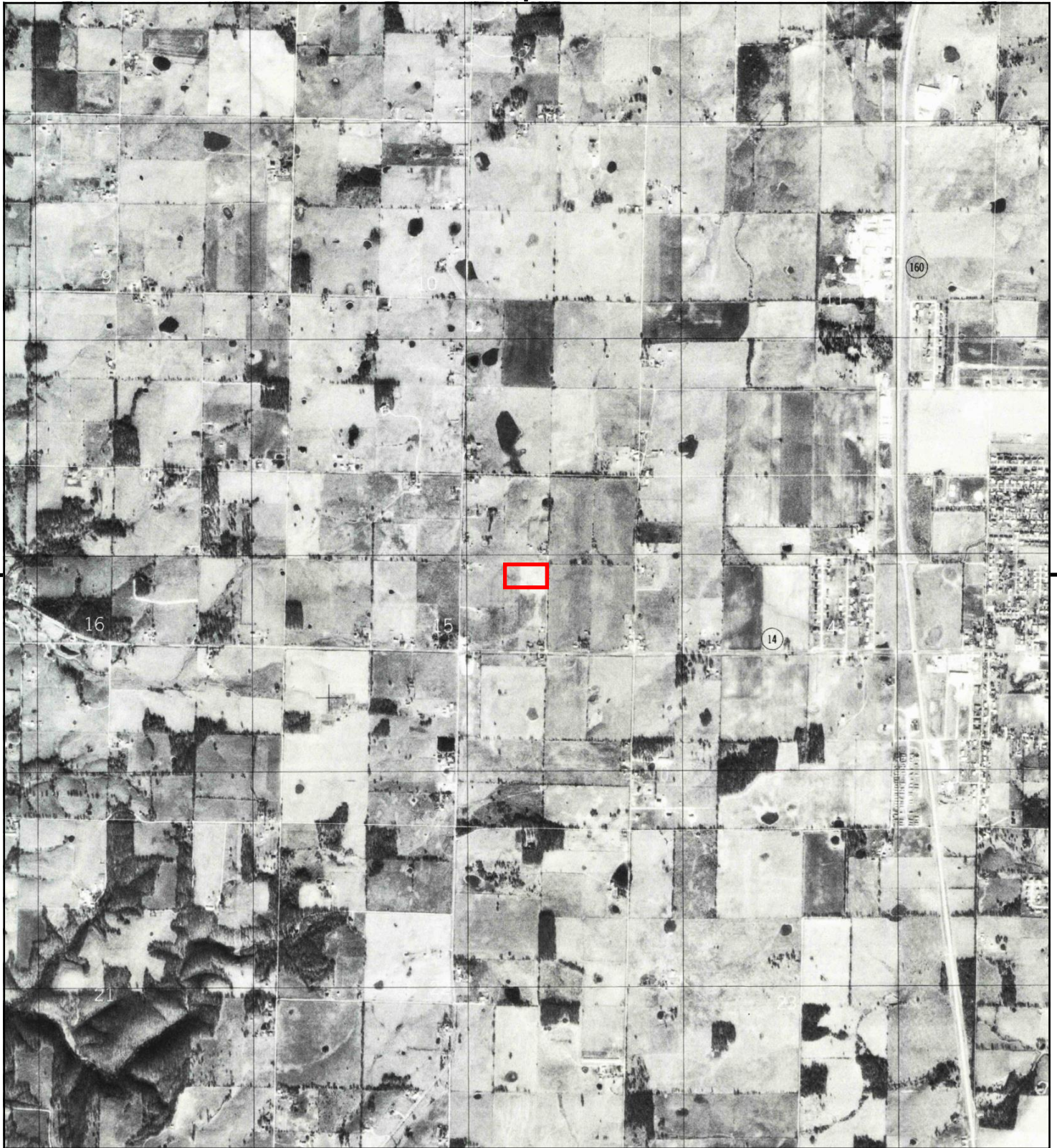
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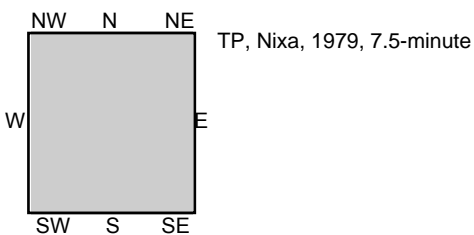
TP, Nixa, 2015, 7.5-minute

SITE NAME: New Police Station
 ADDRESS: 1209 W MOUNT VERNON ST
 NIXA, MO 65714
 CLIENT: Gredell Engineering Resources, Inc.



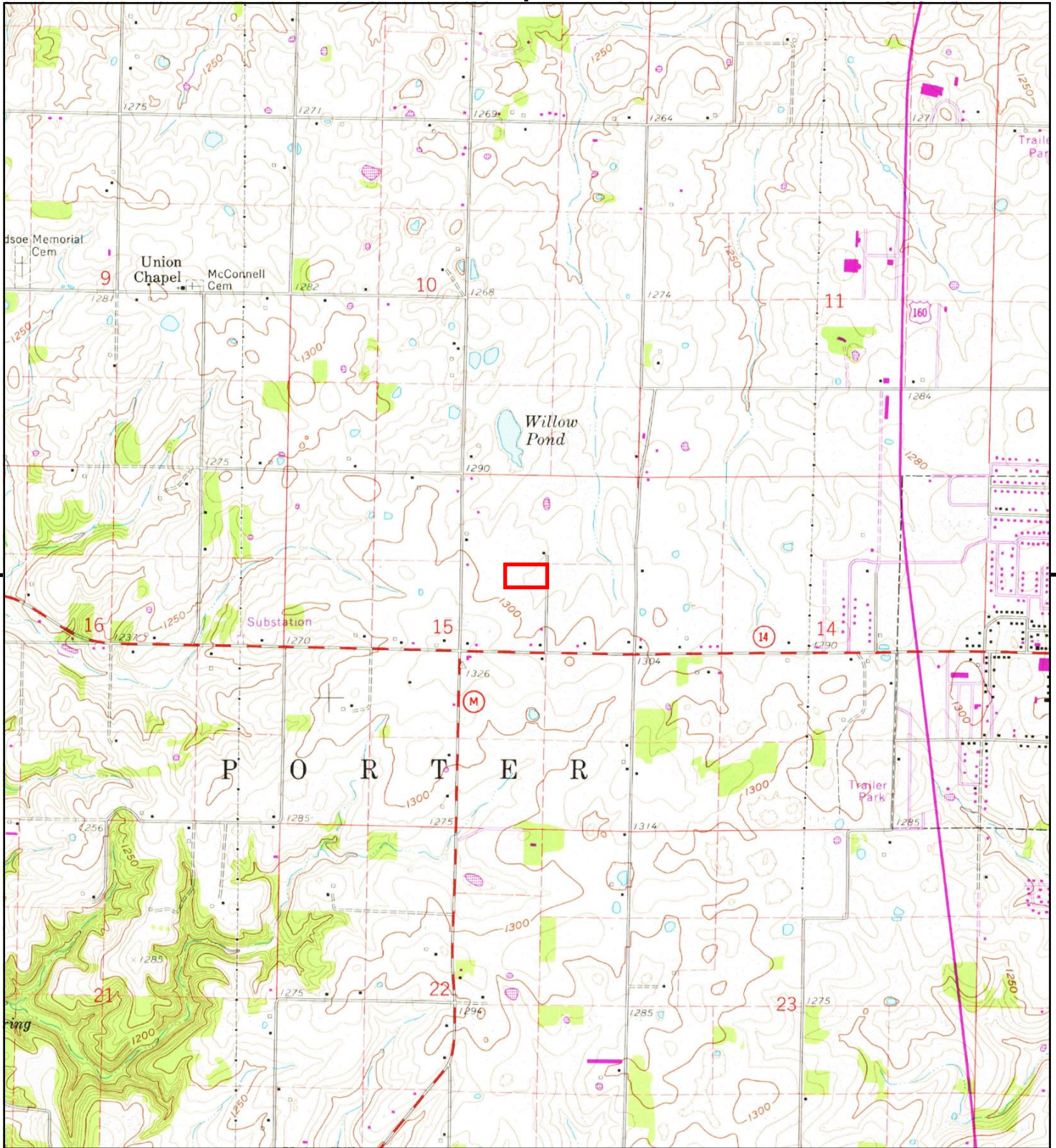


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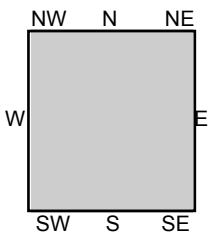
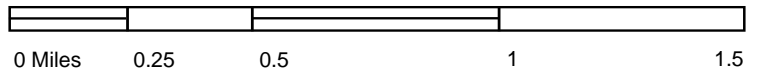


SITE NAME: New Police Station
 ADDRESS: 1209 W MOUNT VERNON ST
 NIXA, MO 65714
 CLIENT: Gredell Engineering Resources, Inc.





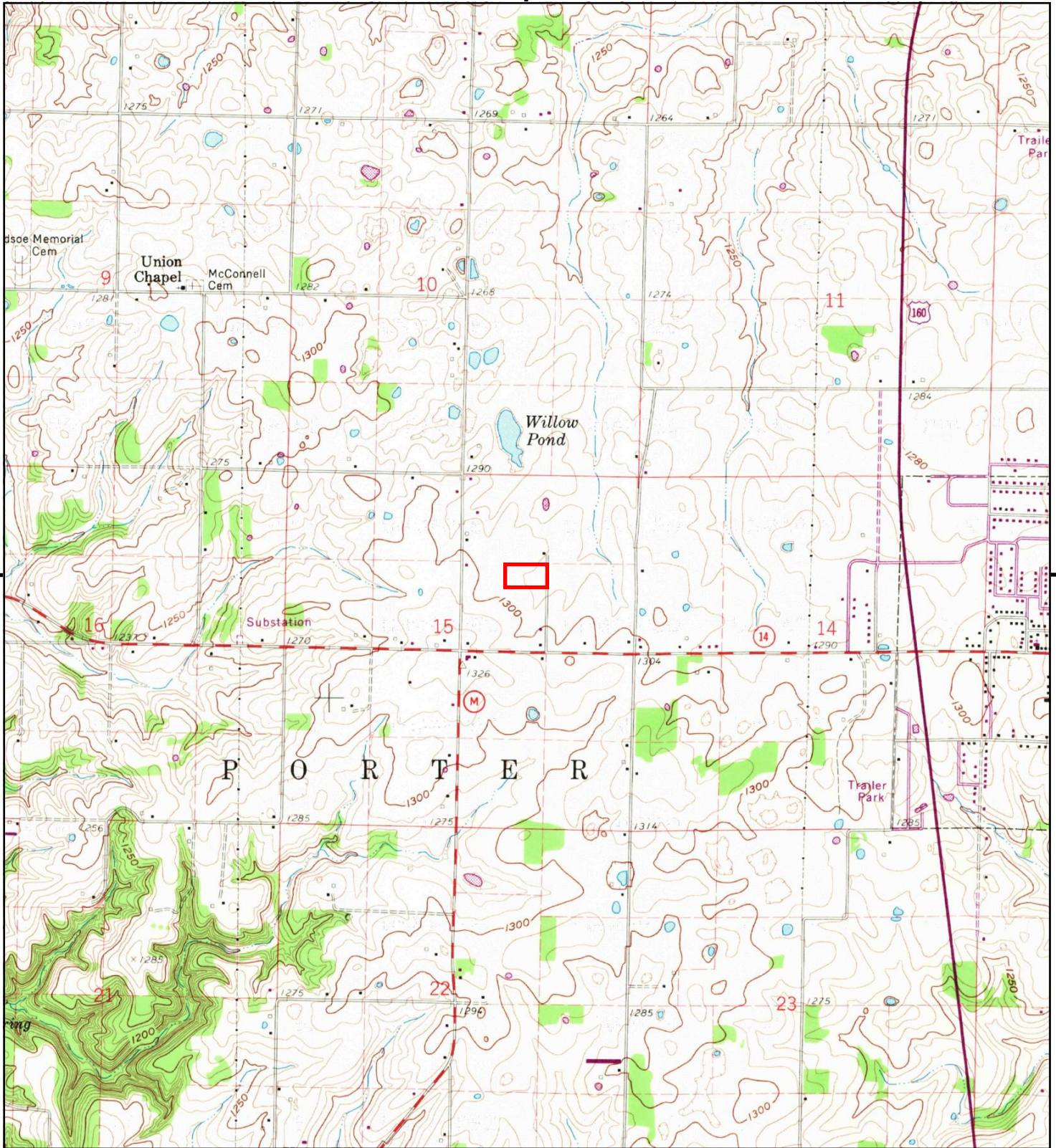
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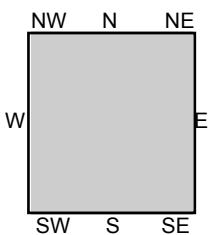
TP, Nixa, 1975, 7.5-minute

SITE NAME: New Police Station
 ADDRESS: 1209 W MOUNT VERNON ST
 NIXA, MO 65714
 CLIENT: Gredell Engineering Resources, Inc.





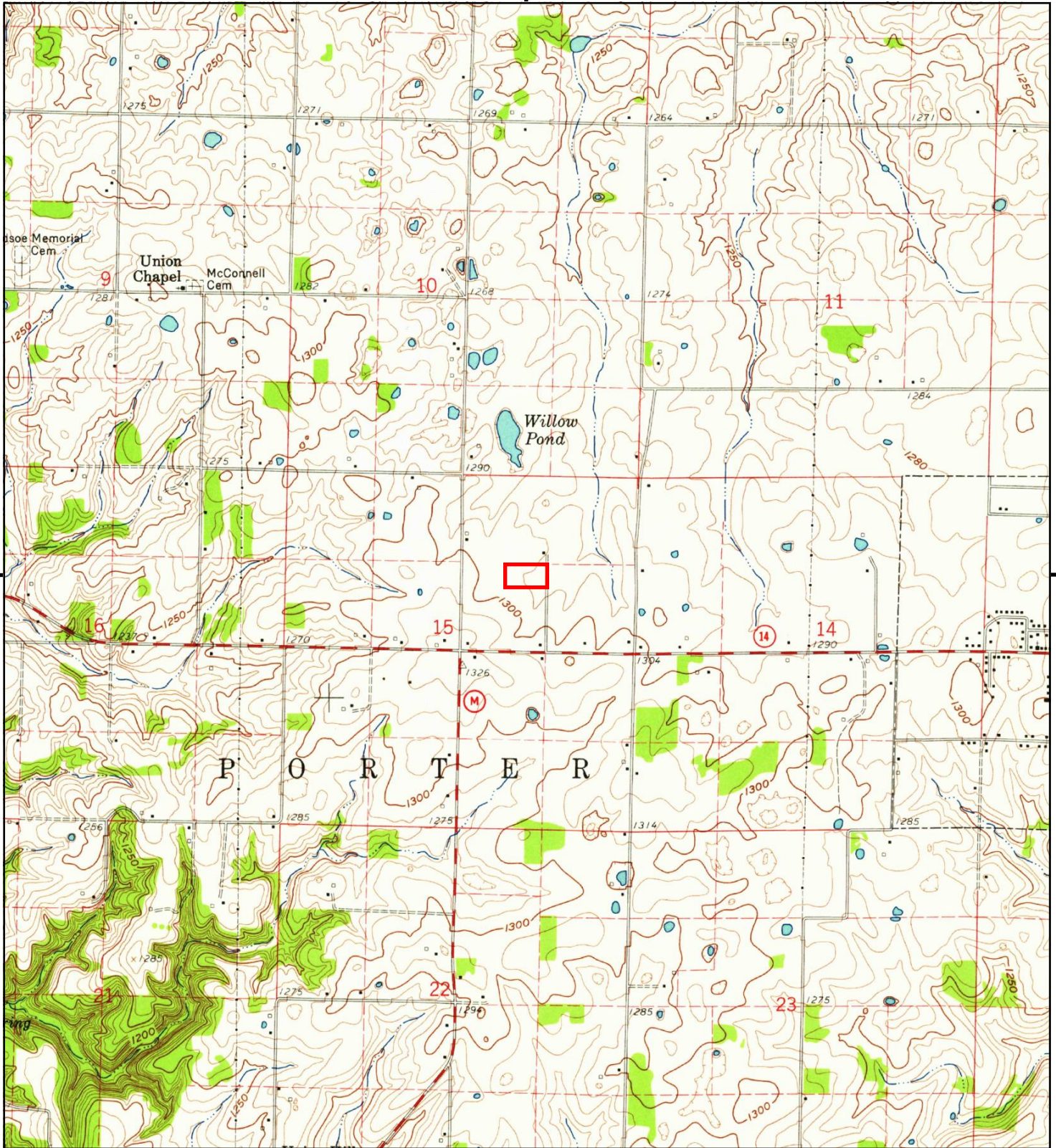
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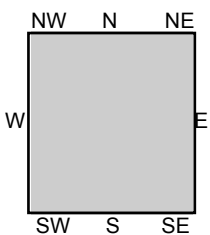
TP, Nixa, 1970, 7.5-minute

SITE NAME: New Police Station
ADDRESS: 1209 W MOUNT VERNON ST
NIXA, MO 65714
CLIENT: Gredell Engineering Resources, Inc.





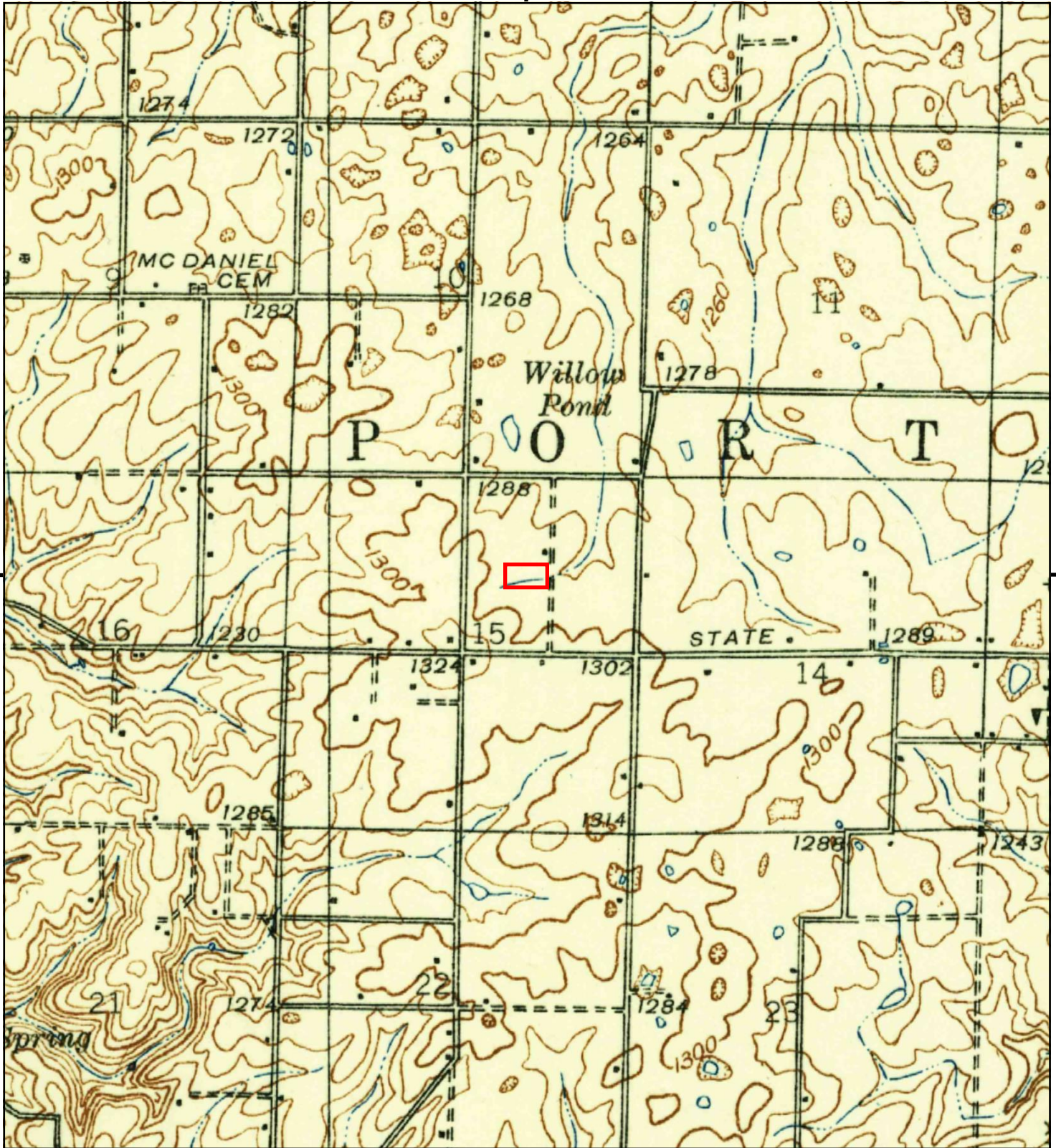
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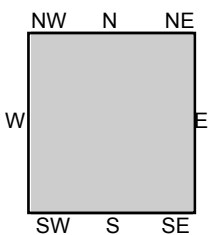
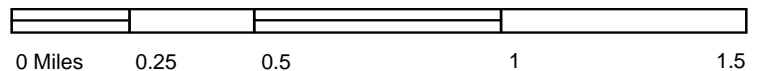
TP, Nixa, 1960, 7.5-minute

SITE NAME: New Police Station
 ADDRESS: 1209 W MOUNT VERNON ST
 NIXA, MO 65714
 CLIENT: Gredell Engineering Resources, Inc.





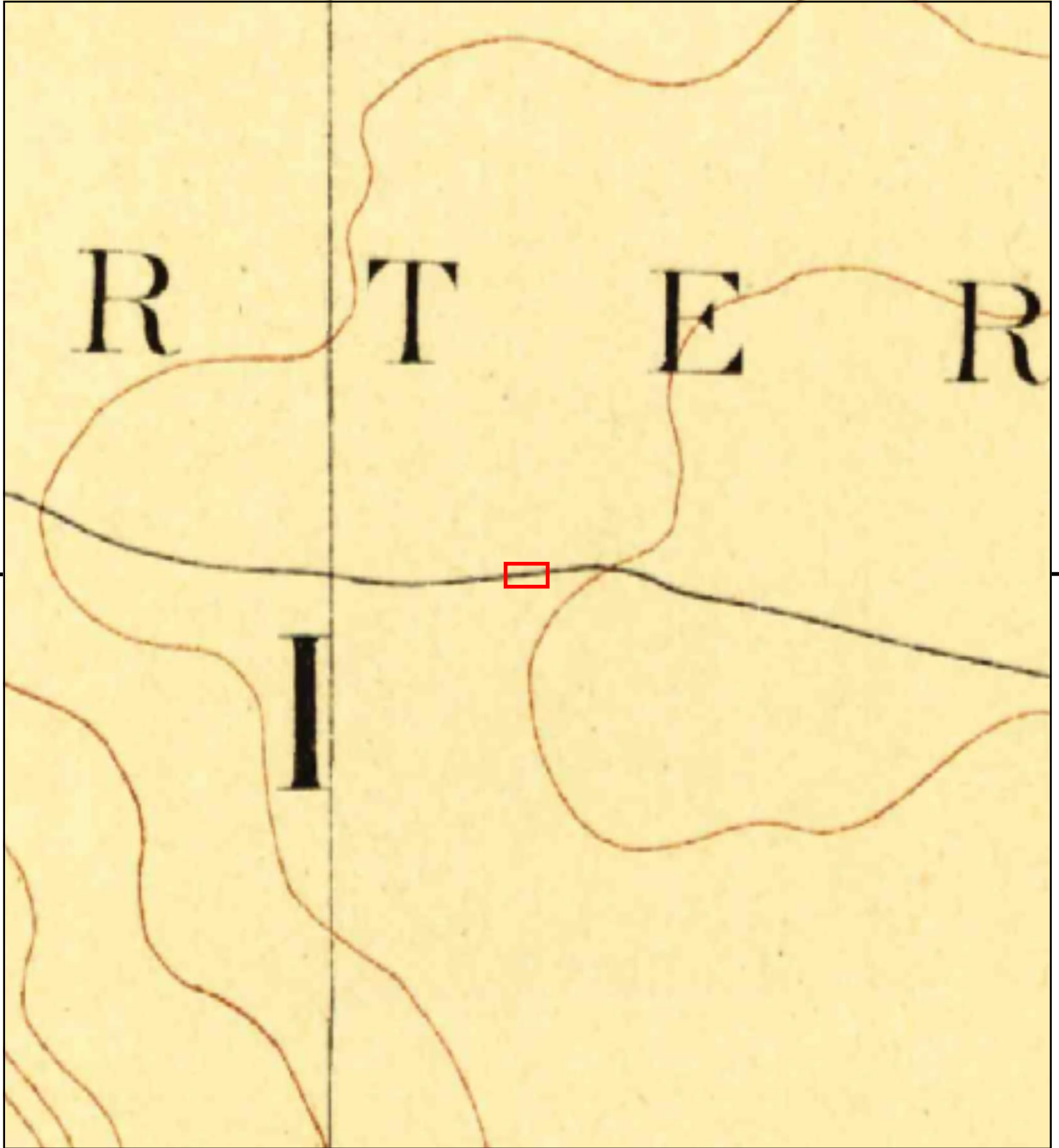
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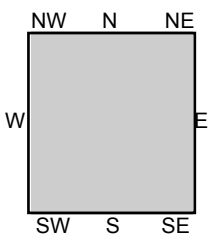
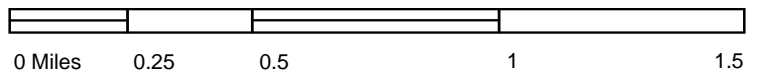
TP, Republic, 1938, 15-minute

SITE NAME: New Police Station
 ADDRESS: 1209 W MOUNT VERNON ST
 NIXA, MO 65714
 CLIENT: Gredell Engineering Resources, Inc.





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




TP, Springfield, 1886, 30-minute

SITE NAME: New Police Station
 ADDRESS: 1209 W MOUNT VERNON ST
 NIXA, MO 65714
 CLIENT: Gredell Engineering Resources, Inc.



Appendix II(d)

Certified Sanborn® Map Report



New Police Station
1209 W MOUNT VERNON ST
NIXA, MO 65714

Inquiry Number: 7682213.3
June 14, 2024

Certified Sanborn® Map Report



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

Certified Sanborn® Map Report

06/14/24

Site Name:

New Police Station
1209 W MOUNT VERNON ST
NIXA, MO 65714
EDR Inquiry # 7682213.3

Client Name:

Gredell Engineering Resources, Inc.
1505 East High Street
Jefferson City, MO 65101
Contact: Jacob Fitzpatrick



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Certified Sanborn Results:

Certification # DC81-4DD7-AF31

PO # Task Order 24-002

Project New Police Station

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 #: DC81-4DD7-AF31

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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Appendix II(e)

The EDR - City Directory Image Report

New Police Station

1209 W MOUNT VERNON ST
NIXA, MO 65714

Inquiry Number: 7682213.5
June 17, 2024

The EDR-City Directory Image Report

TABLE OF CONTENTS

SECTION

Executive Summary

Findings

City Directory Images

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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.

<u>Year</u>	<u>Target Street</u>	<u>Cross Street</u>	<u>Source</u>
2020	<input checked="" type="checkbox"/>	<input type="checkbox"/>	EDR Digital Archive
2017	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Cole Information
2014	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Cole Information
2010	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Cole Information
2005	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Cole Information
2000	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Cole Information
1995	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Cole Information
1992	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Cole Information
1988	<input checked="" type="checkbox"/>	<input type="checkbox"/>	City Publishing Co
1985	<input checked="" type="checkbox"/>	<input type="checkbox"/>	City Publishing Co
1981	<input checked="" type="checkbox"/>	<input type="checkbox"/>	City Publishing Co

FINDINGS

TARGET PROPERTY STREET

1209 W MOUNT VERNON ST
NIXA, MO 65714

<u>Year</u>	<u>CD Image</u>	<u>Source</u>
-------------	-----------------	---------------

W MOUNT VERNON ST

2020	pg A1	EDR Digital Archive
2017	pg A2	Cole Information
2014	pg A3	Cole Information
2010	pg A4	Cole Information
2005	pg A5	Cole Information
2000	pg A6	Cole Information
1995	pg A7	Cole Information
1992	pg A8	Cole Information
1988	pg A10	City Publishing Co
1985	pg A11	City Publishing Co
1981	pg A12	City Publishing Co

FINDINGS

CROSS STREETS

No Cross Streets Identified

City Directory Images

W MOUNT VERNON ST 2020

940 CITY OF NIXA
 DIXON STACI E DO
 GRISHCHUK ASIA
 HARRINGTON PAIGE E
 HAYES KATHRYN K MD
 JACKSON AMANDA
 LEE DANIELLE R NP
 MERCY
 MERCY CLINIC
 MERCY CLINIC EYE SPECIALIST
 MERCY CLINIC EYE SPECIALISTS
 MERCY CLINIC FAMILY MEDICINE
 MERCY CLINIC-EYE SPECLSTS
 MERCY PHARMACY
 Sheila Carret
 ST JOHN'S CLINIC-EYE SPECLSTS
 ST JOHN'S NIXA URGENT CARE
 VORHIES STACEY ANN MD
 1011 NIXA COUNTRY GUN & PAWN
 1110 CASEY'S GENERAL STORE
 1306 ATM
 CASEY'S GENERAL STORE
 1342 AMERIGAS PROPANE EXCHANGE
 DOLLAR GENERAL
 WESTERN UNION AGENT LOCATION
 1353 Norma Merideth
 1361 CHIROPRACTOR PLUS
 1375 IMAGINATION STATION DAISY'S
 1376 EXTREME EXTERIORS
 1398 SCORE ALTERNATIVE HIGH SCHOOL
 1401 Charles Torgeson
 1432 Amber Shackelford
 Janey Young
 Rita Glover
 Steven Souter
 1521 Leroy Matthews
 Trinity Finley
 1651 Chad Lammon
 Randy Buck
 1665 Kenneth Garner
 Terry Garner
 Vonita Garner

W MOUNT VERNON ST 2017

902	OLD MISSOURI MUTUAL
905	VOS, MICHAEL D
911	REDEEMER LUTHERAN CHURCH NIXA CAMPUS
912	MACPHERSON LAW
	MACPHERSON LAW LLC
	THE ELMER LAW FIRM LLC
918	NIXA VAPOR
924	FAMILY PHARMACY HOME MEDICAL SUPPLY
928	FLUFFY PUPPYS GROOMING SHOP
940	DR CHRISTOPHER FARMER MD
	DR KRISTIN GRIFFIN MD
	FRASER ANNA MD
	MERCY CLINIC EYE SPECIALISTS OPTOMET
	MERCY CLINICS
	MERCY PHARMACY NIXA
	MERCY THERAPY SERVICES
	ST JOHNS REGIONAL CLINICS ORTHOPEDI
1011	NIXA COUNTRY GUN & PAWN
1110	CASEYS GENERAL STORE
1209	WHITE, ALICE I
1306	CASEYS GENERAL STORE
1353	MERIDETH, NORMA J
1361	CHIROPRACTOR PLUS
	HUNTER DC GREENWOOD ND
1375	PRAISE TIME PRESCHOOL & LEARNING C
	PUZZLE PLACE
	PUZZLE PLACE LEARNING CENTER
1401	TORGESON, CHARLES L
1432	SOUTER, CHRISTOPHER R

W MOUNT VERNON ST 2014

902	OLD MISSOURI MUTUAL
903	YARBROUGH, EVALEE M
905	VOS, MICHAEL D
907	WOMMACK, CURTIS H
911	REDEEMER LUTHERAN CHURCH NIXA CAMPUS
912	TOWN & COUNTRY FLOWER SHOP & GIFTS
916	ROLLINGS & ASSOCIATES INSURANCE AGEN
920	C & M TAX & ACCOUNTING SERVICE
924	FAMILY PHARMACY
	FAMILY PHARMACY HOME MEDICAL SUPPLY
940	BARTHOLOMEW STEVEN DO
	FARMER CHRISTOPHER MD
	FRASER ANNA MD
	FUSCO TAMARA MD
	GRIFFIN KRISTIN MD
	MERCY CLINICS
	MERCYS CLINICEYE SPECIALISTS OPTOM
	MIDDLETON RACHELENE MD
	MILLER GUY DO
	MOOSE SCOTT MD
	ST JOHNS CLINIC NIXA ORTHOPEDICS
	ST JOHNS REGIONAL CLINICS CARDIOPUL
	TEMOFEEW RICHARD MD
1011	NIXA COUNTRY GUN & PAWN
	NIXA COUNTRY MINI STORAGE
	NIXA GUN & PAWN
1110	CASEYS GENERAL STORE
1201	ROSE, NATALIE L
1209	WHITE, ALICE I
1306	CASEYS GENERAL STORE
1353	MERIDETH, NORMA J
1361	CHIROPRACTOR PLUS
	GREENWOOD HUNTER DC ND ND
1375	PUZZLE PLACE LEARNING CENTER
	READY SET LEARN DAYCARE CENTER
1376	XTREME EXTERIORS
1401	BUCK, RANDY
1432	SOUTER, CHRIS S

W MOUNT VERNON ST 2010

903	YARBROUGH, EVALEE M
905	RAAB, BRENT D
907	WOMMACK, CURTIS H
911	REDEEMER LUTHERAN CHURCH
930	HARRINGTON, TIM W
940	BARTHOLOMEW STEVEN B OD
	FREEMAN JULIE MD
	ST JOHNS CLINICEYE SPECLSTS
	ST JOHNS CLINICFAMILY MED
	ST JOHNS CLINICINTERNAL MED
	ST JOHNS NIXA URGENT CARE
	ST JOHNS PHARMACY
	ST JOHNS THERAPY SVC
1011	NIXA COUNTRY GUN & PAWN
1105	TRIDENN SALES & NURSERY
1201	MINOR, EDWARD W
1209	WHITE, INEZE
1306	BULLSEYE
1342	DOLLAR GENERAL
1353	MERIDETH, NORMA J
1361	CHIROPRACTOR PLUS
1375	PUZZLE PLACE LEARNING CTR
	READY SET LEARN DAYCARE CTR
1376	HANDYMAN RENTALS
	UHAUL CO
1398	SCORE ALTERNATIVE HIGH SCHOOL
1401	OCCUPANT UNKNOWN,
1432	SOUTER, ROBERT L

W MOUNT VERNON ST 2005

902	NIXA FARMERS MUTUAL INSURANCE CO
905	RAAB, MICHELLE R
907	WOMMACK, CURTIS H
911	FAMILY OF CHRIST LUTHERAN CHURCH
916	SWOPE, JACK I
1011	NIXA COUNTRY GUN & PAWN
1110	EXPRESS LANE
1201	ROSE, NATALIE L
1204	OCCUPANT UNKNOWN,
1208	SMITH, ALLENE C
1209	WHITE, MAX D
1351	HEADLEY, MARK W
1353	MERIDETH, NORMA J
1361	CHIROPRACTOR PLUS
1376	HANDYMAN RENTALS
1401	TORGESON, CHARLES
1432	SOUTER, ROBERT L
	TRIM WORKS BY STEVE LLC

W MOUNT VERNON ST 2000

903	YARBROUGH, CARL E
907	WOMMACK, CURTIS H
930	HARRINGTON, TIM
1011	NIXA GUN & PAWN
1201	ROSE, NATALIE
1203	MAINOR, SCOTT A
1209	WHITE, MAX
1353	MERIDETH, NORMA J
1401	MOORE, CHRIS
1432	SOUTER, ROBERT L
1586	MILLER, RODNEY D
1651	LINEBAUGH, ROSCOE C
1665	GARNER, KENNETH L

W MOUNT VERNON ST 1995

104	GARY MURRAY NIXA HARDWARE SEED BUYING STA
106	NIXA CITY PARK
120	DIVERSIFIED PLASTICS CORP
214	CHANEY, JANICE
250	O'REILLY AUTOMOTIVE PAINT DEPARTMENT
264	PAPAS PIZZA
270	JAMES RIVER CLINIC
272	JUST FOR YOU
273	ANGEL TREASURES
300	CHINESE WOK
303	BARBER, JOHN H
304	MR CLEAN JEANS
308	RAMEY SUPER MARKETS WESTERN UNION
310	VISION CLINIC
402	BREADEAUX PIZZA MAIL BOXES ETC MARTIN, STACEY
434	RITZ CAFE
501	KFC CORP
510	NIXA HARDWARE & SEED CO
550	CAROL JONES REALTORS MR DRY CLEANERS
554	MEGA TAN
558	EDWARD D JONES & CO MERCURY PRINTING CO
560	HERBYS HOMES LAKE PRINTING OF SPRINGFIELD SHELTER INSURANCE CO
606	HEDGPETH, FERN
611	B MARK TRAVEL HEADS UP SALON JACQUES CUSTOM LAMP SHADES ROBISONS PRINTING
615	NIXA CONVENIENCE CTR
708	FAIRWAY CONSTRUCTION
715	BUILDING DEPT NIXA CITY HALL NIXA UTILITIES
911	FAMILY OF CHRIST LUTHERAN CHR

W MOUNT VERNON ST 1992

101 CHRISTIAN COUNTY CARD CO
 INDEPENDENT FREIGHTWAY
 PROGRESSIVE MECHANICAL
 103 EATON CORP CUTLER HAMMER
 104 NIXA HARWARE SEED BUYING STATION
 108 ACCURATE PLASTICS CORPORATION
 DIVERSIFIED PLASTICS CORPORATION MFG
 113 NIXA ASSEMBLY OF GOD CHURCH
 250 O'REILLY AUTOMOTIVE INC-BRANCH STORE
 254 JOYCE'S RESTAURANT
 264 NIXA DONUT & DESSERT SHOP
 266 FAMILY PHARMACY
 272 BRIGHT IDEAS PRESCHOOL
 274 NIXA OFFICE SUPPLIES
 300 CHINESE WOK
 TRENDSETTER THE SALON
 WOLF ARTHUR DMD
 WOLF, ARTHUR
 303 BARBER, JOHN H
 304 MR CLEAN JEANS
 307 BOLLING REALTY & AUCTION SERVICE
 308 RAMEY SUPER MKT #20
 434 RITZ CAFE
 510 NIXA HARDWARE & SEED
 NIXA SEED CO
 550 DESIGNER'S CLUB
 HEARTLAND REAL ESTATE
 MR CLEANERS
 MR DRY CLEANERS
 552 PARADISE VIDEO
 554 MEGA TAN
 558 GREGG RICK INSURANCE
 GREGG, RICK
 SHELTER INS AGENT GREGG RICK
 TRI LAKES ACCOUNTING SERVICE
 560 FAMILY MEDICAL CLINIC
 MILLER GUY F DO
 MILLER, GUY F
 606 HEDGPETH, FERN
 611 AMERICAN FAMILY INS
 AMERICAN FAMILY MUTUAL INSURANCE CO
 AUTO WORKS
 HEADS UP FOR HAIR & NAILS
 NIXA FLORAL & GIFT SHOPPE
 OLIVER BOB INS
 ROBISON'S PRINTING
 SHOW-ME VIDEO
 715 NIXA CITY HALL
 NIXA CITY OF BUILDING INSPECTOR
 NIXA CITY POLICE DEPT

W MOUNT VERNON ST 1992 (Cont'd)

715 NIXA UTILITIES
NIXA UTILITY MAINTENANCE OFFICE

W MOUNT VERNON ST 1988

550	#Mr Dry Cleaners	+725-5547	88
550	#Stinger Sam Auto Prts	+725-3888	88
552	#Interior Shoppe The	725-1232	83
552	#Interior Shoppe The Workshop	+725-5191	88
554	#Paradise Video	+725-4611	88
558	#Shelter Ins Agent Campbell Steve	+725-3009	88
560	#Family Medical Clinic	+725-5330	88
560	#Miller Guy F DO	+725-5330	88
604	Collier Gene	+725-4347	88
606	Hedgpeth Fern	725-3502	84
830	#Cassidy Water Co	725-5082	88
830	#Engel-Middleton Builders & Developer	+725-1000	88
--	Barnett Harold	725-3780	80
--	Cobb Dora	725-3802	75
--	#Nixa Assembly Of God Church	725-3075	--
	25-BUS	8-RES	10-NEW

W MOUNT VERNON ST 1985

MT VERNON W (RR 1)

101	#Interior Shoppe The	725-1232	83
103	#Eaton Corp Cutler Hammer	725-2616	84
108	#Accurate Plastics Corporation	725-2622	82
108	#Diversified Plastics Corporation	725-2622	82
214	Peters Esther Mrs	725-3790	--
300E	#Trendsetter Family		
303	Barber John H	725-3024	76
307	Long B L	725-3496	83
308	#Ramey Super Mkt #20	725-2766	75
606	Hedgpeth Fern	725-3502	84
--	Barnett Harold	725-3780	80
--	Cobb Dora	725-3802	75
--	#Nixa Assembly Of God Church	725-3075	--
	7-BUS	6-RES	1-NEW

W MOUNT VERNON ST 1981

MOUNT VERNON W

103	#Cutler Hammer Inc	725-2616
103	Freeman Mike	725-2880
105	Davis Claudine	+725-1286
105	Davis Doug	□725-1286
105	#Interior Shoppe The	□725-1232
212	Fitzpatrick Ronnie	725-3386
214	Peters Esther Mrs	725-3790
303	Barber John H	725-3024
307	Ramsey V	725-1408
308	#Ramey Super Mkt #20	725-2766
--	Barnett Harold	725-3780
--	Cobb Dora	725-3802
--	#Nixa Assembly Of God Church	725-3075

Appendix II(f)

The EDR Vapor Encroachment Screen

New Police Station

1209 W MOUNT VERNON ST
NIXA, MO 65714

Inquiry Number: 7682213.2s
June 19, 2024

EDR Vapor Encroachment Screen

Prepared using EDR's Vapor Encroachment Worksheet

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
Executive Summary	ES1
Primary Map	2
Secondary Map	3
Map Findings	4
Record Sources and Currency	GR-1

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by EDR. The report was designed to assist parties seeking to meet the search requirements of the ASTM Standard Practice for Assessment of Vapor Encroachment into Structures on Property Involved in Real Estate Transactions (E 2600).

STANDARD ENVIRONMENTAL RECORDS	Default Area of Concern (Miles)*	property	1/10	> 1/10
Lists of Federal NPL (Superfund) sites	1.0	0	0	0
Lists of Federal Delisted NPL sites	1.0	0	0	0
Lists of Federal sites subject to CERCLA removals and CERCLA orders	0.5	0	0	0
Lists of Federal CERCLA sites with NFRAP	0.5	0	0	0
Lists of Federal RCRA facilities undergoing Corrective Action	1.0	0	0	0
Lists of Federal RCRA TSD facilities	0.5	0	0	0
Lists of Federal RCRA generators	0.25	0	0	0
Federal institutional controls / engineering controls registries	0.5	0	0	0
Federal ERNS list	0.001	0	0	-
Lists of state- and tribal (Superfund) equivalent sites	not searched	-	-	-
Lists of state- and tribal hazardous waste facilities	1.0	0	0	0
Lists of state and tribal landfills and solid waste disposal facilities	0.5	0	0	0
Lists of state and tribal leaking storage tanks	0.5	0	0	0
Lists of state and tribal registered storage tanks	0.25	0	0	0
State and tribal institutional control / engineering control registries	0.5	0	0	0
Lists of state and tribal voluntary cleanup sites	0.5	0	0	0
Lists of state and tribal brownfield sites	0.5	0	0	0

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists	0.5	0	0	0
Local Lists of Landfill / Solid Waste Disposal Sites	0.5	0	0	0
Local Lists of Hazardous waste / Contaminated Sites	1.0	0	0	0
Local Lists of Registered Storage Tanks	not searched	-	-	-
Local Land Records	0.001	0	0	-
Records of Emergency Release Reports	0.001	0	0	-
Other Ascertainable Records	1.0	0	0	0

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records	1.0	0	0	0
Exclusive Recovered Govt. Archives	0.001	0	0	-

EXECUTIVE SUMMARY

EDR RECOVERED GOVERNMENT ARCHIVES

EDR Exclusive Records	1.0	0	0	0
Exclusive Recovered Govt. Archives	0.001	0	0	-

*The Default Area of Concern may be adjusted by the environmental professional using experience and professional judgement. Each category may include several databases, and each database may have a different distance. A list of individual databases is provided at the back of this report.

EXECUTIVE SUMMARY

TARGET PROPERTY INFORMATION

ADDRESS

NEW POLICE STATION
1209 W MOUNT VERNON ST
NIXA, MO 65714

COORDINATES

Latitude (North):	37.04684 - 37° 2' 48.626404"
Longitude (West):	93.323181 - 93° 19' 23.452148"
Elevation:	1290 ft. above sea level

EXECUTIVE SUMMARY

SEARCH RESULTS

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

STANDARD ENVIRONMENTAL RECORDS

<u>Name</u>	<u>Address</u>	<u>Dist/Dir</u>	<u>Map ID</u>	<u>Page</u>
Not Reported				

ADDITIONAL ENVIRONMENTAL RECORDS

<u>Name</u>	<u>Address</u>	<u>Dist/Dir</u>	<u>Map ID</u>	<u>Page</u>
Not Reported				

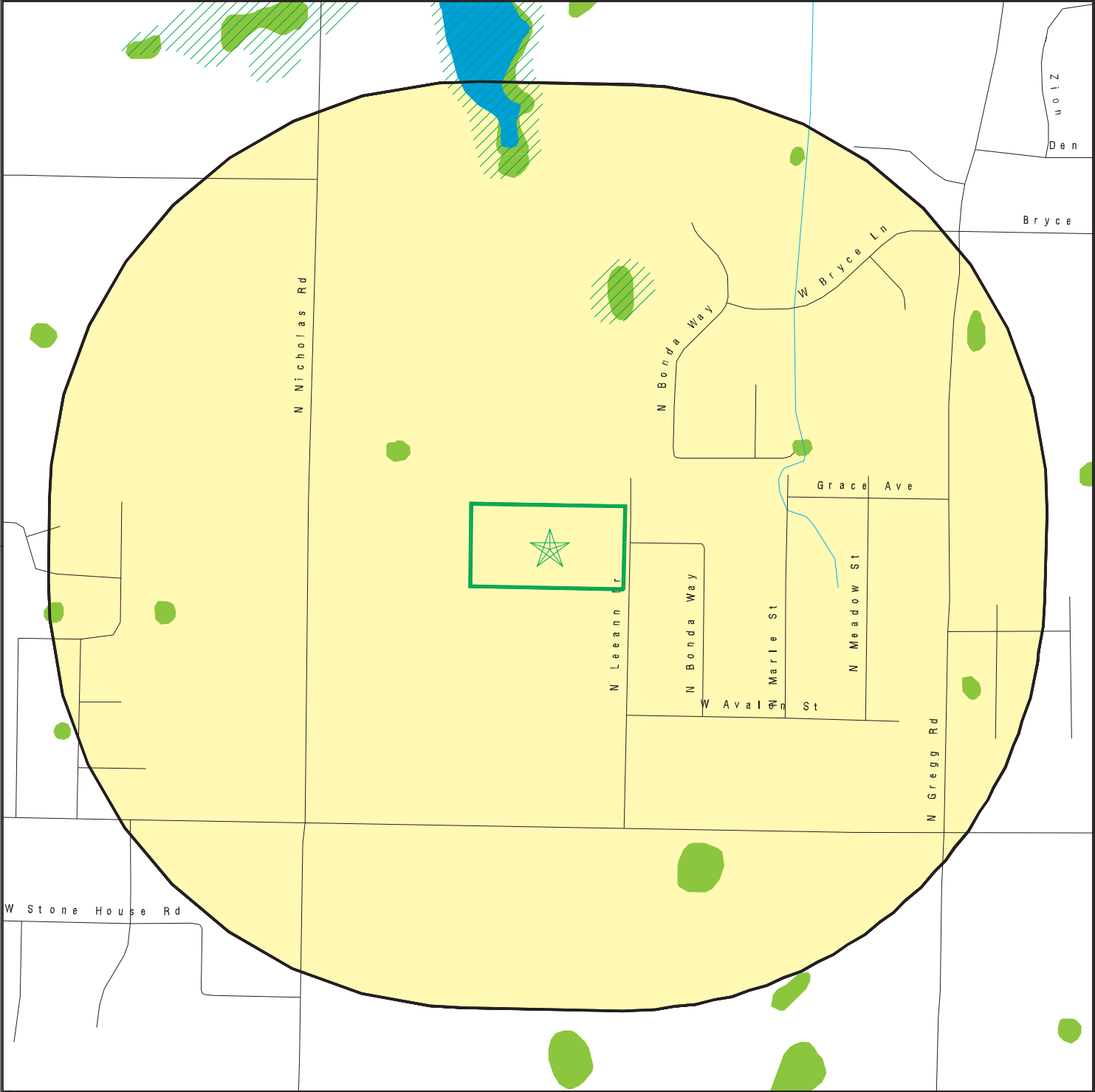
EDR HIGH RISK HISTORICAL RECORDS







<u>Name</u>	<u>Address</u>	<u>Dist/Dir</u>	<u>Map ID</u>	<u>Page</u>
Not Reported				

EDR RECOVERED GOVERNMENT ARCHIVES

<u>Name</u>	<u>Address</u>	<u>Dist/Dir</u>	<u>Map ID</u>	<u>Page</u>
Not Reported				

PRIMARY MAP - 7682213.2S



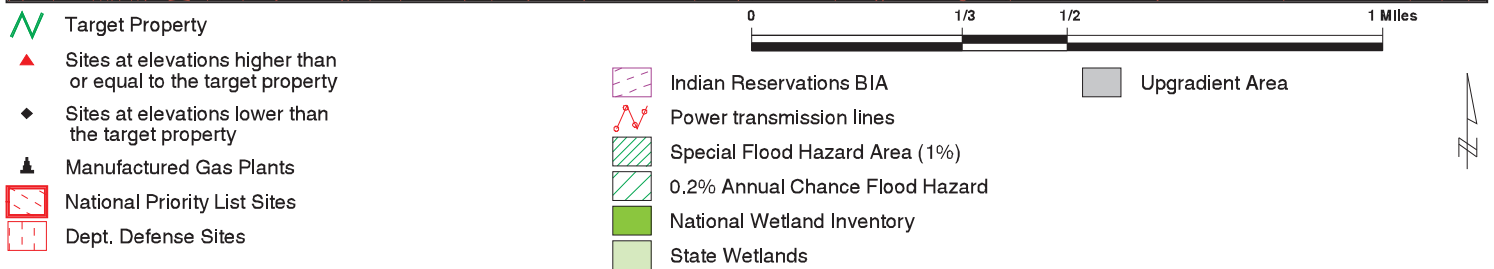
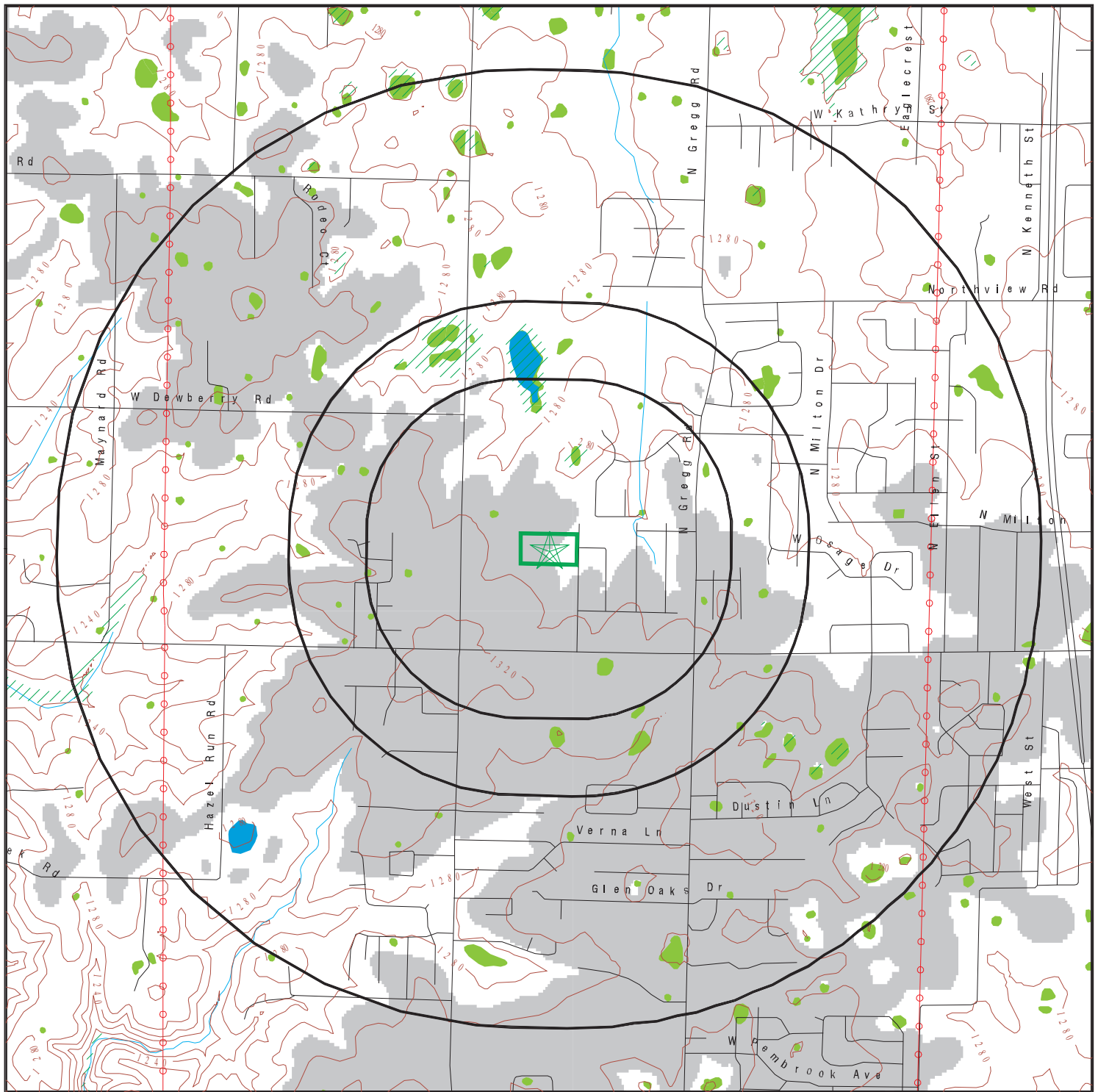
-  Target Property
-  Sites at elevations higher than or equal to the target property
-  Sites at elevations lower than the target property
-  Manufactured Gas Plants
-  National Priority List Sites
-  Dept. Defense Sites

-  Indian Reservations BIA
-  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: New Police Station	CLIENT: Gredell Engineering Resources, Inc.
ADDRESS: 1209 W MOUNT VERNON ST	CONTACT: Jacob Fitzpatrick
NIXA MO 65714	INQUIRY #: 7682213.2s
LAT/LONG: 37.04684 / 93.323181	DATE: June 14, 2024 11:52 am

SECONDARY MAP - 7682213.2S



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: New Police Station
 ADDRESS: 1209 W MOUNT VERNON ST
 NIXA MO 65714
 LAT/LONG: 37.04684 / 93.323181

CLIENT: Gredell Engineering Resources, Inc.
 CONTACT: Jacob Fitzpatrick
 INQUIRY #: 7682213.2s
 DATE: June 14, 2024 11:52 am

MAP FINDINGS

LEGEND

FACILITY NAME FACILITY ADDRESS, CITY, ST, ZIP				EDR SITE ID NUMBER
◆ MAP ID#	Direction	Distance	Range	ASTM 2600 Record Sources found in this report. Each database searched has been assigned to one or more categories. For detailed information about categorization, see the section of the report Records Searched and Currency.
		(Distance feet / miles)		
	Relative Elevation		Feet Above Sea Level	
Worksheet:				
Comments:				
Comments may be added on the online Vapor Encroachment Worksheet.				

DATABASE ACRONYM: Applicable categories (A hoverbox with database description).

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
ENVIRONMENTAL RECORDS						
Federal NPL site list						
US	NPL	National Priority List	EPA	02/29/2024	03/01/2024	03/27/2024
US	Proposed NPL	Proposed National Priority List Sites	EPA	02/29/2024	03/01/2024	03/27/2024
US	NPL LIENS	Federal Superfund Liens	EPA	10/15/1991	02/02/1994	03/30/1994
Federal CERCLIS list						
US	SEMS	Superfund Enterprise Management System	EPA	04/22/2024	05/01/2024	05/24/2024
Federal RCRA CORRACTS facilities list						
US	CORRACTS	Corrective Action Report	EPA	12/04/2023	12/06/2023	12/12/2023
Federal RCRA TSD facilities list						
US	RCRA-TSDF	RCRA - Treatment, Storage and Disposal	Environmental Protection Agency	12/04/2023	12/06/2023	12/12/2023
Federal RCRA generators list						
US	RCRA-LQG	RCRA - Large Quantity Generators	Environmental Protection Agency	12/04/2023	12/06/2023	12/12/2023
US	RCRA-SQG	RCRA - Small Quantity Generators	Environmental Protection Agency	12/04/2023	12/06/2023	12/12/2023
US	RCRA-VSQG	RCRA - Very Small Quantity Generators (Formerly Conditionall	Environmental Protection Agency	12/04/2023	12/06/2023	12/12/2023
Federal institutional controls / engineering controls registries						
US	LUCIS	Land Use Control Information System	Department of the Navy	02/14/2024	02/16/2024	04/04/2024
US	US ENG CONTROLS	Engineering Controls Sites List	Environmental Protection Agency	02/13/2024	02/21/2024	04/04/2024
US	US INST CONTROLS	Institutional Controls Sites List	Environmental Protection Agency	02/13/2024	02/21/2024	04/04/2024
Federal ERNS list						
US	ERNS	Emergency Response Notification System	National Response Center, United States Coast	12/12/2023	12/13/2023	02/28/2024
State and tribal - equivalent CERCLIS						
MO	HWS DETAIL	Registry Annual Report	Department of Natural Resources	06/30/2023	02/29/2024	05/21/2024
MO	SHWS	Registry of Confirmed Abandoned or Uncontrolled Hazardous Wa	Department of Natural Resources	07/24/2023	10/03/2023	12/19/2023
State and tribal landfill / solid waste disposal						
MO	SWF/LF	Solid Waste Facility List	Department of Natural Resources	02/21/2024	02/22/2024	05/10/2024
State and tribal leaking storage tank lists						
MO	LAST	Leaking Aboveground Storage Tanks	Department of Natural Resources	02/26/2024	03/06/2024	05/29/2024
MO	LUST	Leaking Underground Storage Tanks	Department of Natural Resources	02/26/2024	03/06/2024	05/29/2024
US	INDIAN LUST R8	Leaking Underground Storage Tanks on Indian Land	EPA Region 8	10/25/2023	01/17/2024	03/13/2024
US	INDIAN LUST R4	Leaking Underground Storage Tanks on Indian Land	EPA Region 4	10/25/2023	01/17/2024	03/13/2024
US	INDIAN LUST R1	Leaking Underground Storage Tanks on Indian Land	EPA Region 1	10/25/2023	01/17/2024	03/13/2024
US	INDIAN LUST R7	Leaking Underground Storage Tanks on Indian Land	EPA Region 7	10/25/2023	01/17/2024	03/13/2024
US	INDIAN LUST R10	Leaking Underground Storage Tanks on Indian Land	EPA Region 10	10/25/2023	01/17/2024	03/13/2024
US	INDIAN LUST R5	Leaking Underground Storage Tanks on Indian Land	EPA, Region 5	10/04/2023	01/17/2024	03/13/2024
US	INDIAN LUST R9	Leaking Underground Storage Tanks on Indian Land	Environmental Protection Agency	10/25/2023	01/17/2024	03/13/2024

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl Date	Active Date
US	INDIAN LUST R6	Leaking Underground Storage Tanks on Indian Land	EPA Region 6	10/25/2023	01/17/2024	03/13/2024
State and tribal registered storage tank lists						
MO	TANKS	Underground Storage Tank Database	Department of Natural Resources	02/26/2024	03/06/2024	05/29/2024
MO	UST	Petroleum Storage Tanks	Department of Natural Resources	02/26/2024	03/06/2024	05/29/2024
MO	AST	Aboveground Petroleum Storage Tanks	Department of Agriculture	03/05/2024	03/08/2024	05/29/2024
US	INDIAN UST R6	Underground Storage Tanks on Indian Land	EPA Region 6	10/24/2023	01/17/2024	03/13/2024
US	INDIAN UST R5	Underground Storage Tanks on Indian Land	EPA Region 5	10/17/2023	01/17/2024	03/13/2024
US	INDIAN UST R9	Underground Storage Tanks on Indian Land	EPA Region 9	10/24/2023	01/17/2024	03/13/2024
US	INDIAN UST R4	Underground Storage Tanks on Indian Land	EPA Region 4	10/24/2023	01/17/2024	03/13/2024
US	INDIAN UST R10	Underground Storage Tanks on Indian Land	EPA Region 10	10/24/2023	01/17/2024	03/13/2024
US	INDIAN UST R1	Underground Storage Tanks on Indian Land	EPA, Region 1	10/24/2023	01/17/2024	03/13/2024
US	INDIAN UST R7	Underground Storage Tanks on Indian Land	EPA Region 7	10/24/2023	01/17/2024	03/13/2024
US	INDIAN UST R8	Underground Storage Tanks on Indian Land	EPA Region 8	10/24/2023	01/17/2024	03/13/2024
US	FEMA UST	Underground Storage Tank Listing	FEMA	11/16/2023	11/16/2023	02/13/2024
State and tribal institutional control / engineering control registries						
MO	AUL	Sites with Controls	Department of Natural Resources	02/01/2024	02/07/2024	04/30/2024
State and tribal voluntary cleanup sites						
MO	VCP	Sites Participating in the Voluntary Cleanup Program	Department of Natural Resources	02/01/2024	02/07/2024	04/30/2024
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 Listing	EPA, Region 7	03/20/2008	04/22/2008	05/19/2008
State and tribal Brownfields sites						
MO	BROWNFIELDS	Brownfields Site List	Department of Natural Resources	02/01/2024	02/07/2024	04/30/2024
Other Records						
US	CONSENT	Superfund (CERCLA) Consent Decrees	Department of Justice, Consent Decree Library	12/31/2023	01/11/2024	01/16/2024
US	ROD	Records Of Decision	EPA	02/29/2024	03/01/2024	03/27/2024
US	LIENS 2	CERCLA Lien Information	Environmental Protection Agency	02/29/2024	03/01/2024	03/27/2024
MO	DEL SHWS	Registry Sites Withdrawn or Deleted	Department of Natural Resources	07/24/2023	10/03/2023	12/19/2023
US	DEBRIS REGION 9	Torres Martinez Reservation Illegal Dump Site Locations	EPA, Region 9	01/12/2009	05/07/2009	09/21/2009
MO	HIST LF	Solid Waste Facility Database List	Department of Natural Resources	04/12/2005	07/19/2006	08/18/2006
MO	SWRCY	Solid Waste Recycling Facilities	Department of Natural Resources	02/20/2024	02/21/2024	05/10/2024
US	EPA WATCH LIST	EPA Watch List	Environmental Protection Agency	08/30/2013	03/21/2014	06/17/2014
US	COAL ASH DOE	Steam-Electric Plant Operation Data	Department of Energy	12/31/2022	11/27/2023	02/22/2024
US	US FIN ASSUR	Financial Assurance Information	Environmental Protection Agency	12/11/2023	12/13/2023	02/28/2024
US	US HIST CDL	National Clandestine Laboratory Register	Drug Enforcement Administration	12/31/2023	02/21/2024	04/04/2024
US	2020 COR ACTION	2020 Corrective Action Program List	Environmental Protection Agency	09/30/2017	05/08/2018	07/20/2018
US	LEAD SMELTER 1	Lead Smelter Sites	Environmental Protection Agency	02/29/2024	03/01/2024	03/27/2024
US	FUSRAP	Formerly Utilized Sites Remedial Action Program	Department of Energy	03/03/2023	03/03/2023	06/09/2023
US	COAL ASH EPA	Coal Combustion Residues Surface Impoundments List	Environmental Protection Agency	01/12/2017	03/05/2019	11/11/2019
US	LEAD SMELTER 2	Lead Smelter Sites	American Journal of Public Health	04/05/2001	10/27/2010	12/02/2010
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	PCB TRANSFORMER	PCB Transformer Registration Database	Environmental Protection Agency	09/13/2019	11/06/2019	02/10/2020

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
US	SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing	Environmental Protection Agency	07/30/2021	02/03/2023	02/10/2023
US	Delisted NPL	National Priority List Deletions	EPA	02/29/2024	03/01/2024	03/27/2024
US	SEMS-ARCHIVE	Superfund Enterprise Management System Archive	EPA	04/22/2024	05/01/2024	05/24/2024
US	RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated	Environmental Protection Agency	12/04/2023	12/06/2023	12/12/2023
US	HMIRS	Hazardous Materials Information Reporting System	U.S. Department of Transportation	12/12/2023	12/13/2023	02/28/2024
US	DOT OPS	Incident and Accident Data	Department of Transportation, Office of Pipeli	01/02/2020	01/28/2020	04/17/2020
US	US CDL	Clandestine Drug Labs	Drug Enforcement Administration	12/31/2023	02/21/2024	04/04/2024
US	US BROWNFIELDS	A Listing of Brownfields Sites	Environmental Protection Agency	03/11/2024	03/12/2024	05/10/2024
US	DOD	Department of Defense Sites	USGS	06/07/2021	07/13/2021	03/09/2022
US	FEDLAND	Federal and Indian Lands	U.S. Geological Survey	04/02/2018	04/11/2018	11/06/2019
US	FUDS	Formerly Used Defense Sites	U.S. Army Corps of Engineers	01/30/2024	02/13/2024	04/04/2024
US	UMTRA	Uranium Mill Tailings Sites	Department of Energy	08/30/2019	11/15/2019	01/28/2020
US	ODI	Open Dump Inventory	Environmental Protection Agency	06/30/1985	08/09/2004	09/17/2004
US	MINES VIOLATIONS	MSHA Violation Assessment Data	DOL, Mine Safety & Health Admi	01/02/2024	01/03/2024	01/04/2024
US	US MINES	Mines Master Index File	Department of Labor, Mine Safety and Health A	02/05/2024	02/21/2024	04/04/2024
US	US MINES 2	Ferrous and Nonferrous Metal Mines Database Listing	USGS	01/07/2022	02/24/2023	05/17/2023
US	US MINES 3	Active Mines & Mineral Plants Database Listing	USGS	04/14/2011	06/08/2011	09/13/2011
US	PRP	Potentially Responsible Parties	EPA	09/19/2023	10/03/2023	10/19/2023
US	TRIS	Toxic Chemical Release Inventory System	EPA	12/31/2022	11/13/2023	02/07/2024
US	TSCA	Toxic Substances Control Act	EPA	12/31/2020	06/14/2022	03/24/2023
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	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	SSTS	Section 7 Tracking Systems	EPA	01/16/2024	01/17/2024	03/27/2024
US	ICIS	Integrated Compliance Information System	Environmental Protection Agency	11/18/2016	11/23/2016	02/10/2017
US	PADS	PCB Activity Database System	EPA	03/20/2023	04/04/2023	06/09/2023
US	MLTS	Material Licensing Tracking System	Nuclear Regulatory Commission	01/02/2024	01/16/2024	03/13/2024
US	RADINFO	Radiation Information Database	Environmental Protection Agency	07/01/2019	07/01/2019	09/23/2019
US	FINDS	Facility Index System/Facility Registry System	EPA	02/09/2024	02/27/2024	05/24/2024
US	RAATS	RCRA Administrative Action Tracking System	EPA	04/17/1995	07/03/1995	08/07/1995
US	RMP	Risk Management Plans	Environmental Protection Agency	02/01/2024	02/08/2024	04/04/2024
US	BRS	Biennial Reporting System	EPA/NTIS	12/31/2021	03/09/2023	03/20/2023
US	PWS	Public Water System Data	EPA	12/17/2013	01/09/2014	10/15/2014
US	INDIAN RESERV	Indian Reservations	USGS	12/31/2014	07/14/2015	01/10/2017
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	IHS OPEN DUMPS	Open Dumps on Indian Land	Department of Health & Human Serivces, Indian	04/01/2014	08/06/2014	01/29/2015
US	ABANDONED MINES	Abandoned Mines	Department of Interior	03/18/2024	03/19/2024	06/06/2024
MO	AIRS	Permit Facility Listing	Department of Natural Resources	06/06/2024	06/06/2024	06/07/2024
MO	ASBESTOS	Asbestos Notification Listing	Department of Natural Resources	12/29/2023	01/03/2024	03/25/2024
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	DRYCLEANERS	Drycleaners in Missouri Listing	Department of Natural Resources	11/30/2017	12/13/2017	01/18/2018
MO	FIN ASSURANCE 1	Financial Assurance Information Listing	Department of Natural Resources	11/23/2023	12/13/2023	03/08/2024
MO	FIN ASSURANCE 2	Financial Assurance Information Listing	Department of Natural Resources	12/19/2022	02/28/2023	05/17/2023
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	12/19/2023	12/27/2023	12/28/2023

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl Date	Active Date
MO	RRC	Certified Hazardous Waste Resource Recovery Facilities	Department of Natural Resources	09/30/2020	10/06/2020	12/28/2020
MO	SMARS	Site Management and Reporting System	Department of Natural Resources	01/02/2024	01/23/2024	04/09/2024
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	UIC	Underground Injection Wells Database	Department of Natural Resources	05/10/2024	05/30/2024	06/10/2024
US	PFAS TSCA	PFAS Manufacture and Imports Information	Environmental Protection Agency	12/28/2023	12/28/2023	01/04/2024
US	BIOSOLIDS	ICIS-NPDES Biosolids Facility Data	Environmental Protection Agency	12/31/2023	01/03/2024	01/16/2024
US	PFAS ECHO	Facilities in Industries that May Be Handling PFAS Listing	Environmental Protection Agency	12/28/2023	12/28/2023	03/04/2024
US	ECHO	Enforcement & Compliance History Information	Environmental Protection Agency	12/17/2023	12/28/2023	03/04/2024
MO	PFAS	PFAS Detections	Department of Natural Resources	01/02/2024	01/10/2024	01/17/2024
US	PFAS ATSDR	PFAS Contamination Site Location Listing	Department of Health & Human Services	06/24/2020	03/17/2021	11/08/2022
US	MINES MRDS	Mineral Resources Data System	USGS	08/23/2022	11/22/2022	02/28/2023
US	DOCKET HWC	Hazardous Waste Compliance Docket Listing	Environmental Protection Agency	05/06/2021	05/21/2021	08/11/2021
US	PFAS PT 139 AIRPORT	All Certified Part 139 Airports PFAS Information Listing	Environmental Protection Agency	12/28/2023	12/28/2023	03/04/2024
US	PFAS WQP	Ambient Environmental Sampling for PFAS	Environmental Protection Agency	12/28/2023	12/28/2023	03/04/2024
US	PFAS FEDERAL SITES	Federal Sites PFAS Information	Environmental Protection Agency	12/28/2023	12/28/2023	03/04/2024
US	PFAS RCRA MANIFEST	PFAS Transfers Identified In the RCRA Database Listing	Environmental Protection Agency	12/28/2023	12/28/2023	01/04/2024
US	PFAS ECHO FIRE TRAIN	Facilities in Industries that May Be Handling PFAS Listing	Environmental Protection Agency	12/28/2023	12/28/2023	03/04/2024
US	PFAS NPDES	Clean Water Act Discharge Monitoring Information	Environmental Protection Agency	12/28/2023	12/28/2023	03/04/2024
US	PFAS NPL	Superfund Sites with PFAS Detections Information	Environmental Protection Agency	12/28/2023	12/28/2023	03/04/2024
US	E MANIFEST	Hazardous Waste Electronic Manifest System	Environmental Protection Agency	07/24/2023	04/18/2024	06/06/2024
US	FUELS PROGRAM	EPA Fuels Program Registered Listing	EPA	02/12/2024	02/13/2024	04/04/2024
US	FEDERAL FACILITY	Federal Facility Site Information listing	Environmental Protection Agency	12/20/2023	12/20/2023	01/24/2024
US	PFAS PROJECT	NORTHEASTERN UNIVERSITY PFAS PROJECT	Social Science Environmental Health Research	05/19/2023	04/05/2024	06/06/2024
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 Protection Agency	06/08/2023	10/31/2023	01/18/2024
US	PCS	Permit Compliance System	EPA, Office of Water	12/16/2016	01/06/2017	03/10/2017
US	AQUEOUS FOAM NRC	Aqueous Foam Related Incidents Listing	Environmental Protection Agency	12/28/2023	12/28/2023	03/04/2024
US	PFAS TRIS	List of PFAS Added to the TRI	Environmental Protection Agency	12/28/2023	12/28/2023	01/04/2024
US	UXO	Unexploded Ordnance Sites	Department of Defense	09/06/2023	09/13/2023	12/11/2023
HISTORICAL USE RECORDS						
US	EDR MGP	EDR Proprietary Manufactured Gas Plants	EDR, Inc.			
US	EDR Hist Auto	EDR Exclusive Historical Auto Stations	EDR, Inc.			
US	EDR Hist Cleaner	EDR Exclusive Historical Cleaners	EDR, Inc.			
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

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

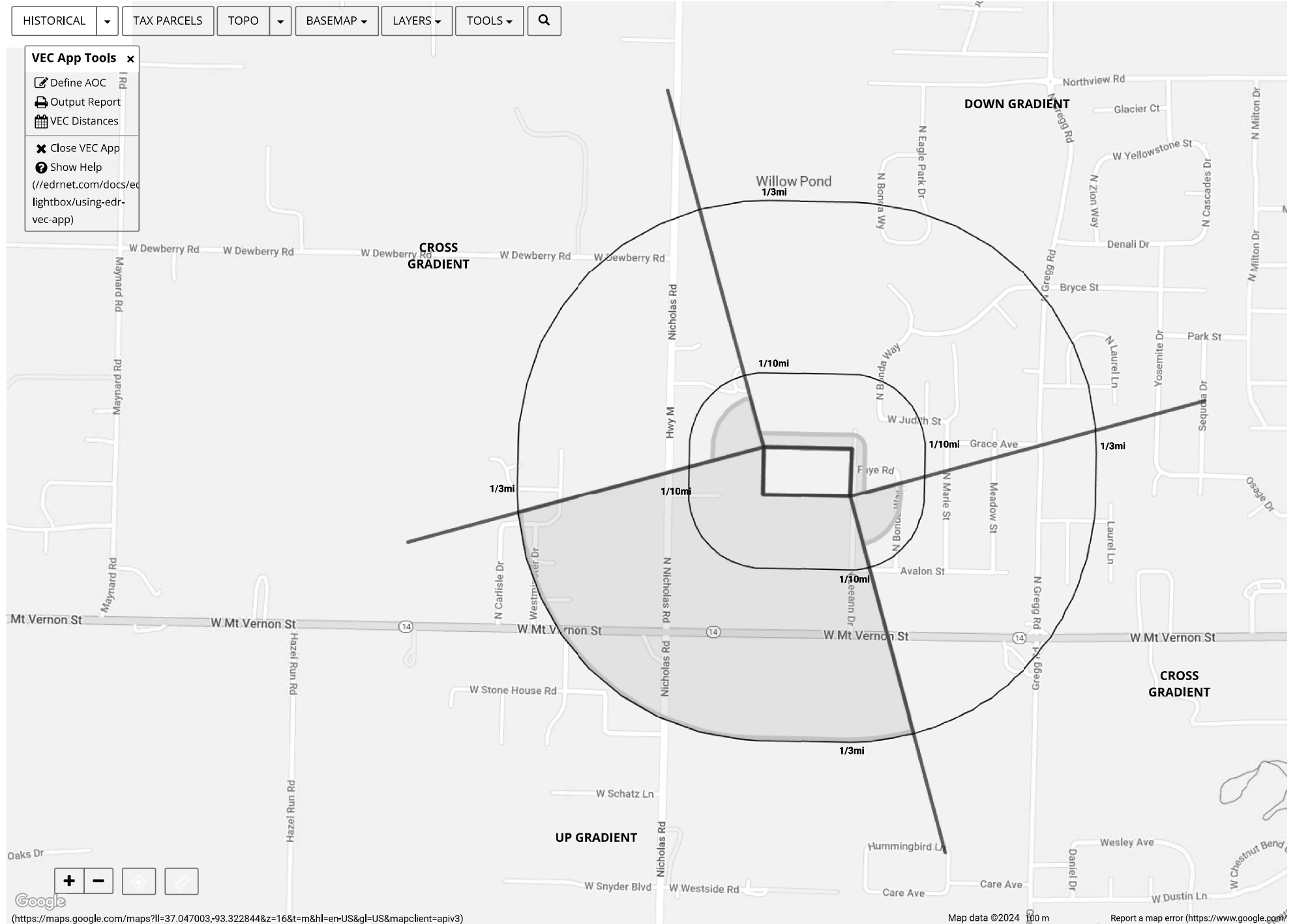
St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
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STREET AND ADDRESS INFORMATION

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Appendix II(g)

EDR Ground Water Flow Gradients Map



Appendix II(h)

FEMA National Flood Hazard Layer
(NFLH) FIRMette, Nixa, MO

Appendix III

Documents from E-START & GeoSTRAT

- (a) E-START Interactive Map
- (b) GeoSTRAT Interactive Map







Appendix III(a)

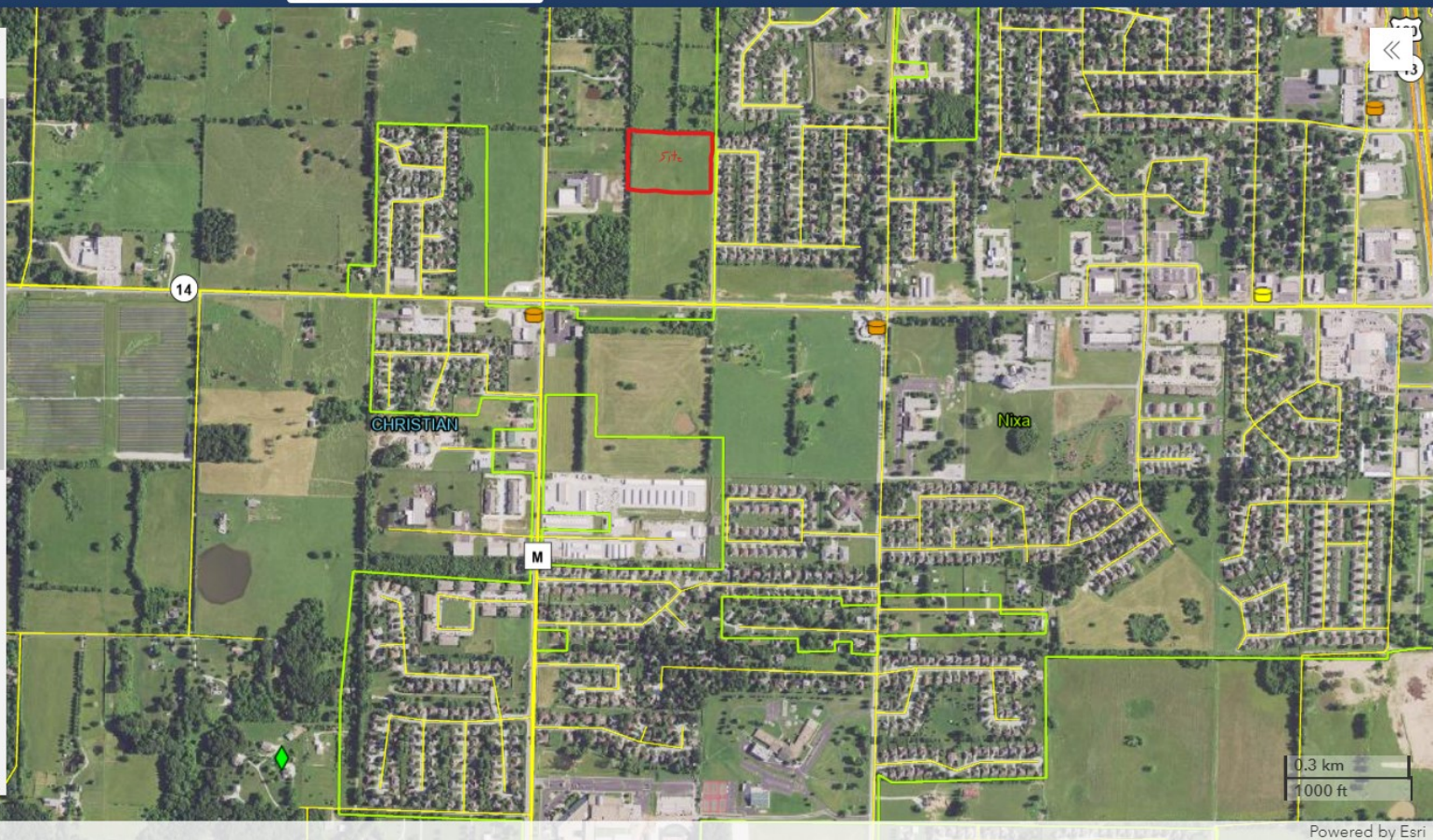
E-START Interactive Map

☒ HAZARDOUS SUBSTANCE INVESTIGATION AND CLEANUP SITES

- ☒  Activity and Use Limitation Area
- ☒  Site Area
- ☒  Active
- ☒  Long-Term Stewardship
- ☒  Environmental Notice
- ☒  Completed
- ☒  Brownfield Assessment
- ☒  Inactive VCP (Terminated/Withdrew)

☒ REGULATED PETROLEUM AND HAZARDOUS SUBSTANCE STORAGE TANK FACILITIES

- ☒  Activity and Use Limitation Area
- ☒ All Operating Underground Storage Tank Facilities
 - ☒  Investigation/Corrective Action is Ongoing or Incomplete
 - ☒  No Further Action Letter Issued With Restriction
 - ☒  Facility Closed Prior to Implementation of 2004 Tanks RBCA
 - ☒  No Further Action Letter Issued Without Restriction
 - ☒  Operating UST Facilities with No Known Release



To report a problem with information about a site location, please contact us at LTS@dnr.mo.gov (573) 526-8913, or (800) 361-4827.

Missouri E-START Site/Facility Summary

This is an advisory about environmental conditions that could affect use of the property identified on the map below. Any property use limitations are intended to ensure safe use of the property after the cleanup of contamination in the soil and/or groundwater. This advisory identifies the governmental agencies that oversaw the sites cleanup, and provides contacts for further information.

Although this map and its underlying data sets have been compiled by the Missouri Department of Natural Resources (Department), no warranty, expressed or implied, is made by the Department as to the accuracy of the data and related materials. The act of distribution shall not constitute any such warranty, and no responsibility is assumed by the Department in the use of these data or related materials.

SITE MAP



No Further Action Letter Issued with
Restriction

Facility Identification Number ST0002991

Site/Facility Name RAPID ROBERTS INC #103

Address 615 W MT VERNON

City NIXA

Zip 65714

County CHRISTIAN

Facility Type All Operating Underground Storage Tank Facilities

Status No Further Action Letter Issued with Restriction

Summary A petroleum or hazardous substance storage tank closure or regulated release was addressed under the Missouri Risk-Based Corrective Action Guidance for Petroleum Storage Tanks. Evaluation of environmental media found that concentrations of any remaining contaminants, if present, do not pose an unacceptable risk to human health or the environment provided that Activity & Use Limitations applied to this property remain in place. Please review the Department of Natural Resources site file for more information.

Contaminants of Concern Remaining On-Site Petroleum constituents

Activity & Use Limitations Deed Notice For Tank Closed In Place

Lead Regulatory Agency DNR/Hazardous Waste Program/Tanks Section

Contact Information Long-Term Stewardship Unit

To report a problem with information about a site location, please contact us at LTS@dnr.mo.gov, (573) 526-8913, or (800) 361-4827.

Missouri E-START

Site/Facility Summary

This is an advisory about environmental conditions that could affect use of the property identified on the map below. Any property use limitations are intended to ensure safe use of the property after the cleanup of contamination in the soil and/or groundwater. This advisory identifies the governmental agencies that oversaw the sites cleanup, and provides contacts for further information.

Although this map and its underlying data sets have been compiled by the Missouri Department of Natural Resources (Department), no warranty, expressed or implied, is made by the Department as to the accuracy of the data and related materials. The act of distribution shall not constitute any such warranty, and no responsibility is assumed by the Department in the use of these data or related materials.

SITE MAP



COMPLETED

Site/Facility Name Beets Well

Address 1385 Old Bittersweet Road

City Nixa

Zip 65714-7172

County Christian

Site Status Completed

Site Background/History The site, located in Nixa in Christian County, contained a new private drinking well that was installed in early 2001. Shortly after the well was put into use, a strong propane-like odor was observed by the residents. The property owners contact the Missouri Department of Health and Senior Services, who recommended that the use of the well be suspended and referred the site to the Missouri Department of Natural Resources (the department). Department personnel visited the site and collected a groundwater sample from the well on June 20, 2001, and an odor was noticed in the well water. The sample analysis identified the volatile organic compound (VOC) 1,2-dichloropropane at 0.5 parts per billion (ppb). Sampling on July 24, 2001 from the well and a neighboring well did not detect any VOCs. A third sample was collected from the well on September 12, 2001 and no VOCs or odor was identified. A Pre-CERCLIS [Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Information System] Site Screening Report, dated March 13, 2002, determined that no further investigation or action was warranted.

Lead Regulatory Agency DNR/Hazardous Waste Program/Superfund Section

Contact Information Long-Term Stewardship Unit

To report a problem with information about a site location, please contact us at LTS@dnr.mo.gov, (573) 526-8913, or (800) 361-4827.

Appendix III(b)

GeoSTRAT Interactive Map



Appendix IV

Questionnaires and Interview Summaries

- (a) Owner Questionnaire - Xtreme Property Holdings, LLC
- (b) User Questionnaire – City of Nixa
- (c) Interview - City of Nixa, Public Works and Code Compliance
- (d) Interview - City of Nixa, Fire Department

Appendix IV(a)

Owner Questionnaire – Xtreme Property
Holdings, LLC

OWNER QUESTIONNAIRE

Owner Contact Information (Name, Address, Phone, Email):

XTREME PROPERTY HOLDINGS, LLC

PO BOX 173, NIXA, MO 65714

Email:

Target Property: NE ¼, SW ¼, NE 1/4, S-15, T27N, R22W (5 acres)

1209 West Mount Vernon Street, Nixa, MO 65714
(North end of 19.7-acre lot)

Current Use: Undeveloped

As a qualified environmental professional for GREDELL Engineering Resources, Inc. (GER), I am conducting the Phase I Environmental Site Assessment (ESA) for the real estate transaction by XTREME PROPERTY HOLDINGS, LLC (current property owner) of the above Target Property. This questionnaire follows the current Environmental Protection Agency (EPA) guidelines outlined in 40 CFR Part 312 Standards and Practices for All Appropriate Inquiry (AAI) and the American Society of Testing and Materials (ASTM) E1527-21, Standard Practices for Environmental Site Assessment: Phase I Environmental Site Assessment Process.

As part of the “All Appropriate Inquiry” and due diligence requirements required by the Phase I ESA, GER is required to ask you the following questions regarding the above referenced Target Property:

Mr. Lampe returned Christine Houts call at 3:30pm on July 2 2024. Christine Houts read the questions to Mr. Lampe over the phone while he read from the copy emailed him by Jacob Fitzpatrick. Mr. Lampe responded verbally to the questions read and Christine Houts recorded the answers directly to this questionnaire simultaneously. Mr. Lampe stated that the property was purchased recently in the past year or so and that he had no knowledge of its history other than it was farm land. He agreed to forward any title documents that he had to Jacob Fitzpatrick as soon as possible.

1. Do you know whether any documents listed below exist and, if so, whether copies can and will be provided to the environmental professional within reasonable time and cost constraints?
 - a. Environmental site assessment reports;
 - b. Environmental compliance audit reports;
 - c. Environmental permits (for example, solid waste disposal permits, hazardous waste disposal permits, wastewater permits, NPDES permits, underground injection permits);
 - d. Registrations for underground and above-ground storage tanks;
 - e. Registrations for underground injection systems;
 - f. Material safety data sheets;
 - g. Community right-to-know plan;

- h. Safety plans; preparedness and prevention plans; spill prevention, countermeasure and control plans (SPCC); facility response plans, etc.;
- i. Reports regarding hydrogeologic conditions on the property or surrounding area;
- j. Notices or other correspondence from a government agency relating to past or current violations of environmental laws with respect to the property or relating to environmental liens encumbering the property;
- k. Hazardous waste generator notices or reports;
- l. Geotechnical studies;
- m. Risk assessments; and
- n. Recorded Activity and Use Limitations (AULs).

Respondent says No

2. Are you aware of any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the property?

Respondent says No

3. Are you aware of any pending, threatened, or past administration proceedings relevant to hazardous substances or petroleum products in, on, or from the property?

Respondent says No

4. Are you aware of any notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products?

Respondent says No

5. May we contact the current tenant and perform a similar environmental interview about this property?

Yes ___ No ***X*** ***Respondent commented that there are no tenants to contact.***

Please answer the questions above to the best of your ability and return to me via email, fax or standard mail at your earliest convenience. You may also contact me by phone and provide the answers. If you have any questions regarding this information, please contact me or Mr. Mike Carlson at (417) 890-6200.

Thank you,

Jacob Fitzpatrick, E.I.
GREDELL Engineering Resources, Inc.
636 W. Republic Road, Springfield, MO 65807
(417) 890-6200
jacobf@ger-inc.biz

Appendix IV(b)

User Questionnaire – City of Nixa

User Questionnaire

As a qualified environmental professional for GREDELL Engineering Resources, Inc. (GER), I am conducting a Phase I Environmental Site Assessment (ESA) for the real estate transaction by the City of Nixa, Missouri. (User). The 5-acre Target Property is located at the north end of the 19.7-acre lot at 1209 West Mount Vernon Street, in the Northeast quarter of Section 15, Township 27 North, Range 22 West, Nixa, Missouri. This questionnaire follows the current Environmental Protection Agency (EPA) guidelines outlined in 40 CFR Part 312 Standards and Practices for All Appropriate Inquiry (AAI) and the American Society of Testing and Materials (ASTM) E1527-21, Standard Practices for Environmental Site Assessment: Phase I Environmental Site Assessment Process.

GENERAL LEGAL DESCRIPTION OF TARGET PROPERTIES

- 1) City of Nixa, Missouri
 - a. Undeveloped, 5 acres
 - b. General Legal Description: NE ¼, SW ¼, NE ¼, S-15, T27N, R22W

In order to qualify for one of the *Landowner Liability Protections (LLPs)* offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001 (the “*Brownfields Amendments*”), the user must conduct the following inquiries required by 40 CFR 312.25, 312.28, 312.29, 312.30, and 312.31. These inquiries must also be conducted by EPA Brownfield Assessment and Characterization grantees. The user should provide the following information to the environmental professional. Failure to conduct these inquiries could result in the determination that “*All Appropriate Inquiry*” is not complete.

As part of the “All Appropriate Inquiry” and due diligence requirements required by the Phase I ESA, I am required to ask you the following questions regarding the Target Property:

1. Did a search of recorded land title records (or judicial records where appropriate) identify any environmental liens filed or recorded against the property under federal, tribal, state, or local law?
Yes ____ No **X**____
If Yes, please provide a description or copies.
Not that we are aware of.
2. Did a search of recorded land title records (or judicial records where appropriate) identify any Activity and Land Use Limitations (AULs), such as engineering controls, land use restrictions, or institutional controls that are in place at the property and/or have been filed or recorded against the property under federal, tribal, state, or local law?
Yes ____ No **X**____

If Yes, please provide a description or copies.

3. Did a search of chain of title records (or judicial records where appropriate) identify all previous property owners?

Yes ____ No ____

If Yes, please provide a description or copies.

N/A No title search has been performed by the City of Nixa.

4. 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?

To our knowledge, the property has only been used for a house and farmland. We have no specialized knowledge or experience related to this property.

5. Does the purchase price being paid 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?

Yes X No ____

If No, please give a brief explanation for the lower price

An appraisal was performed and we are paying fair market value.

6. 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,

- a. Do you know the past use of the property?

Yes X No ____

If Yes, what was the past use of the property?

Farm and residential

- b. Do you know of specific chemicals that are present or once were present at the property?

Yes ____ No X

If Yes, please provide a list of chemicals.

- c. Do you know of any spills or other chemical releases that have taken place at the property?

Yes ____ No X

If Yes, please provide a brief description of the spill or other chemical release.

d. Do you know of any environmental cleanups that have taken place at the property?

Yes ____ No X

If Yes, please provide a brief description of the environmental cleanup.

7. 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?

Yes ____ No X

If Yes, please provide a brief description.

Please answer the questions above to the best of your ability and return to me via email, fax or standard mail at your earliest convenience. You may also contact me by phone and provide the answers verbally. If you have any questions regarding this information, please contact me at (417) 890-6200.

Jacob Fitzpatrick, E.I.,
GREDELL Engineering Resources, Inc.
636 W. Republic Road, Springfield, MO 65807
(417) 890-6200
jacobf@ger-inc.biz

Appendix IV(c)

Interview – City of Nixa
Public Works and Code Compliance

Phase I ESA Interview Questionnaire

Last Revised: 6/27/2024

This office is currently conducting a Phase I Environmental Site Assessment (ESA) on behalf of the City of Nixa for a 5-acre parcel of ground located at the north end of 1209 West Mount Vernon Street just west of the intersection of North Leeann Drive and West Faye Road, in the Northeast quarter of S-15, T-27N, R-22W in Nixa, Christian County, MO. As part of the ESA process and because you may have familiarity with the property, GREDELL Engineering Resources, Inc. is contacting you in the effort to satisfy the current Environmental Protection Agency (EPA) guidelines outlined in 40 CFR Part 312 Standards and Practices for All Appropriate Inquiry (AAI) and the American Society of Testing and Materials (ASTM) E1527-21, Standard Practices for Environmental Site Assessment: Phase I Environmental Site Assessment Process.

As part of the “all appropriate inquiry” and due diligence requirements required to complete a Phase I ESA, this office is required to respectfully ask you the following questions regarding the property described above and currently owned by: **Xtreme Property Holdings LLC**

1. Are you aware of commonly known or reasonably ascertainable information about the property that would help us identify conditions indicative of releases or threatened releases? For example:
 - a. Do you know the past uses of the property?
Agricultural or farm use.
 - b. Do you know of specific chemicals that are present or once were present at the property?
No
 - c. Do you know of any spills or other chemical releases that have taken place at the property?
No
 - d. Do you know of any environmental cleanups that have taken place at the property?
No

Please contact me if you have any questions. Feel free to call at 417-890-6200 to discuss these questions over the phone! Either Gary Pendergrass or I will be available to do so.

Thank you,

Jacob Fitzpatrick, E.I.
GREDELL Engineering Resources, Inc.
636 W. Republic Road, Springfield, MO 65807
(417) 890-6200
jacobf@ger-inc.biz

Appendix IV(d)

Interview – City of Nixa
Fire Department

Phase I ESA Interview Questionnaire

Last Revised: 6/27/2024

This office is currently conducting a Phase I Environmental Site Assessment (ESA) on behalf of the City of Nixa for a 5-acre parcel of ground located at the north end of 1209 West Mount Vernon Street just west of the intersection of North Leeann Drive and West Faye Road, in the Northeast quarter of S-15, T-27N, R-22W in Nixa, Christian County, MO. As part of the ESA process and because you may have familiarity with the property, GREDELL Engineering Resources, Inc. is contacting you in the effort to satisfy the current Environmental Protection Agency (EPA) guidelines outlined in 40 CFR Part 312 Standards and Practices for All Appropriate Inquiry (AAI) and the American Society of Testing and Materials (ASTM) E1527-21, Standard Practices for Environmental Site Assessment: Phase I Environmental Site Assessment Process.

As part of the "all appropriate inquiry" and due diligence requirements required to complete a Phase I ESA, this office is required to respectfully ask you the following questions regarding the property described above and currently owned by:

1. Are you aware of commonly known or reasonably ascertainable information about the property that would help us identify conditions indicative of releases or threatened releases? For example:
 - a. Do you know the past uses of the property?
No, we only keep records on property with a 911 address.
 - b. Do you know of specific chemicals that are present or once were present at the property?
We have no records of such chemicals.
 - c. Do you know of any spills or other chemical releases that have taken place at the property?
None
 - d. Do you know of any environmental cleanups that have taken place at the property?
None

Please contact me if you have any questions. Feel free to call at 417-890-6200 to discuss these questions over the phone! Either Gary Pendergrass or I will be available to do so.

Thank you,

Jacob Fitzpatrick, E.I.
GREDELL Engineering Resources, Inc.
636 W. Republic Road, Springfield, MO 65807
(417) 890-6200
jacobf@ger-inc.biz

Appendix V

Representative Photographs from Site Visit

**New Police Station
Phase I ESA
West Mount Vernon Street,
Nixa, Missouri
Representative Site Photographs**



**New Police Station
Phase I ESA
West Mount Vernon Street,
Nixa, Missouri
Representative Site Photographs**

PHOTO ID:	3
DATE:	7/10/23
DIRECTION:	East
DESCRIPTION:	
View of Target Property from southwest corner. Vegetated, open field is shown in the foreground. Trees line the north boundary of the property, as shown in the background.	



PHOTO ID:	4
DATE:	7/10/23
DIRECTION:	North
DESCRIPTION:	
View of the adjacent property to the west of the Target Property. A detention basin outlet is shown in the background that is adjacent to the northwest corner of the Target Property.	



Appendix VI

Qualifications (Resumes) of Environmental Professionals

- (a) Gary Pendergrass, P.E., R.G.
- (b) Mike Carlson, R.G.
- (c) Jacob Fitzpatrick, E.I.
- (d) Christine Houts

Appendix VI (a)

Gary Pendergrass, P.E., R.G.



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RESUME OF GARY J. PENDERGRASS, P.E., R.G.

Education B.S., Engineering Geology and Stratigraphy (dual comprehensive degrees), Missouri State University, December 1975
B.S., Geological Engineering, Missouri University of Science & Technology, May 1980
M.S., Geological Engineering, Missouri University of Science & Technology, May 1979

Registration Professional Engineer: Missouri, Arkansas; Registered Geologist: Missouri

Experience Gary Pendergrass is a Registered Professional Engineer and Registered Geologist with over 48 years of experience in management of major engineering and environmental projects, and management of diverse professional and technical groups. Over the course of his career, Gary has held senior management positions in the energy, chemical and consulting sectors. As a senior manager with City Utilities of Springfield, Gary managed landfill development, power plant construction, dam rehabilitation and water supply projects for the utility. As President of Agribusiness Technologies (a division of Syntex Corporation), Gary managed major Superfund cleanup projects and served as corporate spokesman. As a Principal with GeoEngineers, Gary managed environmental, geological, and geotechnical projects in the Midwestern and Southern United States.

Recently completed projects have involved air quality permitting, mine remediation, carbon sequestration, utility waste landfill development, karst investigation, groundwater characterization, and federal dam rehabilitation.

Professional Experience

Gary has had the good fortune of involvement in a number of high-profile engineering and environmental projects. Representative projects include:

- **Eastern Missouri Dioxin Project** – Gary headed the environmental management division of Syntex Corporation with primary corporate responsibility for the Eastern Missouri Dioxin Project, a \$600 million Superfund cleanup project involving remediation and restoration of 29 separate dioxin-contaminated sites in eastern Missouri, including Times Beach. Gary and his team successfully negotiated a settlement agreement with the US Environmental Protection Agency (EPA), the Department of Justice, and the State of Missouri to provide for cleanup of the sites. The agreement was the first "mixed work" agreement in the nation and has served as a model for subsequent EPA negotiations. Gary directed a team of engineers, scientists, attorneys, toxicologists, environmental professionals and contractors to complete the corporate obligations outlined in the settlement agreement. The work involved site selection, design, permitting, construction and operation of a special waste landfill; demolition of 650 abandoned structures within the former town of Times Beach, Missouri; design, permitting, construction, testing and operation of a Subtitle C TSD Facility for storage, treatment and disposal of 265,000 tons of dioxin-contaminated material; design, construction and operation of flood protection facilities; design, construction and operation of groundwater, surface water and air monitoring networks; design and construction of a 3,000-ft. natural gas pipeline; sampling and excavation of 22,000 cubic yards of dioxin-contaminated material at the Times Beach site; receiving, storage, processing, testing and



disposal of dioxin-contaminated material from the 29 sites; design and construction of a treated material repository; and restoration of the Times Beach site for dedication as Route 66 State Park. In addition to the above, Gary coordinated the project with federal, state and county agencies, elected officials, special interest groups, and the media; managed public and media relations, including serving as project spokesperson; and provided strategic planning/technical support for related personal injury and insurance litigation.

- **Missouri Carbon Sequestration Project** – Gary assembled, organized and managed a project team for the Shallow Carbon Sequestration Demonstration Project, a Department of Energy funded research project to investigate the feasibility of capture and storage of carbon dioxide from power plant emissions in shallow geological formations beneath Missouri. Project members included City Utilities of Springfield (lead agency), the Missouri Department of Natural Resources, Missouri State University, Missouri University of Science & Technology, Ameren Missouri, Associated Electric Cooperative, Inc., The Empire District Electric Company, and Kansas City Power & Light. Gary secured \$6 million in federal and private funding for the project. The project involved drilling and coring of deep exploratory boreholes at four Missouri power plant sites, core analysis, pump testing, downhole geophysical logging, 3D seismic reflection surveys, reservoir analysis, development of geologic/hydrologic/geochemical models, preparation of a 698- page summary report, and presentation of findings at Department of Energy conferences. Gary also provided testimony to Missouri House and Senate committees regarding risk and appropriate liability limits for carbon sequestration projects.
- **City Utilities CCR Rule Support** – Served as Principal-In-Charge for certification of utility waste landfill stability at City Utilities' John Twitty Energy Center and James River Power Station, groundwater characterization at both plant sites, and development of groundwater monitoring systems at both plant sites pursuant to USEPA's Coal Combustion Residuals (CCR) Rule. Work included electrical resistivity tomography (ERT) surveys, multi-channel analysis of surface waves (MASW) soundings, piezometer and monitoring well construction, hydrologic testing, and development of 3D GIS models for presentation of data.
- **Oronogo-Duenweg Mining Belt Remedial Action** – Provided remedial design and construction oversight services for a confidential client at a number of former lead and zinc mining sites which were remediated pursuant to CERCLA in the Tri-State Mining District (MO/KS/OK). Services included site investigation, preparation of remedial work plans, sampling and analysis, pre- and post-construction surveys, reporting, negotiations with USEPA, and certification that work was completed in conformance with the approved remedial action plan and consent decree.
- **Magmont Mine Site Groundwater Characterization** - Served as Principal-In-Charge for groundwater characterization at Teck American's Magmont Mine Site in Bixby, Missouri. Work included delineation of aquifer systems, hydrogeologic analysis, installation of groundwater monitoring wells, and preparation of a summary groundwater characterization report. Quarterly groundwater monitoring and water level logging continue at the site.



- **Top of the Rock Sinkhole Investigation** – Provided emergency response, sinkhole investigation, and media relations support to Bass Pro Shops for the May 2015 sinkhole collapse at Top of the Rock resort in Ridgedale, MO. Work included assessment of sinkhole stability, establishment of exclusion zones for guest protection, geophysical investigations to characterize the nature and extent of solution cavities beneath the site, and service as spokesperson for regional, national, and international media inquiries.
- **Confidential Sinkhole Stabilization Project** – Served as Subject Matter Expert for a confidential international energy client for investigation and stabilization of sinkholes at a major pipeline terminal in eastern Tennessee. Performed third-party review of existing remediation plans and provided advice and counsel to corporate management.
- **Confidential Pipeline Karst Investigation** – Performed site investigation for a confidential international energy client involving electrical resistivity tomography (ERT) surveys and multi-channel analysis of surface waves (MASW) soundings to determine the nature and extent of karst development and sinkhole collapse associated with a major petroleum pipeline in southeastern Minnesota.

Associations Missouri Air Conservation Commission, Chair
Missouri Board of Geologist Registration, Chair
Missouri Department of Natural Resources Geological Mapping Advisory Committee
Springfield-Greene County Environmental Advisory Board



Appendix VI (b)

Mike Carlson, R.G.



GREDELL

ENGINEERING RESOURCES

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RESUME OF MIKEL C. CARLSON, R.G.

- Education** B.S., Geology, University of Missouri at Kansas City, 1984
M.S., Geology, University of Tulsa, 1988
Master's Thesis: *A Petrologic Analysis of Surface and Subsurface Atoka Formation (Lower Pennsylvanian) Sandstone, Western Margin of the Arkoma Basin, Oklahoma*
- Registration** Registered Geologist: Missouri (RG 0126)
Registered Geologist: Kansas (#519)
Registered Geologist: Illinois (#196.001335)
Missouri Well Drillers and Pump Installer Permit (No. 002876M)
- Experience** As Principal Geologist, Mikel Carlson is responsible for designing and implementing subsurface investigations including detailed site investigations, hydrogeologic studies, mine development, contaminant plume delineations and soil (borrow) evaluations. He is likewise responsible for the design and installation of groundwater and gas monitoring systems. Mr. Carlson is actively involved in the development of mining permits; stormwater pollution prevention plans (SWPPP); spill prevention, control and countermeasure plans (SPCC); and related industrial compliance activities.
- Mr. Carlson has 34 years of regulatory and consulting experience in the areas of solid waste, hazardous waste, surface mining and storm water control. Prior to joining the private sector, Mr. Carlson worked for the Missouri Department of Natural Resources Land Reclamation Program (MDNR-LRP), where he served as a state mine inspector, project coordinator and ultimately as construction supervisor for abandoned coal mine reclamation projects. Mr. Carlson has been a geological consultant for 28 years. Examples of his consulting experience are highlighted below.

Geologic/Hydrologic Experience

- Currently lead geologist for groundwater related services pertaining to NPDES (Missouri State Operating Permit) compliance for multiple heavy industrial facilities located in eastern Missouri. Responsible for the subsurface characterization of groundwater flow direction and depth, the design and installation of groundwater monitoring systems, the development of sampling and analysis plans, and the coordination and management of groundwater sampling and reporting. Work has been ongoing since 2015.
- Responsible charge for a subsurface investigation located at a heavy industrial site in Scott County, Missouri. Work performed to satisfy various groundwater requirements of the Federal CCR Rule and Clean Water Act. Work involved the installation of nine monitoring wells in alluvium to a depth of 35 feet, aquifer testing, reporting, and providing technical assistance for groundwater sampling and data management and reporting. Work has been ongoing since 2016.
- In charge of a DSI for a proposed expansion to a sanitary landfill located in Greene County, Missouri. The project entailed verification of bedrock continuity through correlation of whole-rock core, wireline logging, and packer testing to demonstrate the presence of a continuous, low permeability unit within Ordovician age carbonate strata. Additional activities included piezometer



installation and aquifer testing. Field work was completed in early 2016. The DSI report was submitted in late 2016 and approved by the MDNR-Missouri Geological Survey (MGS) in April 2017.

- Lead geologist for a DSI involving a proposed utility waste facility in Franklin County, Missouri. This project involved the drilling and installation of 97 piezometers to characterize the geology and hydrology of alluvial sediments within the Missouri River floodplain. The DSI report was submitted to the MDNR- MGS in early 2011 and approved in April 2011.
- Responsible charge for a DSI involving a proposed utility waste facility in St. Charles County, Missouri. This project involved the drilling and construction of 57 piezometers within alluvial sediments of the Mississippi and Missouri River floodplains. The DSI report was approved by the MDNR-MGS in November 2006.
- Successfully completed a geologic and hydrologic investigation for a proposed demolition waste facility in St. Charles County, Missouri. Field work partly consisted of drilling coreholes and installing piezometers in Mississippian age limestone bedrock. A summary report of the investigation was approved by MDNR-MGS in January 2006.
- Lead geologist for a DSI of a proposed utility waste facility in New Madrid County, Missouri. This project involved the development of 126 borings, including 64 piezometers, to characterize the hydrogeology of Mississippi River alluvium. MDNR-MGS approval of the DSI report was secured in late 2004.

Land Reclamation/Mining Experience

- Has assisted Associated Electric Cooperative, Inc. (AECI) on an annual basis since 2003 with the preparation and submittal of bond release applications and permit revisions involving their Prairie Hill, Bee Veer, and Nemo Coal Mines in Randolph, Macon and Chariton Counties, Missouri. Approval of these release applications has enabled AECI to obtain complete release of bond liability for the Bee Veer and NEMO mine sites, as well as large sections of the Prairie Hill mine site, which was closed in 1993.
- Responsible charge of a 72-acre abandoned mine land reclamation project located in Boone County, Missouri to mitigate barren and acidic mine spoil. Preliminary design was completed in March 2009 and final design was completed in March 2010. Construction bid was awarded by the State of Missouri Office of Administration in July 2010 and was successfully completed in July 2011. Total construction cost was \$1.28 million.
- Successfully obtained surface mining permits for open pit mining operations. Past and present clients include: Heartland Materials; Wayland Stone, LLC; Capital Quarries; Pace Construction; Bailey Quarries; Norris Quarries; Journagan Construction; Missouri Partners, Inc.; Magruder Limestone; Adrian Quarry; Double Eagle Aggregate; T&M Stone; S-S-S, Inc.; Lafarge Corporation; R-B Quarry; 2-N-1 S & G; and Holt Construction.



UST Closure/Site Characterization/Environmental Assessment Experience

- Involved in numerous UST Closures, Site Characterizations, and Environmental Assessments at various sites in St. Louis, Sedalia, Jefferson City, Kansas City, Joplin, Columbia, Springfield, Lee's Summit, Osage Beach, Fulton and Aurora.

Prior Experience

Prior to joining GREDELL Engineering Resources, Inc., Mr. Carlson worked as Senior Geologist for Aeromet Engineering, Inc. and Midwest Environmental Consultants, P.C. Mr. Carlson joined MDNR-LRP from Kingwood, TX, where he worked as a Reservoir Petrologist following completion of his Master's Degree.

Certifications OSHA Hazardous Waste Operations (40-hour, 8-hour Supervisor & current 8-hour update)
OSHA Construction Program (10-hour)

Associations Industrial Minerals Advisory Council
Association of Missouri Geologists
Missouri Limestone Producers Association
National Groundwater Association

Publications Carlson, M.C. "A Petrologic Analysis of Surface and Subsurface Atoka Formation Sandstone, Western Margin of the Arkoma Basin, Oklahoma," Shale Shaker Magazine (Oklahoma City Geological Society Publication), April 1989.

Carlson, M.C. "The Occurrence of Sandstone (St. Peter) in the Jefferson City Area", in Davis, G.H., ed., Engineering Geology, Filled-Sink Structures, and Stratigraphy of the Jefferson City Area, Association of Missouri Geologists Field Guide, 1997 Annual Meeting.



Appendix VI (c)

Jacob Fitzpatrick, E.I.



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RESUME OF JACOB T. FITZPATRICK, E.I.

Education B.S., Environmental Engineering, Missouri University of Science & Technology, 2021
Magna Cum Laude
M.S., Environmental Engineering, Missouri University of Science & Technology, 2023
G.C., *Subsurface Water Resources*

Registration Engineer Intern: Missouri

Experience Jacob Fitzpatrick rejoined GREDELL Engineering Resources, Inc. in January 2022, after completing multiple internships with the company. Mr. Fitzpatrick has professional experience with landfill closure design, post-closure assistance, and closed landfill assessments; transfer station design & permitting; karst (sinkhole) evaluations and remediation design; CCR compliance assistance for energy centers; water/wastewater design; lagoon closure; mine permitting; mine bond release; reclaiming mine lands and treating acid mine drainage; metals assessment evaluations; shooting range closure; drainage and stream design modeling; developing stormwater management plans, ordinances, and designs. Other project experience involved environmental & groundwater sampling, environmental compliance, hydrogeology, hydrology, hydraulics, water resources, wastewater, SPCC plans, UST removal, and Environmental Site Assessments.

Mr. Fitzpatrick has previous experience at the U.S. Geological Survey – Hydrology; Missouri Department of Natural Resources – Land Reclamation, Benton and Associates, Inc.; and as a research assistant for the Missouri University of Science and Technology. Mr. Fitzpatrick's education and experience complement and enhance Gredell Engineering's current staff and capabilities with skills in GIS/GPS mapping & geodatabases; modeling softwares for groundwater, water resources, and wastewater; reclamation; and remediation.

Software Experience QGIS (Mapping & Geodatabase Design)
HEC-RAS (Stream Analysis) & HEC-HMS (Hydrologic Modeling)
HydroCAD (Stormwater Design)
Visual MODFLOW (3D Groundwater Modeling)
AQTESOLV (Aquifer Test Analysis)
Sanitas® Statistical Software (Groundwater Statistical Analysis Software)
Surfer (Groundwater mapping/modeling)
Visual Hydraulics (Hydraulics Analysis for Water/Wastewater Design)
OpenFlows WaterGEMS (Water Distribution Network Modeling)
AutoCAD & MicroStation

Certifications Missouri Wastewater Treatment Operator - D
OSHA Construction Program (10-hour & 30-hour)
OSHA Hazardous Waste Operations (40-hour & 8-hour refresher)
OSHA HazCom (Hazard Communication)
Adult & Pediatric First Aid/CPR/AED

Associations Missouri Limestone Producers Association – Mineral Education Board Member
Solid Waste Association of North America – Young Professional Member



Missouri Waste Control Coalition – 2020 Scholarship Recipient
Chi Epsilon Civil Engineering Honor Society
Association of Environmental and Engineering Geologists
Water Environment Federation Association of Environment Engineers
American Society of Civil Engineers
American Academy of Environmental Engineers and Scientists

Appendix VI (d)

Christine Houts



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RESUME OF CHRISTINE HOUTS

Education B.S., Geology and Scientific and Technical Writing, Michigan Technology University, 2007
Associate of Science in Physical Sciences, Northwestern Michigan College, 2005
Associate of Applied Science in Network Systems Administration & Support – Sandhills Community College, 2002

Experience Christine recently joined the staff of GREDELL Engineering Resources, Inc. (GER) as an Environmental Geologist. Christine graduated from Michigan Technology University with a B.S. in Geology and Scientific and Technical Writing. Ms. Houts has over ten years of diverse experience in regulatory compliance; geological surveying and mapping; GPS; field assessments; data management; and reporting. She has worked in the western United States as a Geologist and Surveyor focusing on the mining industry.

Ms. Houts' education and experience will enhance GER's current staff and capabilities with skills in environmental compliance, geological mapping, data management, mining, environmental cleanup actions and safety, as she brings new insights to our team.

Geologic/Mining Prior Experience

Prior to joining GER, Ms. Houts experience includes data reconciliation of all historic drilling logs and assays and QAQC for 43-101 technical report; survey and mapping of surface (Trimble Total Station) and underground historic drilling using tape and Brunton Compass; conducted ore and grade control; channel, blasthole, muck sampling design, inventory, and data management; mine/geology surveying and mapping (tape and Brunton Compass); creating and maintaining up-to-date maps, using MapInfo/Datamine; core logging, exploration activities, sampling QAQC, data management, and coordination with drillers; creating cross sections and 3D representations of historic and current drilling in MapInfo/Datamine; regulatory compliance; management of NDEP water pollution control permit compliance, record keeping, and reporting; permit writer and management of air pollution compliance and reporting; management of HAZMAT inventory, compliance, and permitting; and management of MSHA record keeping and training requirements. Ms. Houts also has extensive experience working with state, local, and federal agencies in both a professional and volunteer capacity.

Certifications Permitted Well Installation Contractor: Missouri
OSHA Construction Program (30-hour)
Mine Safety & Health Administration (MSHA) Surface and Underground Miner Training

Associations 1990-2000 US Army
2012-2014 Advisory Board Member/Secretary, Nevada Mineral Exploration Coalition (NMEC)
2012-2022 Society of Economic Geologists
2012-2022 Geologic Society of Nevada
2018-2022 Society of Mining, Metallurgy, and Exploration



Appendix VII

References

REFERENCES CITED

American Society of Testing and Materials Standard E 1527-21, Standard Practice for Environmental Site Assessments: Phase 1 Environmental Site Assessment Process

Environmental Data Resources, June 14, 2024, *EDR Radius Map™ Report with Geotcheck®*, Target Property New Police Station 1209 W Mount Vernon St, Nixa MO 65714, Inquiry Number 7682213.2s

Environmental Data Resources, June 14, 2024, *Certified Sanborn® Map Report*, Target Property New Police Station 1209 W Mount Vernon St, Nixa MO 65714, Inquiry Number 7682213.3

Environmental Data Resources, June 14, 2024, *EDR Historical Topo Map Report with Quadmatch™*, Target Property New Police Station 1209 W Mount Vernon St, Nixa MO 65714, Inquiry Number 7682213.4

Environmental Data Resources, June 17, 2024, *The EDR Aerial Photo Decade Package*, Target Property New Police Station 1209 W Mount Vernon St, Nixa MO 65714, Inquiry Number 7682213.8

Environmental Data Resources, June 17, 2024, *EDR-City Directory Image Report*, Target Property New Police Station 1209 W Mount Vernon St, Nixa MO 65714, Inquiry Number 7682213.5

Environmental Data Resources, June 19, 2024, *EDR Vapor Encroachment Screen Report Prepared using EDR's Vapor Encroachment Worksheet*, Target Property New Police Station 1209 W Mount Vernon St, Nixa MO 65714, Inquiry Number 7682213.2s

Missouri Environmental Site Tracking and Research Tool (E-START), 2024, Missouri Department of Natural Resources, Waste Management Program

Missouri Geological Survey Geo-Sciences Technical Resource Assessment Tool (GeoSTRAT), 2024, Missouri Department of Natural Resources, Missouri Geological Survey

Federal Emergency Management Agency (FEMA), National Flood Hazard Layer (NFHL) FIRM, November 2, 2023



GREDELL
ENGINEERING RESOURCES

**Sinkhole Evaluation
City of Nixa
New Police Station Development
1209 West Mt. Vernon Street
Nixa, MO 65714**



Prepared for:



**Mr. Jimmy Liles,
City Administrator
City of Nixa
715 West Mt. Vernon Street
Nixa, MO 65714**

July 2024

**Sinkhole Evaluation
City of Nixa
New Police Station Development
1209 West Mt. Vernon Street
Nixa, MO 65714**

**Prepared for:
Mr. Jimmy Liles,
City Administrator
City of Nixa
715 West Mt. Vernon Street
Nixa, MO 65714**

July 2024

**Prepared by:
GREDELL Engineering Resources, Inc.
636 West Republic Road
Springfield, Missouri 65807
Phone: (417) 890-6200
www.ger-inc.biz**



**Sinkhole Evaluation
City of Nixa
New Police Station Development**

July 2024

Table of Contents

1.0	INTRODUCTION	1
2.0	CITY OF NIXA SINKHOLE POLICY	1
3.0	SITE DESCRIPTION AND SETTING	1
4.0	AREA GEOLOGY	2
5.0	SINKHOLE IDENTIFICATION AND EVALUATION	2
6.0	FLOODING CONSIDERATIONS.....	3
7.0	WATER QUALITY CONSIDERATIONS.....	5
8.0	PERFORMANCE STANDARDS AND CONSIDERATIONS FOR DEVELOPMENT	6
9.0	SINKHOLE SETBACKS AND USE RESTRICTIONS	6
10.0	RECOMMENDATIONS	7
11.0	LIMITATIONS	8

List of Figures

Figure 1 Sinkhole Location Map
Figure 2 Sinkhole Drainage Areas
Figure 3 Construction Setbacks and Elevations
Figure 4 Area Karst Features

List of Appendices

Appendix A - Preliminary Development Layout, 05/28/24
Appendix B - Nixa Police Station Photolog
Appendix C - NRCS Web Soil Survey Report
Appendix D - Flood Event Calculations
Appendix E - Report Limitations and Guidelines for Use

1.0 INTRODUCTION

At the request of the City of Nixa, in accordance with our proposal dated June 10, 2024, and authorized by Cindy Robins, Assistant City Administrator, on June 12, 2024, GREDELL Engineering Resources, Inc. (GER) has completed a sinkhole evaluation at the proposed Nixa Police Station development site (the Site) in Christian County, Missouri. Due to the City's anticipation of annexing the Site, this evaluation has been prepared in general accordance with the requirements of the City of Nixa Technical Specifications Manual, Article VII - Stormwater Management Plan. Our findings and recommendations are summarized below.

2.0 CITY OF NIXA SINKHOLE POLICY

The City of Nixa subscribes to a policy of Avoidance, Minimization and Mitigation with respect to development in areas containing sinkholes. Construction in sinkholes should be avoided. Exceptions to the policy may be made only in situations where it can be conclusively demonstrated that there is no practical alternative to such construction. If construction in sinkholes is deemed necessary, measures may be proposed which will minimize or mitigate the impact on the sinkhole or receiving waters.

The City of Nixa has also established four basic goals for development in sinkhole areas. These goals include assurance of structural integrity, maintenance of the storm water drainage system, protection of groundwater quality, and sustainability. These goals, which are described more fully in the Technical Specification Manual, were addressed in the course of this sinkhole evaluation and development of associated recommendations.

3.0 SITE DESCRIPTION AND SETTING

The Site at the north end (5 acres) of 1209 West Mount Vernon Street is just west of the intersection of North Leeann Drive and Faye Road, and just west of the City of Nixa, Missouri corporate limits in the NE $\frac{1}{4}$, SW $\frac{1}{4}$, NE $\frac{1}{4}$, S-15, T27N, R22W, Christian County, Missouri 65714. It has been historically used for agricultural purposes and currently consists of pasture land with tree lines along the north and west property boundaries. The Site is bounded by residential land and a church to the west, N. Leeann Drive and residential land to the east, residential and undeveloped land to the north, and undeveloped land to the south.

The development, as shown on the Preliminary Development Layout provided in Appendix A, is currently in Christian County jurisdiction. However, the City of Nixa anticipates annexing the Site. Access to the site is provided from N. Leeann Drive. Surface runoff and shallow groundwater movement is generally from southwest to northeast. This area is typified by internal stormwater drainage to losing streams and sinkholes. The Site lies at an approximate elevation of 1290 feet. Topographic contours with a one-foot contour interval are provided on the Figures.

4.0 AREA GEOLOGY

This region of Christian County is underlain by the Burlington-Keokuk Limestone; a Mississippian age, coarsely crystalline, crinoidal limestone within which most of the karst features in the county form. Caves, springs and sinkholes commonly develop within this unit, along with pinnacles and cutters, giving rise to a highly irregular soil-bedrock interface. The Burlington-Keokuk typically caps upland areas and can exceed 100 feet (30 m) in thickness.

Beneath the Burlington-Keokuk Limestone lies the Elsey-Reeds Spring Formation, a fine-grained, gray limestone with large amounts of chert in the form of nodules and beds. The Elsey-Reeds Spring Formation is generally 50 to 60 feet (15-18 m) thick in this region. The Elsey-Reeds Spring Formation crops out along tributaries of the James River to the north. The shallow karst system developed within the Burlington-Keokuk Limestone does not typically extend into the Elsey-Reeds Spring Formation. Consequently, shallow groundwater in the karst system tends to resurface at springs developed within the vertical extent of the Burlington-Keokuk.

Two distinct types of sinkholes exist in this area: solutional sinkholes and collapse sinkholes. Solutional sinkholes form along bedrock joints as slightly acidic groundwater slowly dissolves the limestone. Solutional sinkholes tend to be bowl-shaped with a flat floor covered in sediment and sloping sidewalls. Sinkhole eyes often form on the sinkhole floor as fine-grained soils erode into the underlying solution-widened joints. Sinkhole sidewalls tend to be relatively stable. Solutional sinkholes often form at the intersection of solution-widened joints and can mirror the trends of the joint sets. In the Nixa area, there tends to be a primary set of parallel joints that trend NW-SE and a secondary set of parallel joints that trend NE-SW.

Collapse sinkholes originate at the bedrock surface as fine-grained soils migrate into subsurface cavities. As more and more soil is displaced, the subsurface cavity propagates upward toward the ground surface until the soils can no longer bridge the cavity and a surface collapse occurs. Collapse sinkholes can form with no warning but are often triggered by changes in soil moisture content. As moisture content of the soils increases, unit weight increases and strength decreases. Collapse sinkholes can usually be repaired and stabilized by construction of a properly designed graded filter, provided the depth to bedrock is not too great.

5.0 SINKHOLE IDENTIFICATION AND EVALUATION

Initial site reconnaissance was conducted at the Site on Wednesday, June 19, 2024. After the site was mowed, a supplemental site reconnaissance was conducted on June 27, 2024. A total of four (4) sinkholes were identified onsite and are shown on Figure 1 – Sinkhole Location Map. Descriptions of individual sinkholes follow:

Sinkhole A is a shallow, oval shaped solutional sinkhole located on the northeast corner of the Site with a floor elevation of 1286.5 feet. The sinkhole is approximately 73 feet by 88 feet in dimension and oriented in a W-E direction. The sinkhole is mostly contained on the Site and

extends into the tree line near the property to the north. The sinkhole receives runoff from the residence and pasture to the north, pasture south of the site, and drainage from Sinkholes B, C and D. The spillover point is located on the east side of the sinkhole at approximate elevation 1287.5 feet. The discharge flows to the stormwater inlets located along the west side of N. Leeann Drive and along the eastern border of the tract. The sinkhole floor is grass-covered and appears to be relatively stable with no evidence of an eye or other ground movement noted.

Sinkhole B is a solutional side-slope sinkhole approximately 6 inches deep and 25 feet across, located west of Sinkhole A in the north central area of the Site. Side slope sinkholes do not exhibit a defined depression with a continuous rim and tend to drain freely. In the case of Sinkhole B, the “open” side of the sinkhole occurs on the south side of the sinkhole. The existence of a sloping floor was confirmed by GER with a construction level. The sinkhole floor is grass-covered and appears to be relatively stable with no evidence of an eye or other ground movement noted.

Sinkhole C is a solutional side slope sinkhole located in the northwestern corner of the tract. The sinkhole is approximately 32 feet wide and 4 inches in depth, extending along a W-E trend with the “open” side on the east. The sinkhole receives stormwater from the site and from a detention basin to the west of the property. The existence of a sloping floor was confirmed by GER with a construction level. The sinkhole is generally grass covered and appears to be relatively stable. There was no evidence of an eye or other ground movement, although vegetative cover prevented a detailed inspection.

Sinkhole D is a shallow, oval shaped solutional sinkhole located south of Sinkhole B and extends off the Site into the proposed stormwater detention area. The sinkhole is approximately 58 feet in width and 76 feet in length, oriented in a N-S direction. The spillover point is located on the northeast side of the sinkhole at approximate elevation 1289.5 feet where the sinkhole overflows towards Sinkhole A. Sinkhole D has a small, flat floor holding water, with a low point near the center at approximate elevation 1288.5 feet. Two small sinkhole eyes were identified near the northern edge of the sinkhole rim. The western eye was probed to a depth of two feet. The eastern eye was probed to a depth of six inches. No other evidence of ground movement was noted.

A photolog of the sinkholes and possible karst features is provided in Appendix B.

6.0 FLOODING CONSIDERATIONS

The Technical Specification Manual requires a flooding analysis be conducted for both pre-development and post-development conditions, assuming no subsurface outflow from the sinkholes, and that this analysis continue downstream until the lowest sinkhole of the sinkhole cluster is reached or overflow reaches a surface watercourse. Sinkholes A and D pool water and discharge to surface drainage

Sinkholes B, C, and D discharge to Sinkhole A, located on the Site. Sinkhole A discharges to the street stormwater collection system and ultimately flows to a stormwater detention basin. Therefore, Sinkhole A is considered the Terminal Sinkhole, according to the City of Nixa Technical Specifications Manual. The mapped sinkhole areas, water supply wells, and geological features for the area of interest and documented in the Missouri Geological Survey GeoSTRAT database are shown on Figure 4 – Area Karst Features. Following is a summary of the flooding analysis.

The City of Nixa Technical Specifications Manual requires the computation of the maximum estimated flooding elevations for each sinkhole. The volume of runoff considered must be equivalent to a storm event with an annual probability of one percent (1%) (100-year storm) and a duration of six (6) hours; this corresponds to 5.8 inches of rainfall for the City of Nixa. The runoff volume must be determined by the method outlined in Chapter 2 of the SCS TR-55 Manual (SCS Runoff Curve Number Method). The evaluation assumes no subsurface outflow from the sinkhole. According to the NRCS Web Soil Survey Report (Appendix C), the soils on and around the site are rated as hydrologic soil group Class B, D, and C/D.

In order to evaluate the sinkhole storage capacity, the areas of individual topographic contour lines were measured, and incremental sinkhole volumes (between contours) were calculated by the “average end area” method. The 100-year pre-development flood calculations are provided in Appendix D.

The pre-development drainage, storage, and flood data for the sinkhole flood analyses are summarized in Table 1. A map showing the size and location of the predevelopment drainage areas for each sinkhole is provided in Figure 2 – Sinkhole Drainage Areas.

TABLE 1. PRE-DEVELOPMENT 100-YEAR FLOOD VOLUMES, TERMINAL OVERFLOW VOLUMES AND FLOOD ELEVATIONS

Sinkhole ID	Drainage Area (Acres)	Storage Volume (Acre-ft)	Flood Volume (acre ft)	Overflow (Acre-Ft)	Flood Elevation (ft-asl)
A (Terminal Sinkhole)	39.1	0.082	11.48	11.40	1,287.5
D	4.1	0.037	1.11	1.07	1,289.5

The 100-year post-development flood calculations are also provided in Appendix D. The post-development drainage, storage and flood data for each sinkhole are summarized in Table 2. It is important to note that the stormwater analysis was performed based on existing site topography and by using the impervious areas based on the Preliminary Development Layout. It is understood that the site may be graded to drain to a detention basin south of the development, but the development grading plan was not completed prior to this Sinkhole Evaluation.

TABLE 2. POST-DEVELOPMENT 100-YEAR FLOOD VOLUMES, TERMINAL OVERFLOW VOLUMES AND FLOOD ELEVATIONS

Sinkhole ID	Drainage Area (Acres)	Storage Volume (Acre-ft)	Flood Volume (acre ft)	Overflow (Acre-Ft)	Flood Elevation (ft-asl)
A (Terminal Sinkhole)	39.1	0.082	12.34	12.26	1,287.5
D	4.1	0.037	1.11	1.07	1,289.5

Both the pre-development and post-development flood areas for Sinkholes A and D extend past the Site boundary. A drainage easement should not be required for either sinkhole because the

flood area is at least one foot below the minimum entry elevation of any existing structure and flood elevation increases are within the reasonable tolerance (0.1 ft) outlined in the Technical Specification Manual. For the detailed flooding analysis, the Rational Method was used to obtain peak runoff rates for Sinkholes A and D. The overflow across N. Leeann Drive was evaluated to determine that the flooding depth over the roadway would not exceed the maximum 6 inches depth set forth in the Technical Specification Manual and the increased depth from the development was less than 0.1 foot.

7.0 WATER QUALITY CONSIDERATIONS

The Technical Specification Manual requires that all sinkhole evaluations must consider potential impacts of the proposed construction on receiving ground waters and propose measures to mitigate such impacts. The Site does not lie within a Critical Area sensitive to contamination from urban runoff, as defined by the City of Nixa, since it does not lie within recharge areas of domestic water supply wells or springs used for public or private water supply.

There are also no known caves providing habitat to rare or endangered species. Accordingly, only the onsite sinkholes themselves are classified as Sensitive Areas for groundwater contamination. The Technical Specifications Manual also requires that the relative potential for groundwater contamination be classified as Low, Moderate, and High Hazards depending on the type of land use, development density, and amount of directly connected impervious area. The potential for the proposed development to impact groundwater quality is low provided that all setback and storm water management requirements are followed. Additionally, erosion control measures should be maintained during construction in accordance with the Water Quality Management Measures outlined in the Technical Specification Manual and Best Management Practices.

8.0 PERFORMANCE STANDARDS AND CONSIDERATIONS FOR DEVELOPMENT

The Preliminary Site Layout has generally been laid out to avoid sinkholes to the degree possible, given the configuration of the tract and the locations of the sinkholes. Properly designed and constructed roadways and parking spaces that provide adequate stormwater drainage should provide suitable structural stability.

Underground utilities that are constructed within twenty feet of sinkhole rims must be bedded in flowable fill rather than granular fill. This practice will prevent the utility trench from acting as a French drain and channeling subsurface water to the sinkhole floor. The installation of utilities within a sinkhole will be limited to the sinkhole slope, since the sinkhole floor may be subject to subsidence, collapse, or prolonged ponding of storm water.

9.0 SINKHOLE SETBACKS AND USE RESTRICTIONS

The Technical Specification Manual requires that certain setbacks and use restrictions be established for each sinkhole. No new construction of any of the following is permitted within ten (10) feet of the sinkhole rim:

- Residential, commercial or industrial structures within 10 feet of the rim of a sinkhole that has not been closed as provided in the regulations.
- Swimming pools,
- Streets, highways, or parking lots within 10 feet of the rim of a sinkhole that has not been closed as provided in the regulations; and
- Storage yards for materials, vehicles and equipment.

Use restrictions and guidelines include the following:

- Use of pesticides and fertilizers within thirty (30) feet of the sinkhole rim is prohibited.
- Use of heavy construction equipment in unaltered sinkholes is prohibited.
- Construction of underground utilities is prohibited within the sinkhole rim except as provided for in the regulations.
- Recreational facilities such as hiking, jogging, and bicycle trails, playgrounds, exercise courses, and grass playing fields are permitted within the sinkhole area provided they are not located within the eye of the sinkhole.
- Golf courses are permitted subject to approval of a Management Plan for use of pesticides and fertilizers.
- Clearing and pruning of trees and undergrowth, and limited grubbing of roots is permitted.
- Landscaping and minor gardening is permitted outside of the sinkhole eye provided erosion and sediment discharge is limited through the use of minimum tillage and mulch.

- Construction of light incidental landscaping and recreational structures such as gazebos, playground equipment, etc. is permitted except in the sinkhole eye.

City of Nixa regulations also require that the minimum entry elevation of any existing structure be at least one foot higher than the estimated flooding elevation from the 1 percent annual probability 6-hour storm. The 10-foot construction setback from the sinkhole rim and the estimated flood elevations are shown on Figure 3 – Construction Setbacks and Elevations.

10.0 RECOMMENDATIONS

If approved, following are recommendations specific to the Site development:

- The side slope sinkholes are generally unusable in their current state and will only serve as a breeding ground for mosquitos and other vectors. It is recommended that Sinkholes B and C be closed in accordance with the requirements of the Technical Specification Manual. The sinkhole should be filled to match the surrounding ground surface and graded to promote storm water runoff. This action will also improve the stability of the development.
- The proposed detention basin near Sinkhole D should be lined with an HDPE geosynthetic liner to prevent stormwater storage from infiltrating into the sinkhole and causing instability.
- Sinkhole A, which receives stormwater from the adjacent site to the north, should not be disturbed and should remain in its natural state to drain.
- All residential structures constructed within the sinkhole rim must have the lowest floor elevation set a minimum of 1 foot above the Post-Development sinkhole flooding elevation.
- Underground utilities constructed within the sinkhole rim should incorporate flowable fill, rather than granular bedding, to reduce the risk of migration of groundwater along the trench.
- A geotechnical investigation should be conducted by a qualified Geotechnical Engineer to evaluate engineering properties of onsite materials and provide a basis for design of Site improvements.
- No construction activities or construction traffic should be allowed within the floors of sinkholes, and existing grass cover should be maintained.
- It is recommended that these sinkholes be monitored periodically for ground movement or collapse. Sinkhole collapses are generally unpredictable and can occur in areas with no surface expression of karst. In the event that a sinkhole collapse occurs, the collapse should be stabilized and filled in accordance with the recommendations of the Missouri State Department of Natural Resources provided a sinkhole evaluation has been completed by a qualified Engineer or Geologist.

11.0 LIMITATIONS

This report has been prepared under the direction of a Qualified Professional Engineer and Qualified Geologist in accordance with the requirements of the City of Nixa Technical Specification Manual.

GER prepared this report for the City of Nixa, and their authorized agents, for the New Police Station Development, Nixa, Christian County, Missouri. This report is not intended for use by others, and the information contained herein is not applicable to other locations. The data and report should be provided

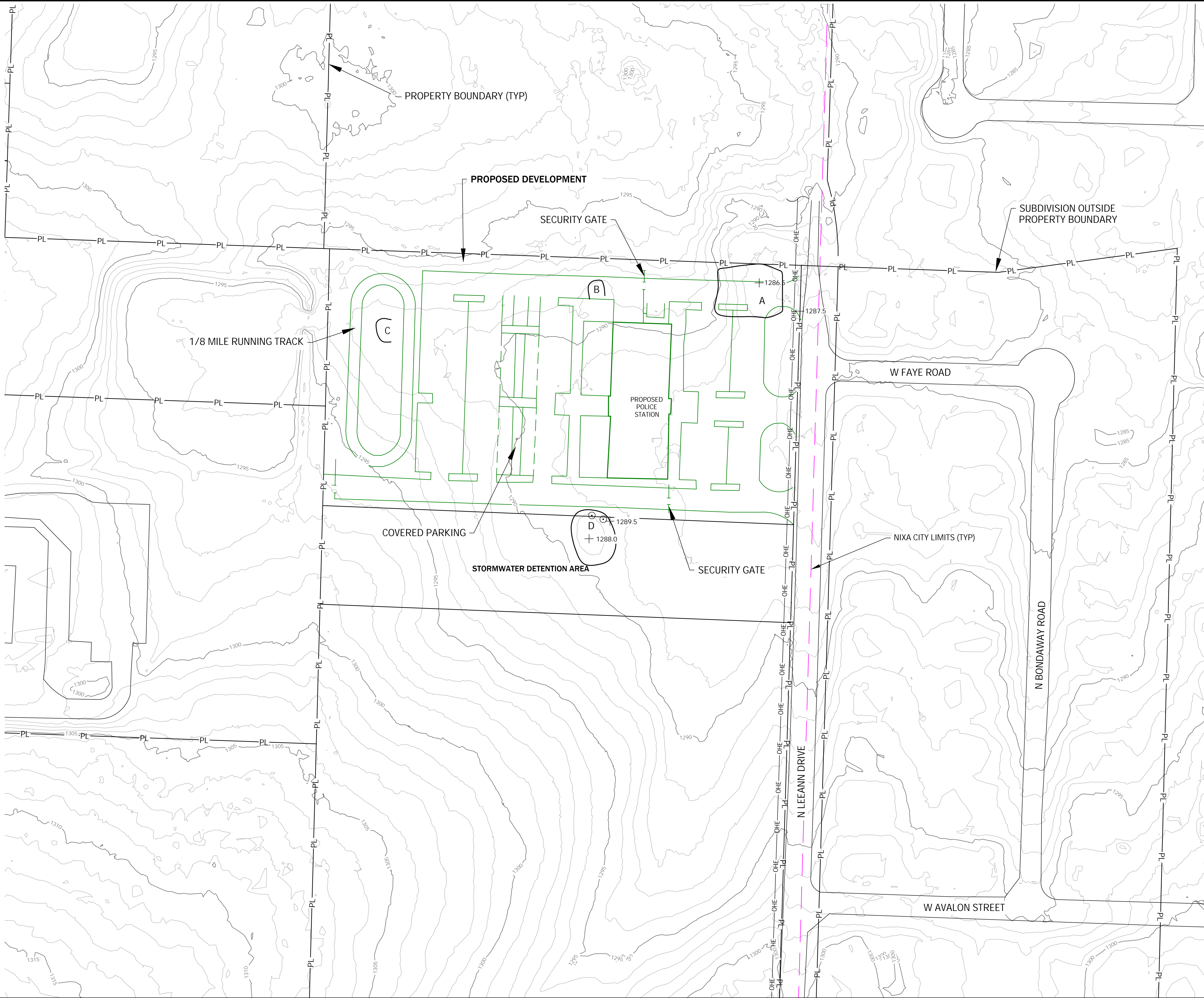
to prospective developers, but our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

The scope of our services does not include services related to construction safety precautions. Our recommendations are not intended to direct the contractor's methods, techniques, sequences or procedures, except as specifically described in our report for consideration in design.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in the field of geotechnical engineering in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood. Please refer to Appendix E titled "Report Limitations and Guidelines for Use" for additional information pertaining to the use of this report.

FIGURES

FILE PATH AND FILENAME: O:\CADDFiles\CITY OF NIXA\NewPoliceDept2024\DRAWINGS\Site Plan\SE-01.dwg
PRINTED ON: 7/10/24 BY: cm
ORIGINAL SHEET SIZE: 24" X 36"



- LEGEND:
- LIDAR MAJOR 5' CONTOUR
 - LIDAR MINOR 1' CONTOUR
 - OVERHEAD POWER LINES
 - PROPERTY BOUNDARY
 - SINKHOLE RIM
 - SITE DEVELOPMENT FOOTPRINT
 - NIXA CITY LIMITS
 - SINKHOLE EYE
 - APPROXIMATE SPOT ELEVATIONS

- NOTES:
- TOPOGRAPHIC DATA OBTAINED FROM MISSOURI SPATIAL DATA INFORMATION SERVICES (MSDIS) DATED 05/2017.
 - PROPERTY BOUNDARY AND NIXA CITY LIMITS OBTAINED FROM CHRISTIAN COUNTY ASSESSOR'S GIS WEBSITE DATED 06/18/2024.
 - DEVELOPMENT LAYOUT OBTAINED FROM NAVIGATE BUILDING SOLUTIONS DATED 05/28/2024.
 - LOCATIONS OF FIELD OBSERVED FEATURES ARE APPROXIMATE.

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Jefferson City, Missouri
MO CORP. ENGINEERING LICENSE NO. E2007001669-D

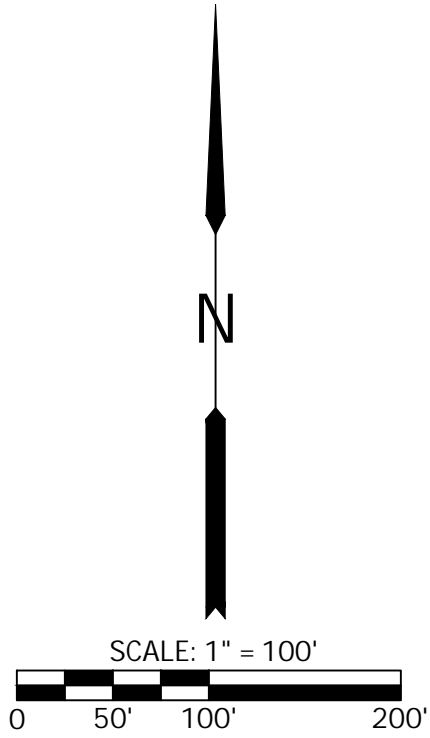
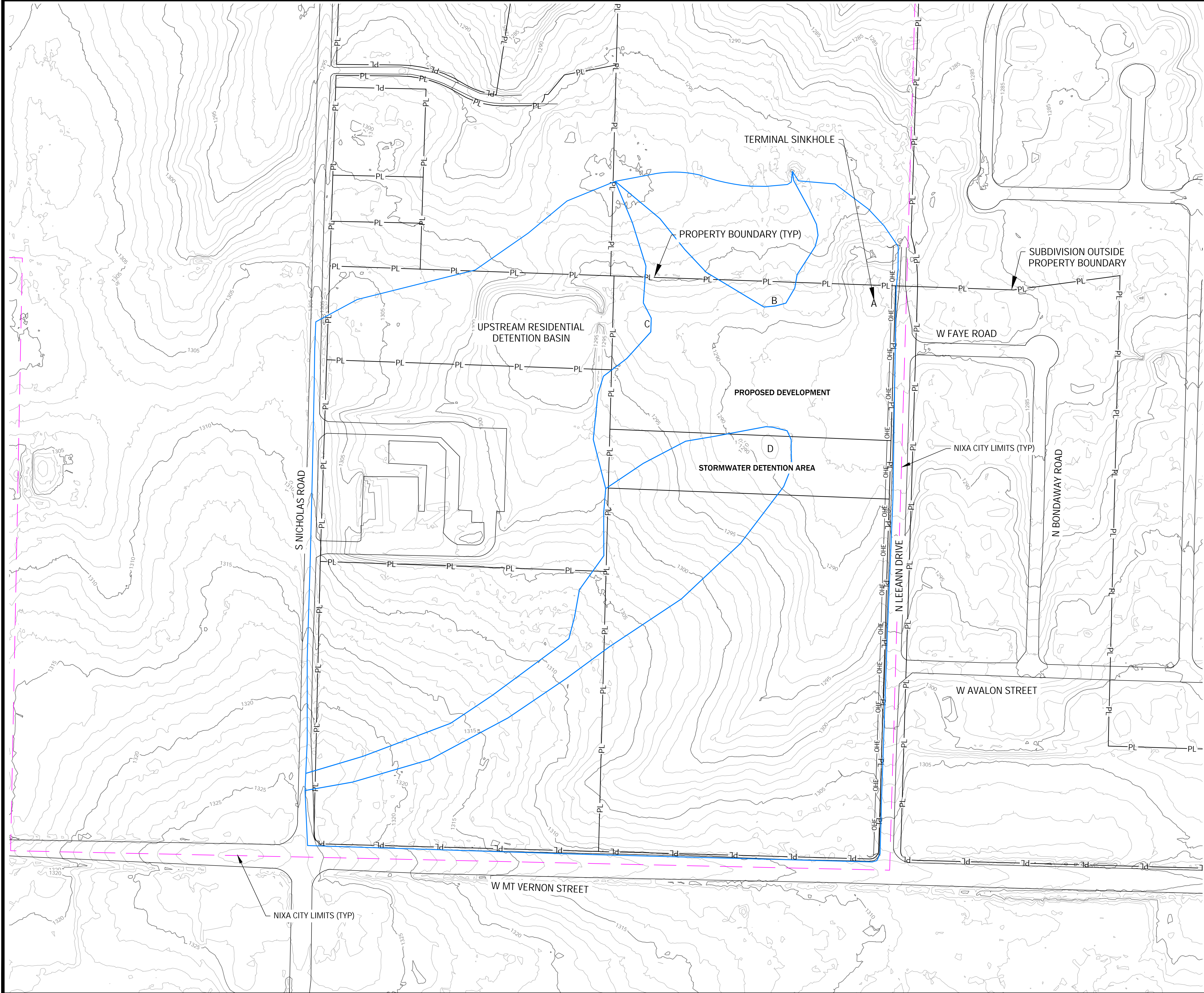
CITY OF NIXA
SINKHOLE EVALUATION
TASK ORDER 24-001

FIGURE 1
SINKHOLE LOCATION MAP
SINKHOLE EVALUATION

DATE	REVISION DESCRIPTION	BY

FILE NAME	PROJECT NAME	SHEET #
Sink-Hole-Eval	SINKHOLE EVAL	1 OF 4

FILE PATH AND FILENAME: O:\CADD\Files\CITY OF NIXA\NewPoliceDept2024\DRAWINGS\Site Plan SE-02.dwg
PRINTED ON: 7/10/24 BY: cm
ORIGINAL SHEET SIZE: 24" X 36"



- LEGEND:
- LIDAR MAJOR 5' CONTOUR
 - LIDAR MINOR 1' CONTOUR
 - OVERHEAD POWER LINES
 - PROPERTY BOUNDARY
 - SINKHOLE DRAINAGE AREA
 - NIXA CITY LIMITS

- NOTES:
- TOPOGRAPHIC DATA OBTAINED FROM MISSOURI SPATIAL DATA INFORMATION SERVICES (MSDIS) DATED 05/2017.
 - PROPERTY BOUNDARY AND NIXA CITY LIMITS OBTAINED FROM CHRISTIAN COUNTY ASSESSOR'S GIS WEBSITE DATED 06/18/2024.
 - DEVELOPMENT LAYOUT OBTAINED FROM NAVIGATE BUILDING SOLUTIONS DATED 05/28/2024.
 - LOCATIONS OF FIELD OBSERVED FEATURES ARE APPROXIMATE.

SINKHOLE AND DRAINAGE AREA	
SINKHOLE	DRAINAGE AREA (ACRES)
A	21.4
B	1.8
C	15.9
D	4.1

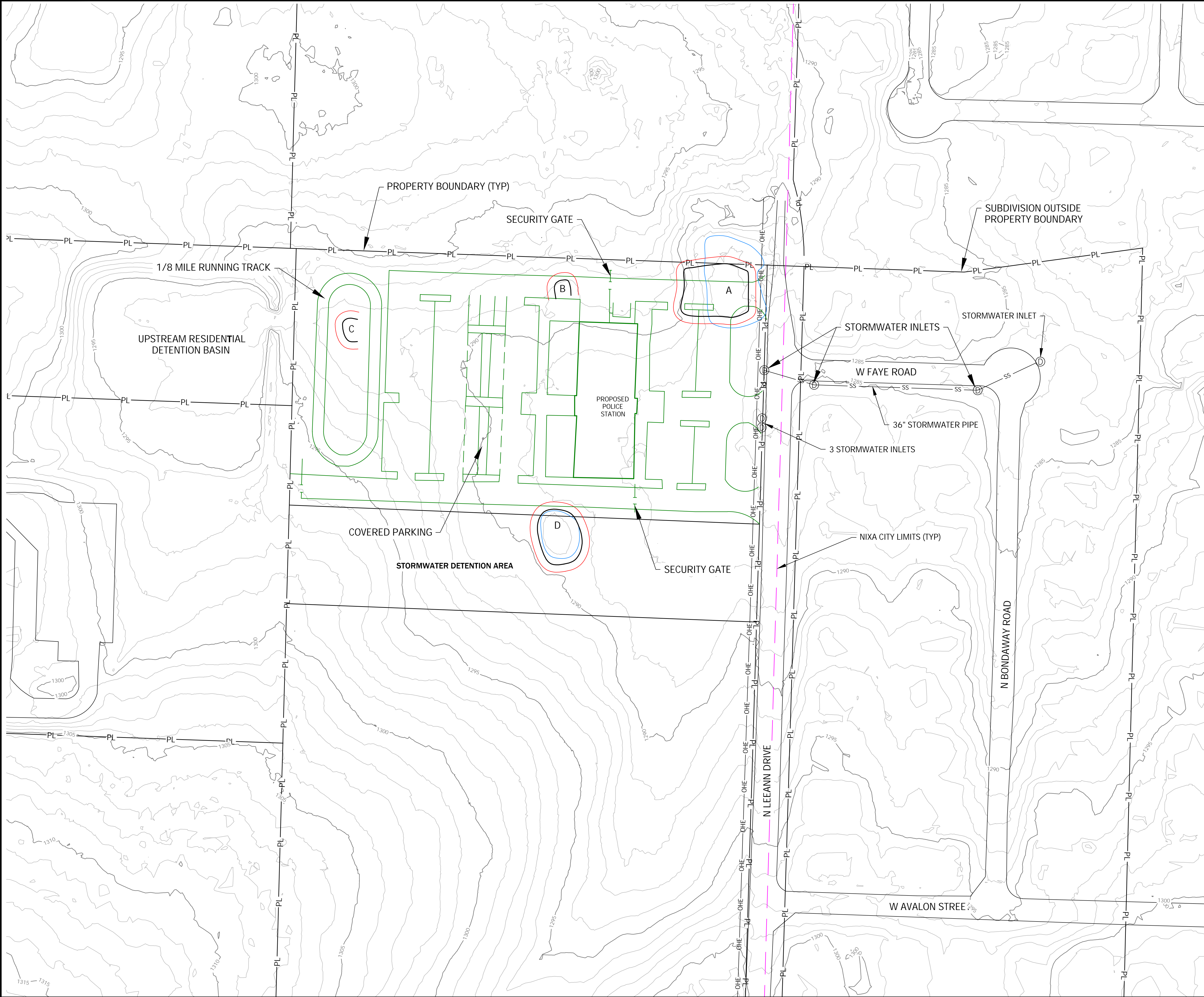
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CITY OF NIXA
SINKHOLE EVALUATION
TASK ORDER 24-001

FIGURE 2
SINKHOLE DRAINAGE AREAS
SINKHOLE EVALUATION

DATE	REVISION DESCRIPTION	BY

SHEET #	FILE NAME	PROJECT NAME
2 OF 4	Site-Plan-SE-02	SINKHOLE EVAL



LEGEND:

LIDAR MAJOR 5' CONTOUR

LIDAR MINOR 1' CONTOUR

OVERHEAD POWER LINES

PROPERTY BOUNDARY

STORMWATER PIPE

FLOODING AREA

SINKHOLE RIM

10' SETBACK FROM SINKHOLE RIM

SITE DEVELOPMENT FOOTPRINT

NIXA CITY LIMITS

APPROXIMATE SPOT ELEVATIONS

STORMWATER INLET

- NOTES:
1. TOPOGRAPHIC DATA OBTAINED FROM MISSOURI SPATIAL DATA INFORMATION SERVICES (MSDIS) DATED 05/2017.

2. PROPERTY BOUNDARY AND NIXA CITY LIMITS OBTAINED FROM CHRISTIAN COUNTY ASSESSOR'S GIS WEBSITE DATED 06/18/2024. DEVELOPMENT LAYOUT OBTAINED FROM NAVIGATE BUILDING SOLUTIONS DATED 05/28/2024.

3. LOCATIONS OF FIELD OBSERVED FEATURES ARE APPROXIMATE.

4. STORMWATER PIPE AND STRUCTURES ARE APPROXIMATE BASED ON CITY OF NIXA INTERACTIVE MAP APPLICATIONS DATED 07/03/2024.

5. DESIGN FLOOD ELEVATIONS ARE BASED ON A STORM WITH AN ANNUAL PROBABILITY OF 1% (100-YEAR STORM) AND DURATION OF 6 HOURS (5.8" FOR NIXA).

GREDELL

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Jefferson City, Missouri

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Telephone: (573) 659-9078

Facsimile: (573) 659-9079

CITY OF NIXA

SINKHOLE EVALUATION

TASK ORDER 24-001

FIGURE 3

CONSTRUCTION SETBACKS

AND ELEVATIONS

BY	DATE	REVISION DESCRIPTION

PROJECT NAME

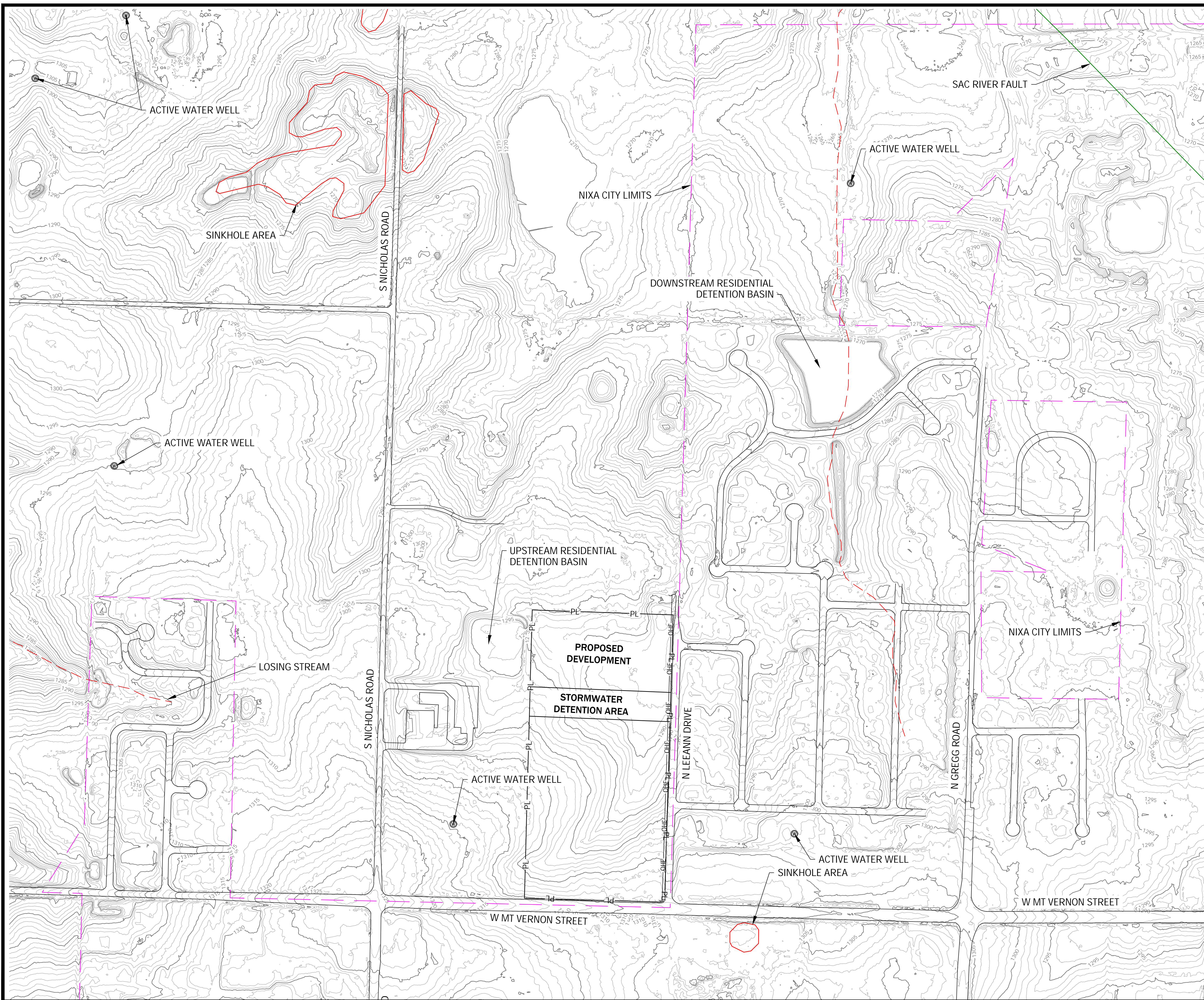
FILE NAME

SHEET #

SINKHOLE EVAL

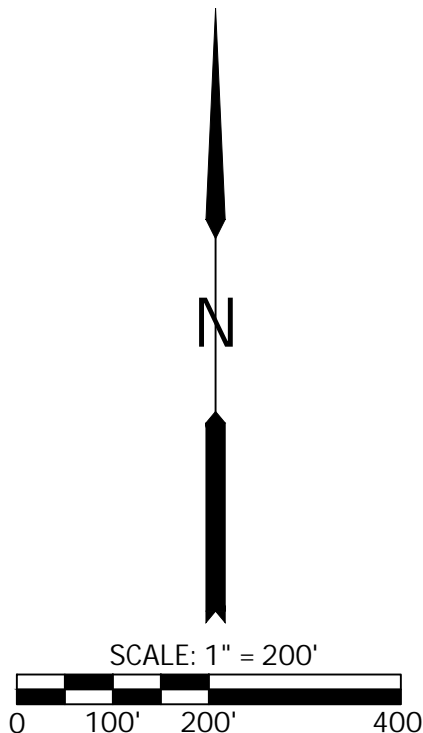
Site-Plan-SE-03

3 OF 4



NOTES:

1. TOPOGRAPHIC DATA OBTAINED FROM MISSOURI SPATIAL DATA INFORMATION SERVICES (MSDIS) DATED 05/2017.
2. PROPERTY BOUNDARY AND NIXA CITY LIMITS OBTAINED FROM CHRISTIAN COUNTY ASSESSOR'S GIS WEBSITE DATED 06/18/2024.
3. DEVELOPMENT LAYOUT OBTAINED FROM NAVIGATE BUILDING SOLUTIONS DATED 05/28/2024.
4. LOCATIONS OF FIELD OBSERVED FEATURES ARE APPROXIMATE.
5. SINKHOLE AREA, LOSING STREAMS, WATER WELLS, AND GEOLOGIC STRUCTURES OBTAINED FROM MISSOURI DEPARTMENT OF NATURAL RESOURCES GEOSTRAT (MDNR GEOSTRAT) DATED 07/03/2024.



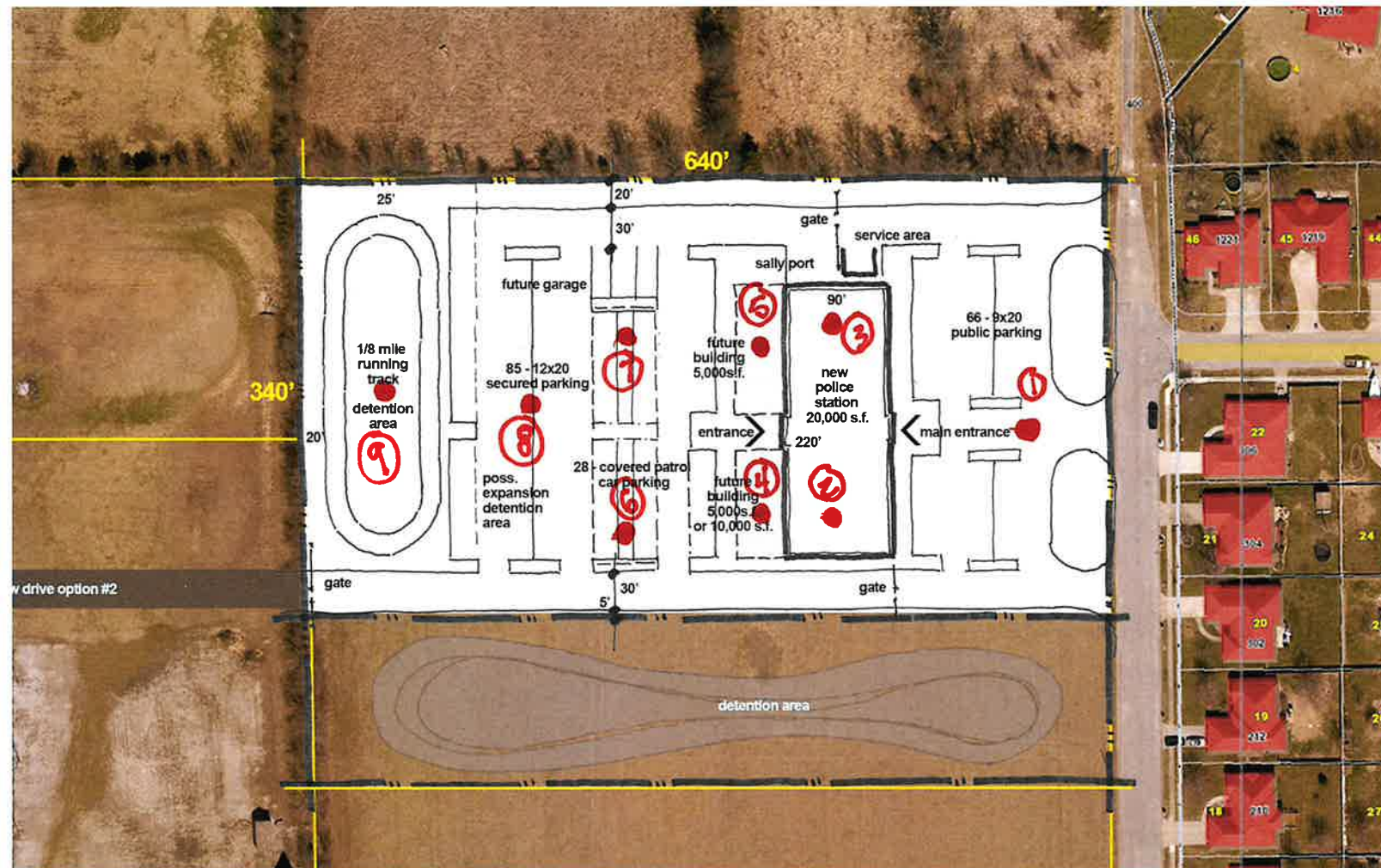
CITY OF NIXA
SINKHOLE EVALUATION
TASK ORDER 24-001

[illegible]

APPENDICES

Appendix A

Preliminary Development Layout, 05/28/24



siteplan
scale: 1"=60'-0"



developmentplan
scale: N.T.S.



alt. site study

Sheet Name:

Date: May 28, 2024



New Police Station
West Mount Vernon Street & North Leann Drive



Insight Design Architects, LLC
112 South Main Street
PO Box 1982
Nixa, MO 65714



Chiadini Associates - Architects | Interior Design | Graphics
1401 South Brentwood Blvd., Studio 575
Saint Louis, Missouri 63144
314.735.5538 | FAX 314.735.9999

Appendix B

Nixa Police Station Photolog

City of Nixa
New Police Station
Sinkhole Evaluation Report
Photolog

PHOTO ID:	1	
DATE:	6-27-2024	
DIRECTION:	West	
DESCRIPTION:		
<p>The depression of Sinkhole A is shown in foreground. The tree line which runs along the west and north property line is shown in the background.</p>		

Date & time:
 WGS84: 37.0
 12

PHOTO ID:	2	
DATE:	6-27-2024	
DIRECTION:	East	
DESCRIPTION:		
<p>The depression of Sinkhole A is shown in foreground. Neighboring residences are shown in the background.</p>		

Not
 Date & time: 06.27.
 WGS84: 37.0
 400 N Leea

City of Nixa

New Police Station

Sinkhole Evaluation Report

Photolog

PHOTO ID:	3	
DATE:	6-27-2024	
DIRECTION:	Southwest	
DESCRIPTION:		
The depression of Sinkhole B is shown in foreground. In the background is the tree line running along the west side of the property.		
		<div>Company: GER Project: Nixa PD Notes: Sinkhole B Date & time: 06.27.2024 09:19 AM WGS84: 37.04723, -93.32297 401 N Leeann Dr, Nixa, MO</div>

PHOTO ID:	4	
DATE:	6-27-2024	
DIRECTION:	Northwest	
DESCRIPTION:		
<p>The depression of Sinkhole A is shown in background, along with the tree line bordering the northern perimeter of the property.</p>		<div><div>C</div><div>Pro</div><div>Note</div><div>Date & time: 06.27.20</div><div>WGS84: 37.047</div><div>400 N Leeann</div></div>

City of Nixa
New Police Station
Sinkhole Evaluation Report
Photolog

PHOTO ID:	5	
DATE:	7-9-2024	
DIRECTION:	Northwest	
DESCRIPTION:		
The depression of Sinkhole C is shown in foreground. In the background is the tree line running along the west side of the property.		

PHOTO ID:	6	
DATE:	7-10-2024	
DIRECTION:	North	
DESCRIPTION:		
The floor of Sinkhole C is shallow with no ponding water.		

City of Nixa

New Police Station


Sinkhole Evaluation Report

Photolog

PHOTO ID:	7
DATE:	7-9-2024
DIRECTION:	Northeast
DESCRIPTION:	
The depression of Sinkhole D is shown in foreground. In the background are neighboring residences east of Leeann Drive.	

A photograph showing a large, green grassy field. In the foreground, there is a slight depression or sinkhole. In the background, there are several houses and parked cars, indicating a residential area. The sky is overcast.

Compan
Project: Nixa PD Si
Date & time: 07.09.2024 12
WGS84: 37.04623, -93
1209 W Mt Vernon St, Nixa, Mo

PHOTO ID:	8	
DATE:	6-27-2024	
DIRECTION:	North	
DESCRIPTION:		
The floor of Sinkhole D is shallow with standing water.		

City of Nixa
New Police Station
Sinkhole Evaluation Report
Photolog

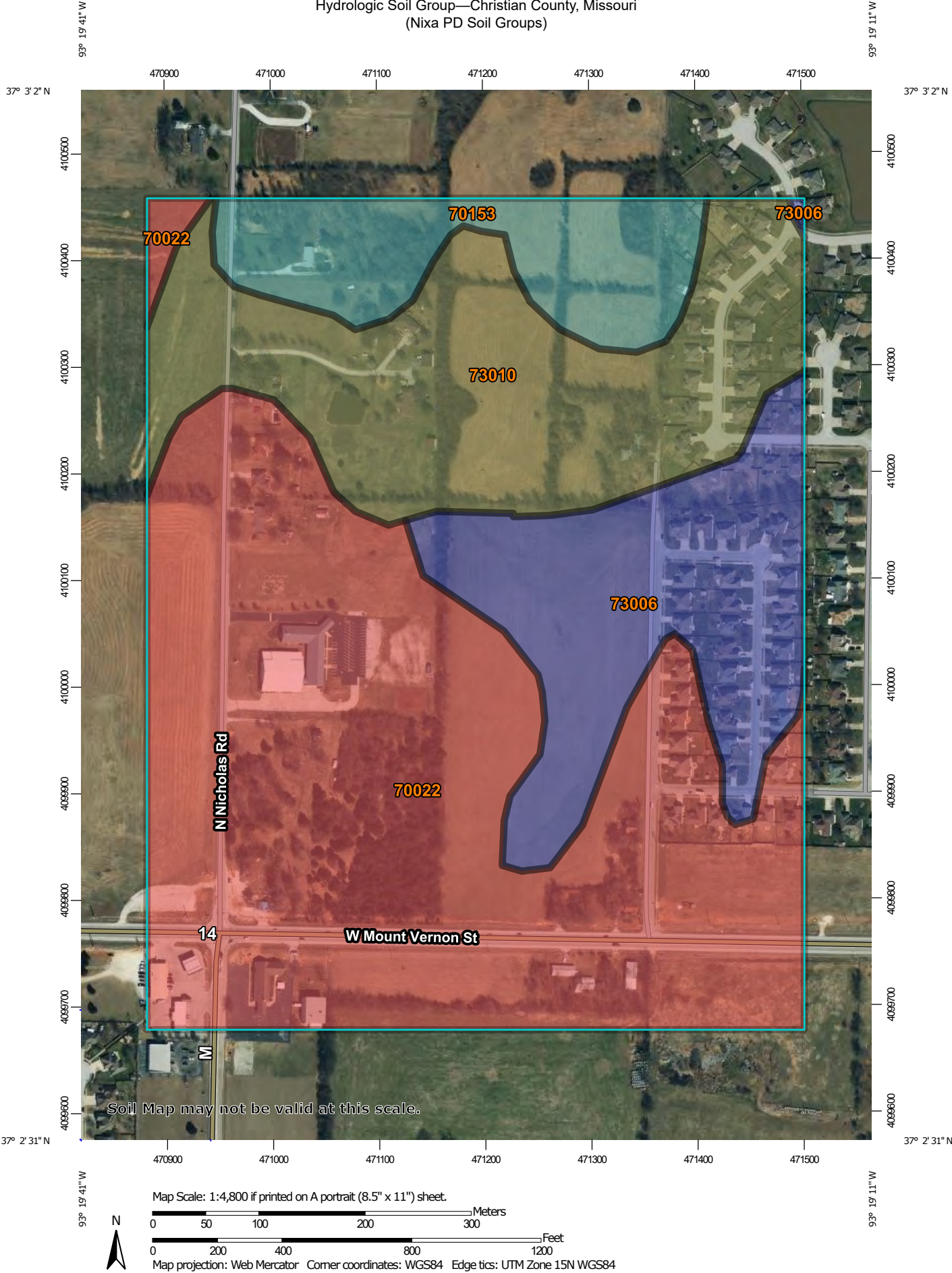
PHOTO ID:	9	
DATE:	6-27-2024	
DIRECTION:	South	
DESCRIPTION:		
Eye 1 of Sinkhole D was approximately 2 feet deep		

PHOTO ID:	10	
DATE:	6-27-2024	
DIRECTION:	West	
DESCRIPTION:		
Eye 2 of Sinkhole D was approximately 6 inches deep.		

Appendix C

NRCS Web Soil Survey Report


Hydrologic Soil Group—Christian County, Missouri
(Nixa PD Soil Groups)



Hydrologic Soil Group—Christian County, Missouri (Nixa PD Soil Groups)

MAP LEGEND

Area of Interest (AOI)









 Area of Interest (AOI)

Soils

Soil Rating Polygons





 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points


 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available


Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Christian County, Missouri
 Survey Area Data: Version 31, Aug 22, 2023

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

Date(s) aerial images were photographed: Mar 5, 2020—Mar 6, 2020

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
70022	Tonti silt loam, 3 to 8 percent slopes	D	61.8	51.6%
70153	Goss gravelly silt loam, karst, 8 to 15 percent slopes	C	11.1	9.3%
73006	Peridge silt loam, 2 to 5 percent slopes	B	19.8	16.5%
73010	Wilderness gravelly silt loam, 3 to 8 percent slopes	C/D	27.1	22.6%
Totals for Area of Interest			119.9	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Appendix D

Flood Event Calculations

City of Nixa
New Police Station
Sinkhole Evaluation
7/9/2024

Pre-Development

Sinkhole ID	Drainage Area (Acres)	Storage Volume (Acre-ft)	Flood Volume (acre ft)	Overflow (Acre-Ft)	Flood Elevation (ft-asl)
A (Terminal Sinkhole)	39.1	0.082	11.48	11.40	1,287.5
D	4.1	0.037	1.11	1.07	1,289.5

City of Nixa
New Police Station
Sinkhole Evaluation
7/9/2024

Post-Development

Sinkhole ID	Drainage Area (Acres)	Storage Volume (Acre-ft)	Flood Volume (acre ft)	Overflow (Acre-Ft)	Flood Elevation (ft-asl)
A (Terminal Sinkhole)	39.1	0.08	12.34	12.26	1,287.5
D	4.1	0.04	1.11	1.07	1,289.5

**City of Nixa
New Police Station
Sinkhole Evaluation**

Sinkhole A

Pre-Development

Land Use	Soil Group	Acreage	Curve Number	% Impervious	Acres Impervious	Acreage Adjusted
Paved/Roof	D	2.6	98	100	2.60	0.00
Res 1 ac	D	1.9	80	20	0.38	1.52
Woods	D	8.9	77	0	0.00	8.90
Grass/Pasture	B	9.3	70	0	0.00	9.30
Grass/Pasture	D	16.4	74	0	0.00	16.40
Total		39.1			2.98	

Post-Development

Land Use	Soil Group	Acreage	Curve Number	% Impervious	Acres Impervious	Acreage Adjusted
Paved/Roof	D	6.4	98	100	6.40	0.00
Res 1 ac	D	1.9	80	20	0.38	1.52
Woods	D	8.9	77	0	0.00	8.90
Grass/Pasture	B	5.6	70	0	0.00	5.60
Grass/Pasture	D	16.3	74	0	0.00	16.30
Total		39.1			6.78	

* Curve numbers based on AMC II

**City of Nixa
New Police Station
Sinkhole Evaluation**

CURVE NUMBER CALCULATION

ID Number: Sinkhole A

	Pre-Development Curve Number												Pre-Development Runoff "Q" (in)																			
ID Number	% Impervious	% Land Use 1	CN-1	% Land Use 2	CN-2	% Land Use 3	CN-3	% Land Use 4	CN-4	CN _{eff}	Zone	Retention "S" (in)	2yr	10yr	25yr	100yr																
Sinkhole A	7.62	3.89	80	22.76	77	23.79	70	41.94	74	75.79		3.19	0.67	1.39	1.95	3.19																
Sinkhole D Overflow																																
																	Volume of Runoff (ft³)															
																	Basin Area (ac)	2yr	10yr	25yr	100yr											
																	39.10	95,570	197,045	276,439	452,535											
																	Runoff Volume from Additional Sources (ft³)															
																	Source															
Total Runoff (ft³)																																
																	105,139217,461305,299500,051															
																	101,583213,906301,743496,496															

Post-Development Curve Number													Post-Development Runoff "Q" (in)								
ID Number	% Impervious	% Land Use 1	CN-1	% Land Use 2	CN-2	% Land Use 3	CN-3	% Land Use 4	CN-4	CN _{eff}	Zone	Retention "S" (in)	2yr	10yr	25yr	100yr					
Sinkhole A	17.34	3.89	80	22.76	77	14.32	70	41.69	74	78.50		2.74	0.80	1.57	2.16	3.45					
																	Volume of Runoff (ft ³)				
																	Basin Area (ac)	2yr	10yr	25yr	100yr
																	39.10	113,478	222,880	306,744	490,033
Sinkhole D Overflow																					
																	Source	Runoff Volume from Additional Sources (ft ³)			
																		9,569	20,417	28,860	47,517
																	Total Runoff (ft ³)	123,048	243,296	335,603	537,550
																	Overflow (ft ³)	119,492	239,741	332,048	533,994

Max Volume of Sinkhole (Calculated in Rating Curve Worksheet) 3,556 (ft³)

City of Nixa New Police Station Sinkhole Evaluation

Rating Curve Calculations

Bottom Elevation (ft) 1286.5

Elevation Increments (ft) 0.5

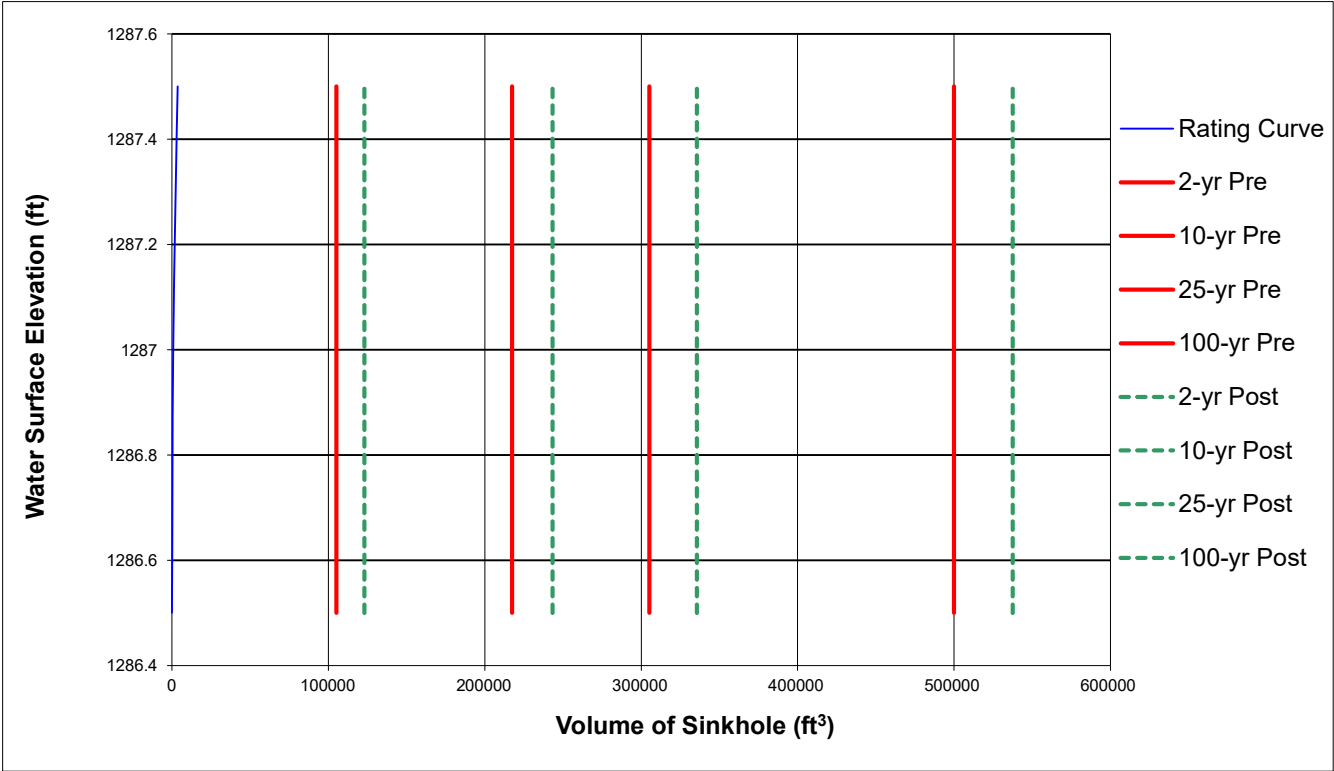
Max Volume (ft³) 3,556

Contour #	Area of Contour (ft ²)	Water Depth	Total Volume (ft ³)	Elevation
Bottom	65	0	0	1286.5
1	3,371	0.5	650	1287
2	8,659	1	3,556	1287.5
3			3,556	1287.5
4			3,556	1287.5
5			3,556	1287.5
6			3,556	1287.5
7			3,556	1287.5
8			3,556	1287.5
9			3,556	1287.5
10			3,556	1287.5
11			3,556	1287.5
12			3,556	1287.5

Results of Curve Number Method

Rainfall Event	2yr	10 yr	25 yr	100 yr
Pre-Development Runoff Volume	105,139	217,461	305,299	500,051
Post-Development Runoff Volume	123,048	243,296	335,603	537,550

Sinkhole #: Sinkhole A



**City of Nixa
New Police Station
Sinkhole Evaluation**

Rational Method

Sinkhole ID: Sinkhole A

Beginning Elevation (ft)	1320
End Elevation (ft)	1287
Total Flow Length (ft)	1900
Slope (ft/ft)	0.0174

Sheet Flow

Mannings "n"	Flow Length (ft)	P _{2-yr 24-hr} (in)	Slope (ft/ft)	T _c (hr)
0.3	300	3.55	0.0174	0.69

Shallow Concentrated Flow

Mannings "n"	Flow Length (ft)	Slope (ft/ft)	Average Velocity (ft/s)	T _c (hr)
0.3	1600	0.0174	2.11	0.21

Area of Watershed(ac)	39.10	Total T _c (hr)	0.90
-----------------------	-------	---------------------------	------

Rainfall (in)

2-year	10-year	25-year	100-year
1.71	2.51	2.99	3.71

Intensity (in/hr)

2-year	10-year	25-year	100-year
1.90	2.79	3.33	4.13

Pre-Development

Runoff Coeff. = 0.37

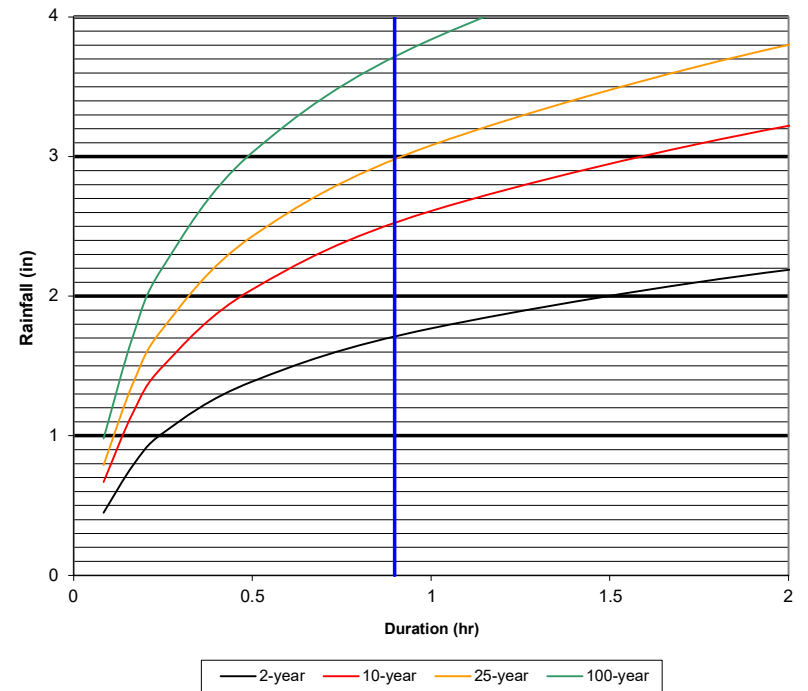
Event	2-year	10-year	25-year	100-year
Peak Flow (cfs)	28	41	59	76

Post-Development

Runoff Coeff. = 0.42

Event	2-year	10-year	25-year	100-year
Peak Flow (cfs)	32	47	67	86

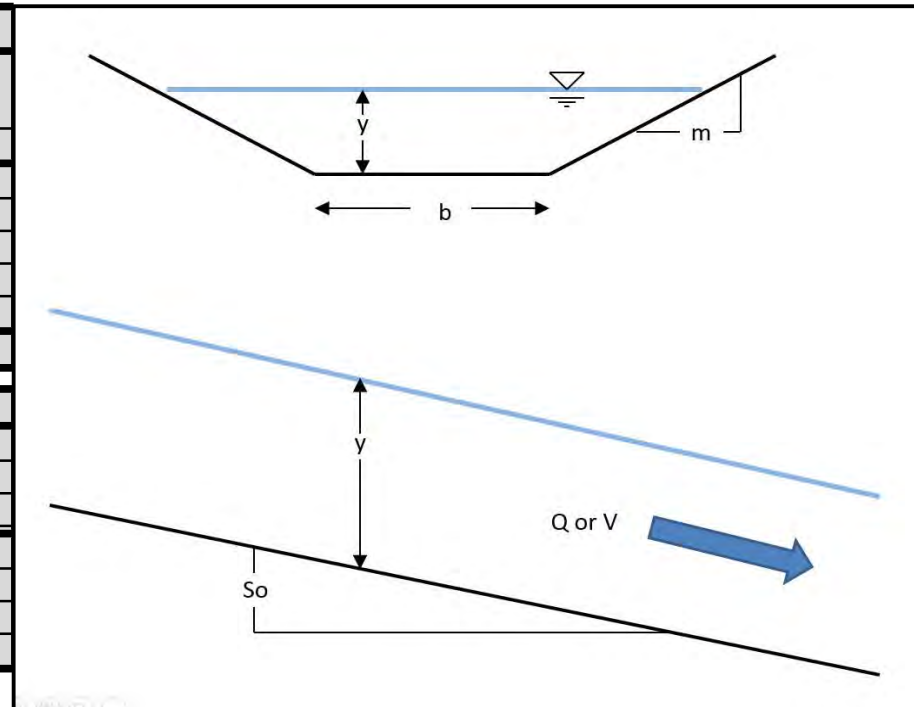
Rainfall - Duration



**City of Nixa
New Police Station
Sinkhole Evaluation**

**Sinkhole A
Pre-Development**

Overflow Channel Properties			Eng or SI
Units	Gravity (g)	32.2	32.2 fpss or 9.81mpss
	Unit Correction (cc)	1.49	1.49 or 1
Channel	Bottom Width (b)	20	ft or m
	Depth (y)	0.38	ft or m
	Side Slope (m)	0	
	Bottom Slope (So)	0.020	
	Manning n: (n)	0.011	
	Manning Q	76	V ³ /sec.
	Discharge (Q)	76	cfs or cms
	Froude Number:	2.799	
	Energy (E)	1.89	L
	Force (M)	24.66	L ³
	Area (A)	7.692556697	L ²
	Velocity (V)	9.85	L/sec
	Wetted Per. (Pw)	20.76925567	L
	Hydraulic Rad.(Rh)	0.37	L

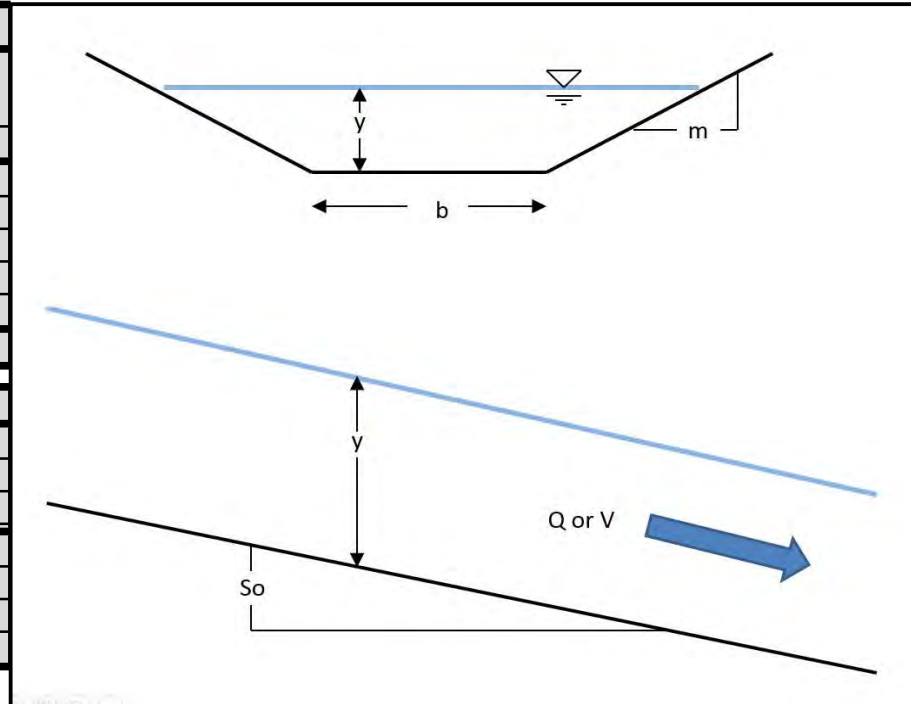


Note: Overflow is over Leeann Drive.

**City of Nixa
New Police Station
Sinkhole Evaluation**

**Sinkhole A
Post-Development**

Overflow Channel Properties			Eng or SI
Units	Gravity (g)	32.2	32.2 fpss or 9.81mpss
	Unit Correction (cc)	1.49	1.49 or 1
Channel	Bottom Width (b)	20	ft or m
	Depth (y)	0.43	ft or m
	Side Slope (m)	0	
	Bottom Slope (So)	0.017	
	Manning n: (n)	0.011	
	Manning Q	86	V ³ /sec.
	Discharge (Q)	86	cfs or cms
	Froude Number:	2.672	
	Energy (E)	1.98	L
	Force (M)	28.64	L ³
	Area (A)	8.659028175	L ²
	Velocity (V)	9.98	L/sec
	Wetted Per. (Pw)	20.86590282	L
	Hydraulic Rad.(Rh)	0.41	L



Note: Overflow is over Leeann Drive and is below the maximum 6 inch Depth (y).

**City of Nixa
New Police Station
Sinkhole Evaluation**

Sinkhole D

Pre-Development

<u>Land Use</u>	<u>Soil Group</u>	<u>Acreage</u>	<u>Curve Number</u>	<u>% Impervious</u>	<u>Acres Impervious</u>	<u>Acreage Adjusted</u>
Paved/Parking	B	0.1	98	100	0.1	0.0
Woods	D	1.0	77	0	0.0	1.0
Grass/Pasture	D	2.3	80	0	0.0	2.3
Grass/Pasture	B	0.7	61	0	0.0	0.7
Total		4.1			0.1	

Post-Development

<u>Land Use</u>	<u>Soil Group</u>	<u>Acreage</u>	<u>Curve Number</u>	<u>% Impervious</u>	<u>Acres Impervious</u>	<u>Acreage Adjusted</u>
Paved/Parking	B	0.1	98	100	0.1	0.0
Woods	D	1.0	77	0	0.0	1.0
Grass/Pasture	D	2.3	80	0	0.0	2.3
Grass/Pasture	B	0.7	61	0	0.0	0.7
Total		4.1			0.1	

* Curve numbers based on AMC 2 and Class C Soil Groups

CURVE NUMBER CALCULATION

Post-Development Curve Number													Post-Development Runoff "Q" (in)			
ID Number	% Impervious	% Land Use 1	CN-1	% Land Use 2	CN-2	% Land Use 3	CN-3	% Land Use 4	CN-4	CN _{off}	Zone	Retention "S" (in)	2yr	10yr	25yr	100yr
Sinkhole D	2.43902439	0	98	24.3902439	77	56.09756098	80	17.07317073	61	76.46341		3.08	0.70	1.43	2.00	3.25
	Volume of Runoff (ft ³)															
Basin Area (ac)	2yr	10yr	25yr	100yr												
4.10	10,467	21,314	29,757	48,414												
Source	Runoff Volume from Additional Sources (ft ³)															
Total Runoff (ft ³)	10,467	21,314	29,757	48,414												
Overflow (ft ³)	8,855	19,702	28,145	46,802												

1,612 (ft³)

**City of Nixa
New Police Station
Sinkhole Evaluation**

Rating Curve Calculations

Bottom Elevation (ft)

Elevation Increments (ft)

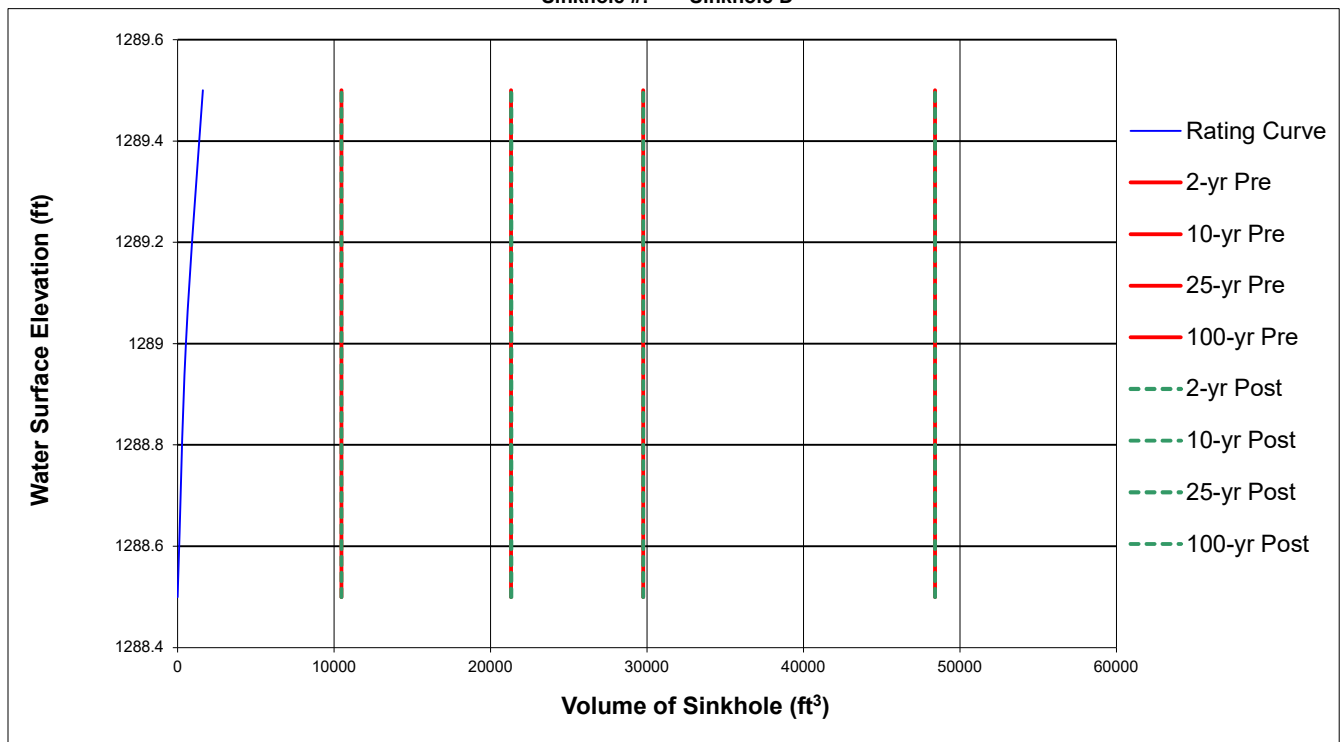
Max Volume (ft³)

Contour #	Area of Contour (ft ²)	Water Depth	Total Volume (ft ³)	Elevation
Bottom	589	0	0	1288.5
1	1,591	0.5	525	1289
2	2,815	1	1,612	1289.5
3			1,612	1289.5
4			1,612	1289.5
5			1,612	1289.5
6			1,612	1289.5
7			1,612	1289.5
8			1,612	1289.5
9			1,612	1289.5
10			1,612	1289.5
11			1,612	1289.5
12			1,612	1289.5

Results of Curve Number Method

Rainfall Event	2yr	10 yr	25 yr	100 yr
Pre-Development Runoff Volume	10,467	21,314	29,757	48,414
Post-Development Runoff Volume	10,467	21,314	29,757	48,414

Sinkhole #: Sinkhole D



Appendix E

Report Limitations and Guidelines for Use

REPORT LIMITATIONS AND GUIDELINES FOR USE¹

This Appendix provides information to help you manage your risks with respect to the use of this report.

Geotechnical Services Are Performed for Specific Purposes, Persons and Projects

This report has been prepared for the exclusive use of D & P Development, LLC, and their authorized agents for the Century Heights Development, in Nixa, Christian County, Missouri. This report is not intended for use by others, and the information contained herein is not applicable to other sites.

GREDELL Engineering Resources, Inc. (GER) structures our services to meet the specific needs of our clients. For example, a geotechnical or geologic study conducted for a civil engineer or architect may not fulfill the needs of a construction contractor or even another civil engineer or architect that are involved in the same project. Because each geotechnical or geologic study is unique, each geotechnical engineering or geologic report is unique, prepared solely for the specific client and project site. Our report is prepared for the exclusive use of our Client. No other party may rely on the product of our services unless we agree in advance to such reliance in writing. This is to provide our firm with reasonable protection against open-ended liability claims by third parties with whom there would otherwise be no contractual limits to their actions. Within the limitations of scope, schedule and budget, our services have been executed in accordance with our Agreement with the Client and generally accepted geotechnical practices in this area at the time this report was prepared. This report should not be applied for any purpose or project except the one originally contemplated.

A Geotechnical Engineering or Geologic Report Is Based on a Unique Set of Project-Specific Factors

GER considered a number of unique, project-specific factors when establishing the scope of services for this project and report. Unless GER specifically indicates otherwise, do not rely on this report if it was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

¹ Developed based on material provided by ASFE/The Best People on Earth, Professional Firms Practicing in the Geosciences; www.asfe.org.

For example, changes that can affect the applicability of this report include those that affect:

- the function of the proposed structure;
- elevation, configuration, location, orientation or weight of the proposed structure;
- composition of the design team; or
- project ownership.

If important changes are made after the date of this report, should be given the opportunity to review our interpretations and recommendations and provide written modifications or confirmation, as appropriate.

Subsurface Conditions Can Change

This geotechnical or geologic report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time, by manmade events such as construction on or adjacent to the site, or by natural events such as floods, earthquakes, slope instability or ground water fluctuations. Always contact GER before applying a report to determine if it remains applicable.

Topsoil

For the purposes of this report, we consider topsoil to consist of generally fine-grained soil with an appreciable amount of organic matter, based on visual examination, and to be unsuitable for direct support of the proposed improvements. However, the organic content and other mineralogical and gradational characteristics used to evaluate the suitability of soil for use in landscaping and agricultural purposes were not determined, nor were they considered in our analyses. Therefore, the information and recommendations in this report, and our logs and descriptions, should not be used as a basis for estimating the volume of topsoil available for such purposes.

Most Geotechnical and Geologic Findings Are Professional Opinions

Our interpretations of subsurface conditions are based on field observations from widely spaced sampling locations at the site. Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. GER reviewed field and laboratory data and then applied our professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ, sometimes significantly, from those indicated in this report. Our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

Geotechnical Engineering Report Recommendations Are Not Final

Do not over-rely on the preliminary construction recommendations included in this report. These recommendations are not final, because they were developed principally from GER professional judgment and opinion. GER recommendations can be finalized only by observing actual subsurface conditions revealed during construction. GER cannot assume responsibility or liability for this report's recommendations if we do not perform construction observation.

Sufficient monitoring, testing and consultation by GER should be provided during construction to confirm that the conditions encountered are consistent with those indicated by the explorations, to provide recommendations for design changes should the conditions revealed during the work differ from those expected, and to evaluate whether or not earthwork activities are completed in accordance with our recommendations. Retaining GER for construction observation for this project is the most effective method of managing the risks associated with unexpected conditions.

Geotechnical Engineering or Geologic Report Could Be Subject to Misinterpretation

Misinterpretation of this report by other design team members can result in costly problems. You could lower that risk by having GER confer with appropriate members of the design team after submitting the report. Also retain GER to review pertinent elements of the design team's plans and specifications. If important changes are made after the date of this report, GER should be given the opportunity to review our interpretations and recommendations and provide written modifications or confirmation, as appropriate.

Do Not Redraw the Exploration Logs

Geotechnical engineers and geologists prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering or geologic report should never be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, but recognize that separating logs from the report can elevate risk.

Give Contractors a Complete Report and Guidance

Some owners and design professionals believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering or geologic report, but preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with GER and/or to conduct additional study to obtain the specific types of information they need or prefer. A pre-bid conference can also be valuable. Be sure contractors have sufficient time to perform additional study. Only then might an owner be in a position to give contractors the best information available, while requiring them to at least share the financial responsibilities stemming from unanticipated conditions. Further, a contingency for unanticipated conditions should be included in your project budget and schedule.

Contractors Are Responsible for Site Safety on Their Own Construction Projects

Our geotechnical recommendations are not intended to direct the contractor's procedures, methods, schedule or management of the work site. The contractor is solely responsible for job site safety and for managing construction operations to minimize risks to onsite personnel and to adjacent properties.

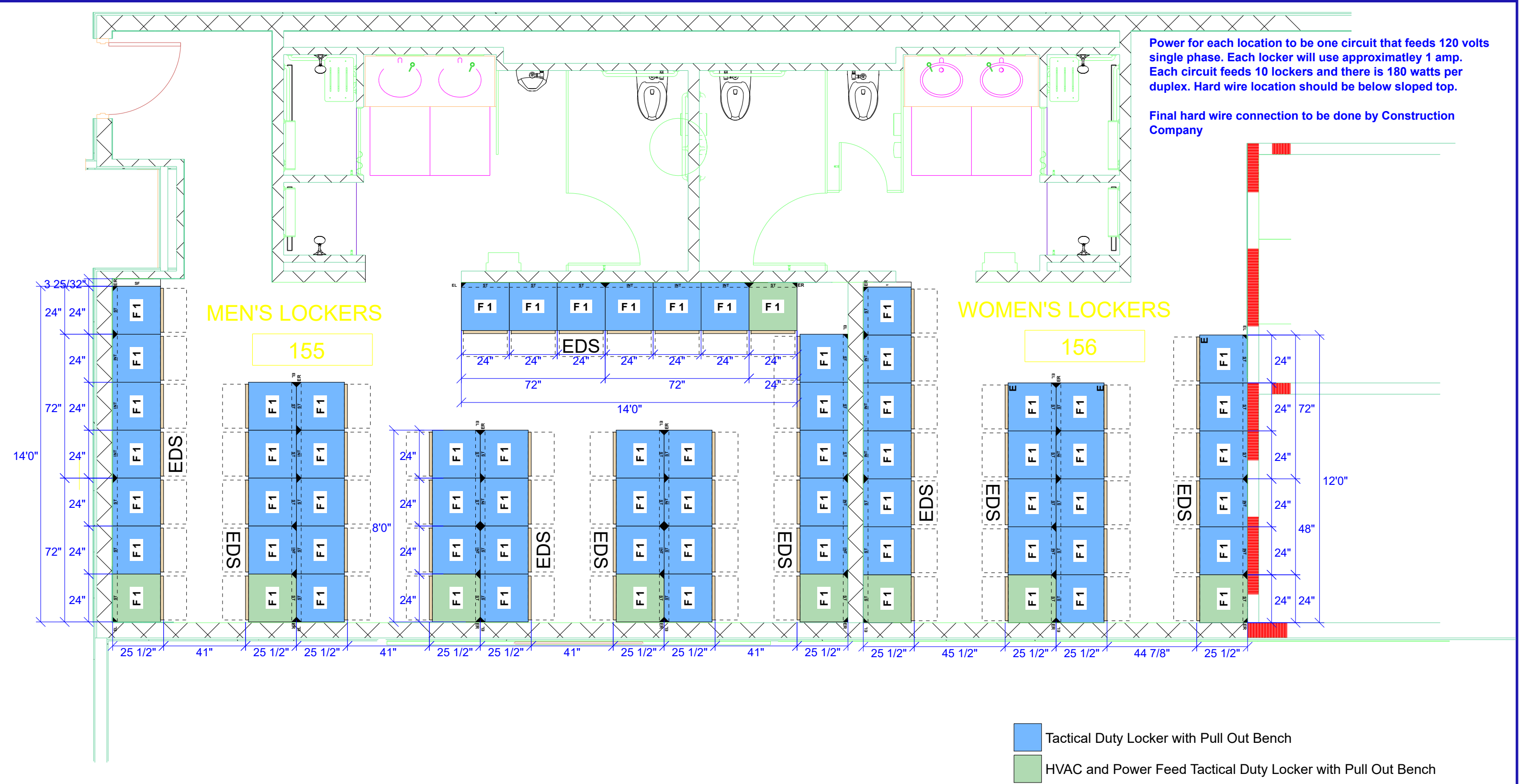
Read These Provisions Closely

Some clients, design professionals and contractors may not recognize that the geoscience practices (geotechnical engineering or geology) are far less exact than other engineering and natural science disciplines. This lack of understanding can create unrealistic expectations that could lead to disappointments, claims and disputes. GER includes these explanatory “limitations” provisions in our reports to help reduce such risks. Please confer with GER if you are unclear how these “Report Limitations and Guidelines for Use” apply to your project or site.

Biological Pollutants

GER’s Scope of Work specifically excludes the investigation, detection, prevention or assessment of the presence of Biological Pollutants. Accordingly, this report does not include any interpretations, recommendations, findings, or conclusions regarding the detecting, assessing, preventing or abating of Biological Pollutants and no conclusions or inferences should be drawn regarding Biological Pollutants, as they may relate to this project. The term “Biological Pollutants” includes, but is not limited to, molds, fungi, spores, bacteria and viruses, and/or any of their byproducts.

If Client desires these specialized services, they should be obtained from a consultant who offers services in this specialized field.



Project Name:
Nixa Police Department

Project #:

Drawn by:

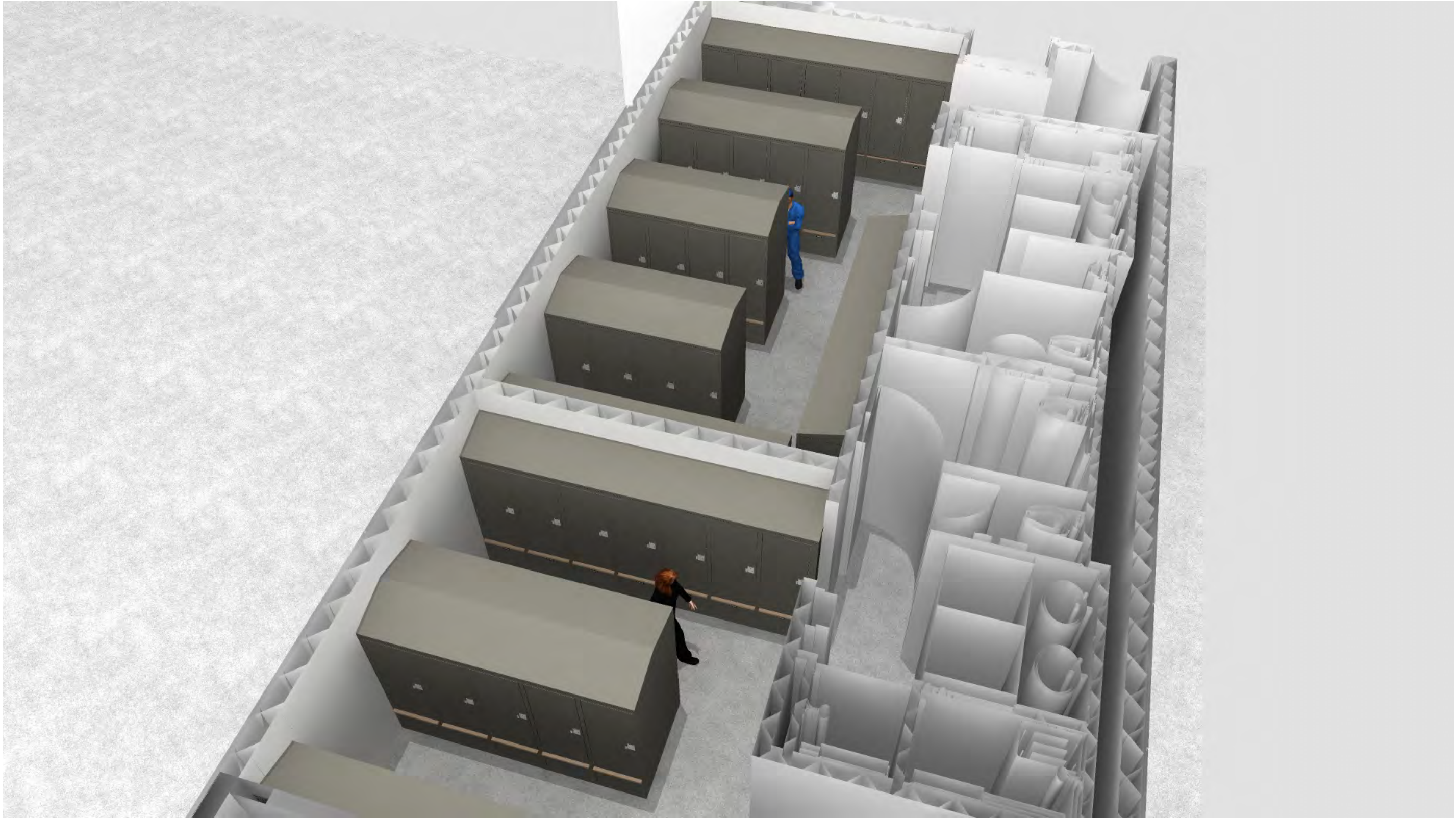
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03/31/2025

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Rev level:

APPROVAL
This drawing Approved By:

Dated _____



Project Name:
Nixa Police Department

Project #:

Drawn by:

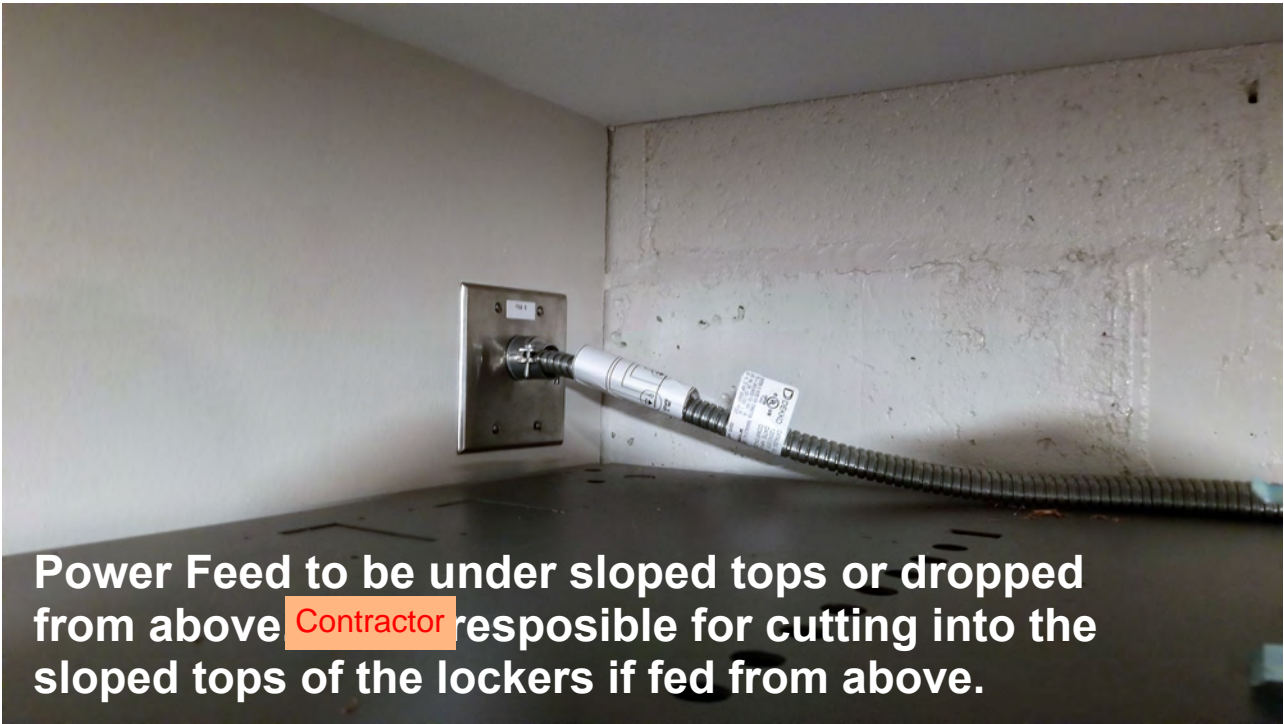
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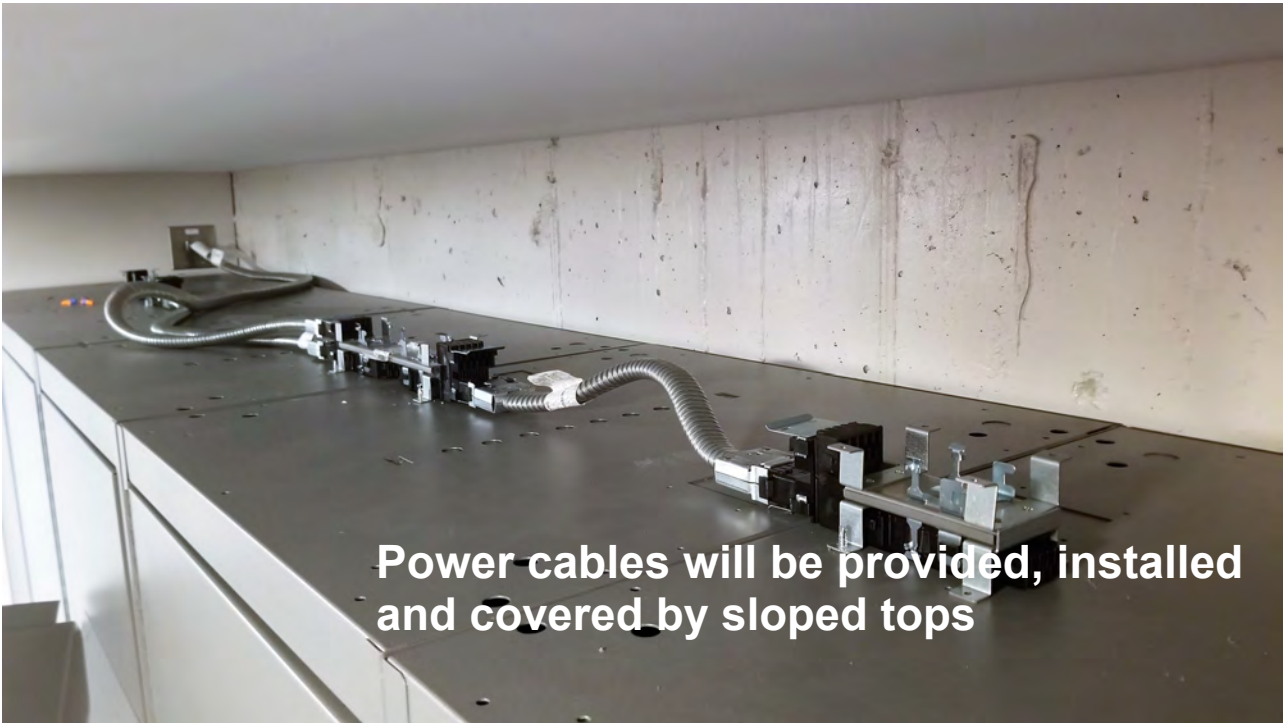
Rev level:

APPROVAL
This drawing Approved By:

Dated _____



Power Feed to be under sloped tops or dropped from above **Contractor** responsible for cutting into the sloped tops of the lockers if fed from above.



Power cables will be provided, installed and covered by sloped tops



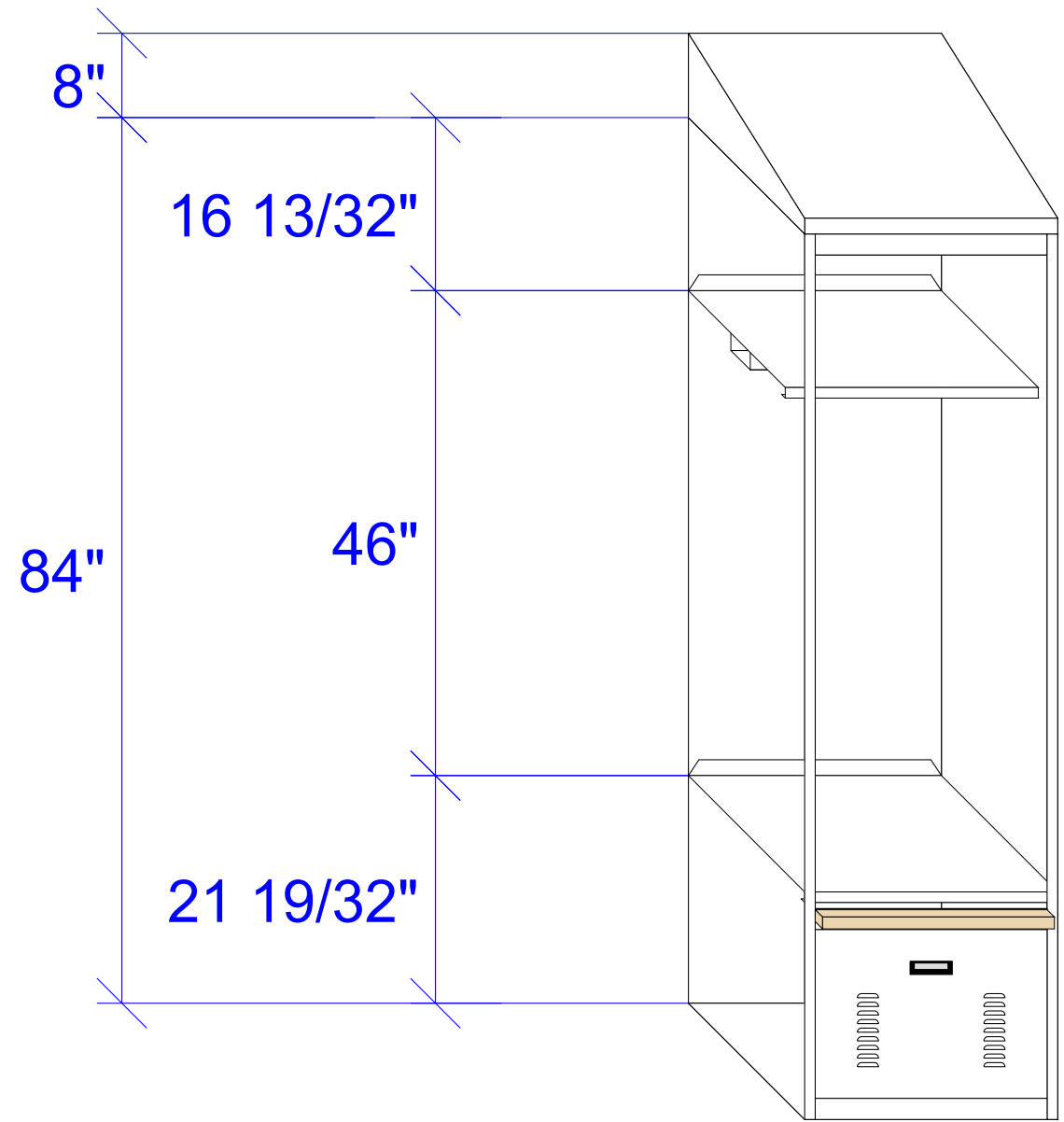
HVAC feed to attach to sloped tops. **Contractor** responsible for cutting hole in sloped tops.



Project Name:
Nixa Police Department

Project #:		APPROVAL This drawing Approved By: _____ Dated _____
Drawn by:		
Date Printed: 03/31/2025		
Scale 1:21	Rev level:	

H92"
84"x24" d24"



- Solid Doors
- Sloped Tops
- Shelf with Hanger Bar
- Power
- Pull Out Bench
- Bottom Drawer

F 1



Project Name:
Nixa Police Department

Project #:

APPROVAL
This drawing Approved By:

Drawn by:

Dated _____

Date Printed:
03/31/2025

Scale
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Rev level:

PROPERTY PROCESSING

162

APPROXIMATE
LOCATION OF 115V
15 AMP DEDICATED
RECEPTACLE ON
OPPOSITE WALL
(INSIDE PROPERTY
ROOM)

110" Wall Opening

108"

36"

36"

36"

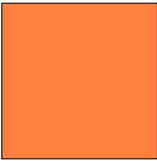
24"

E 1-E

E 3-E

E 2

P



Evidence Lockers

BRADFORD
SYSTEMS

Project Name:
Nixa Police Department

Project #:

Drawn by:

Date Printed:
03/31/2025

Scale
1:17

Rev level:

APPROVAL
This drawing Approved By:

Dated _____



Project Name:
Nixa Police Department

Project #:

Drawn by:

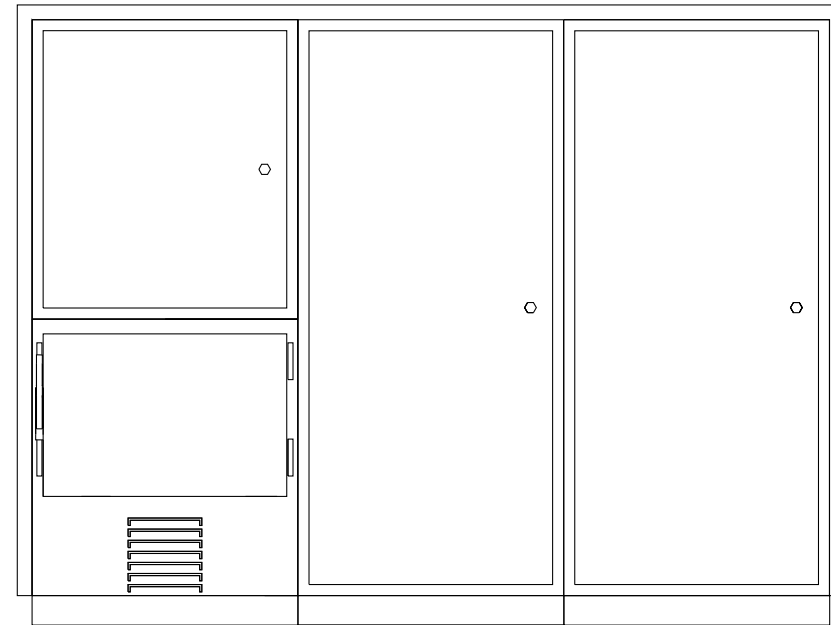
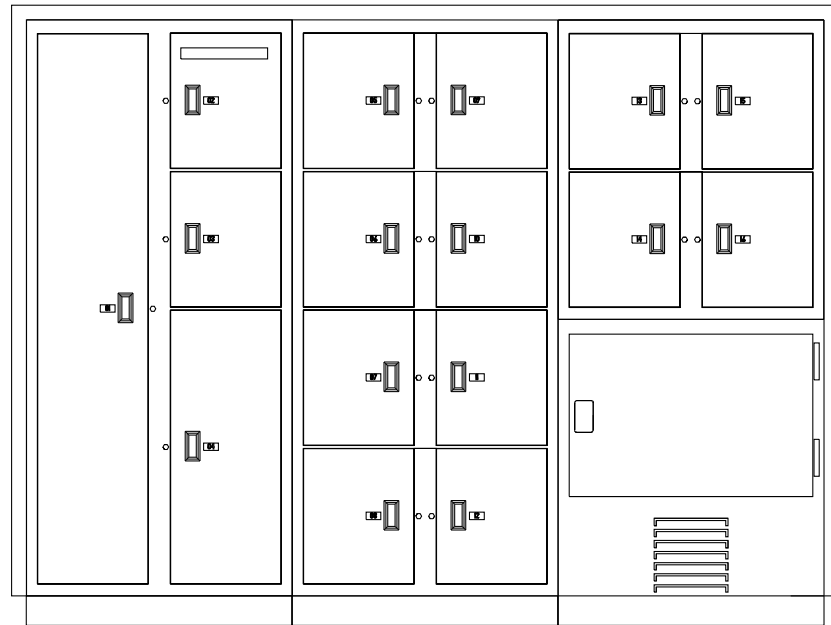
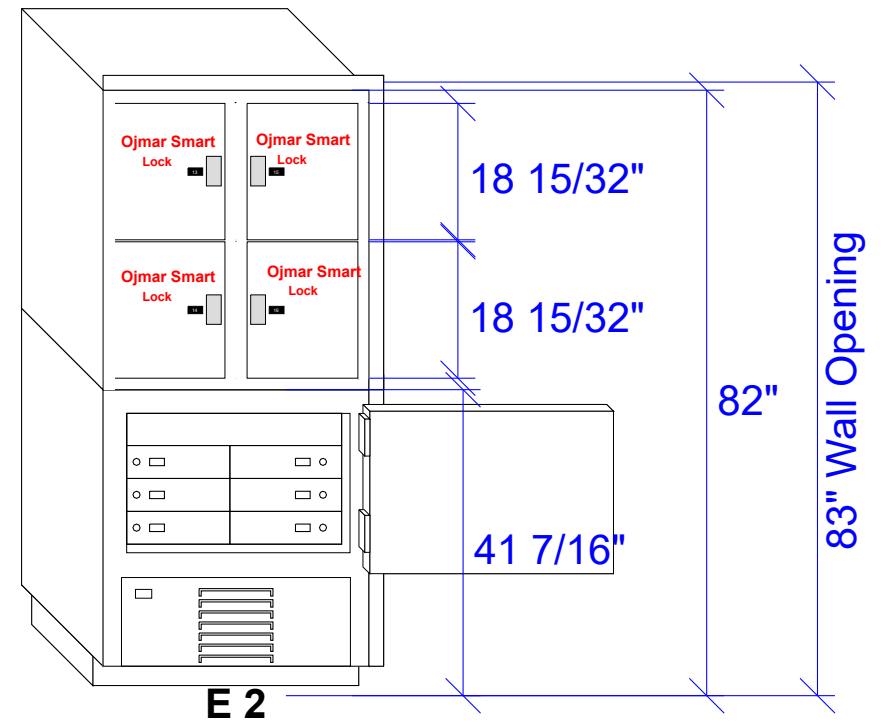
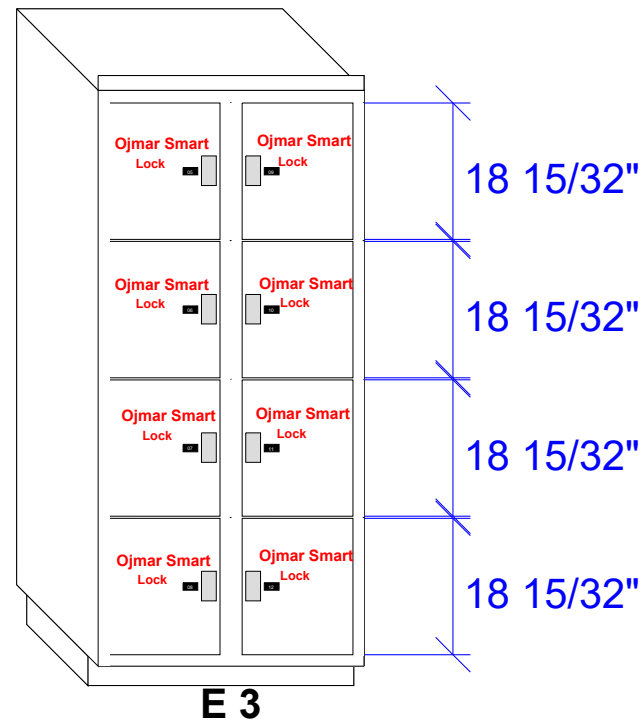
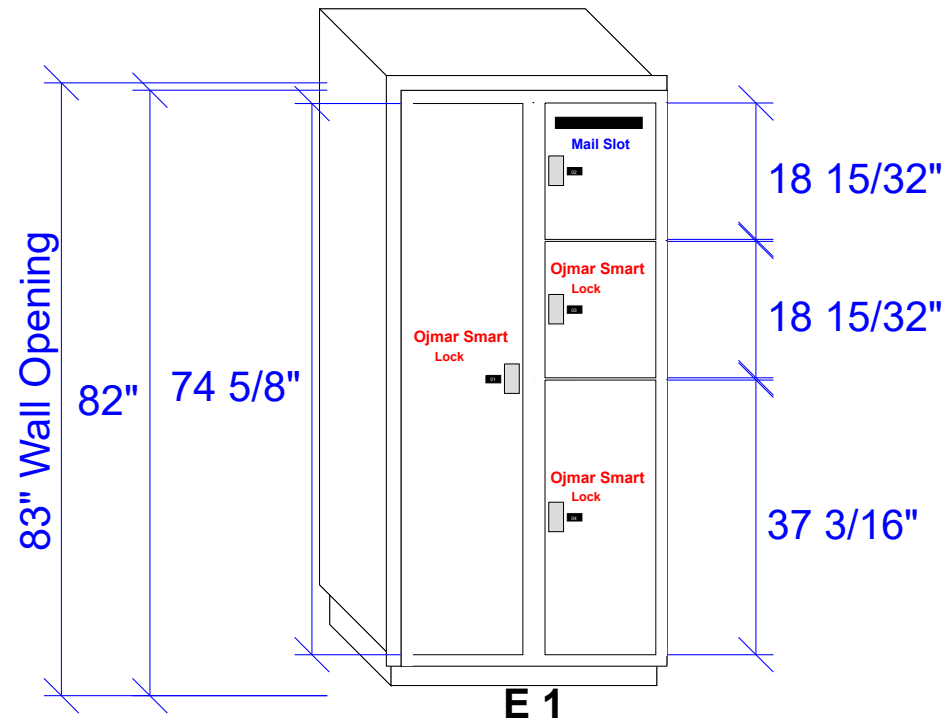
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03/31/2025

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3/4" = 1"

Rev level:

APPROVAL
This drawing Approved By:

Dated _____



Project Name:
Nixa Police Department

Project #:

Drawn by:

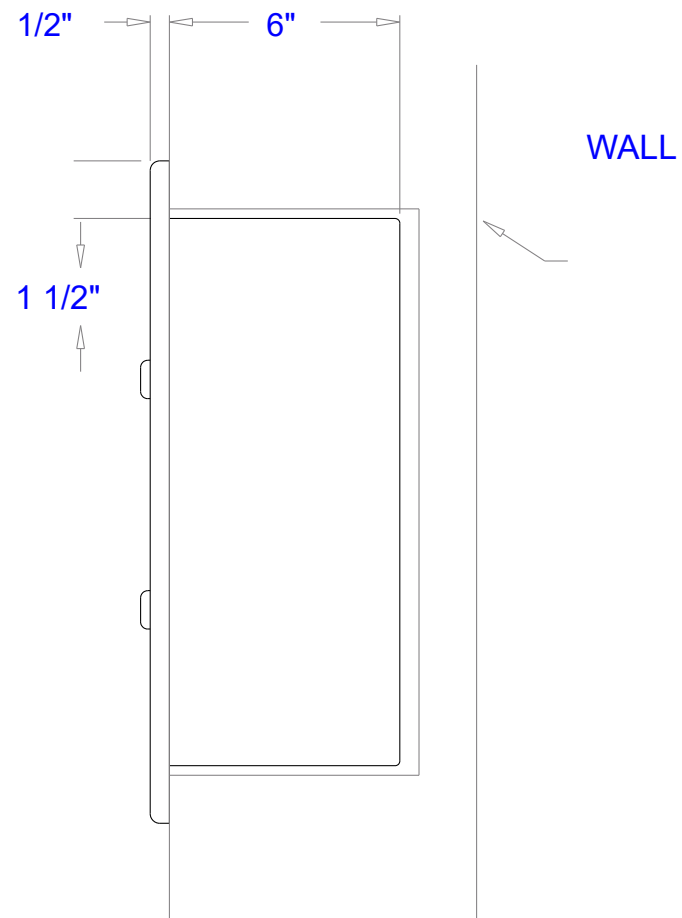
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03/31/2025

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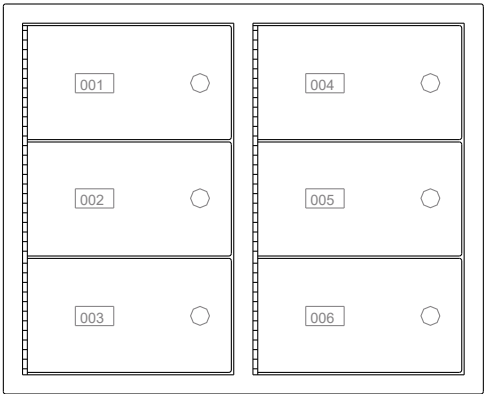
Rev level:

APPROVAL
This drawing Approved By:

Dated _____



FLUSH MOUNT
HGF



HGS-06

**One Unit Required
in corridor 109**

MODEL NUMBER	TYPE OF MOUNTING	NUMBER OF OPENINGS	ACTUAL SIZE OF CABINET				SIZE OF WALL OPENING		
			WIDTH	HEIGHT	DEPTH	WEIGHT	WIDTH	HEIGHT	DEPTH
HGF-06	FLUSH	6	25"	20 1/8"	6 1/2"	53 lbs	25 1/2"	20 1/2"	6 1/2"



Project Name:
Nixa Police Department

Project #:

APPROVAL
This drawing Approved By: _____

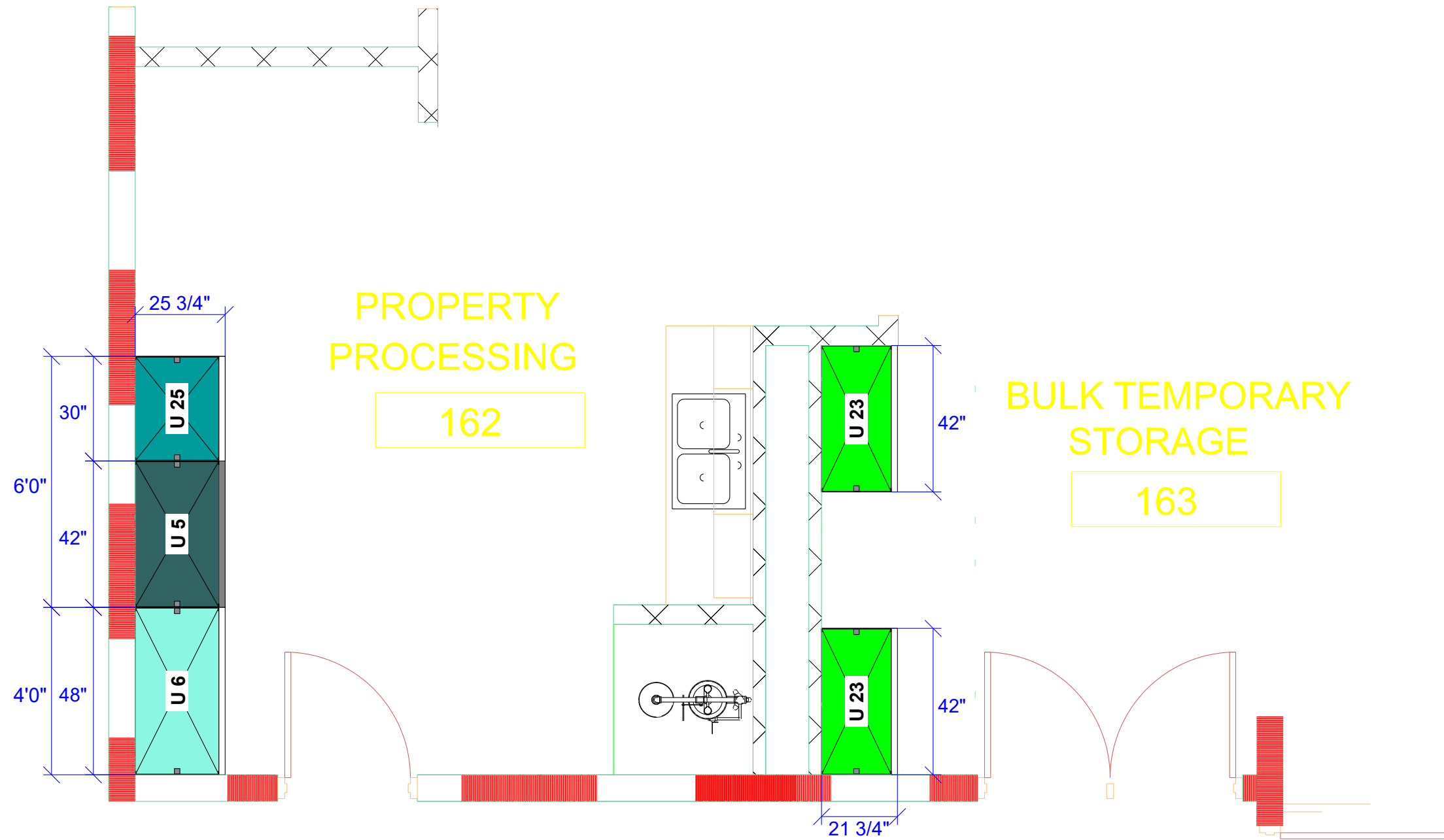
Drawn by:

Dated _____

Date Printed:
03/31/2025

Scale
1:10

Rev level:



- Storage Shelving-Tall with Doors
- Storage Shelving-Short with Doors and Stainless Steel Top
- Storage Shelving-Short with Stainless Steel Top
- Storage Shelving-No Doors



Project Name:
Nixa Police Department

Project #:

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This drawing Approved By: _____

Drawn by:

Dated _____

Date Printed:
03/31/2025

Scale
1:36

Rev level:



Project Name:
Nixa Police Department

Project #:

Drawn by:

Date Printed:
03/31/2025

Scale
1:17

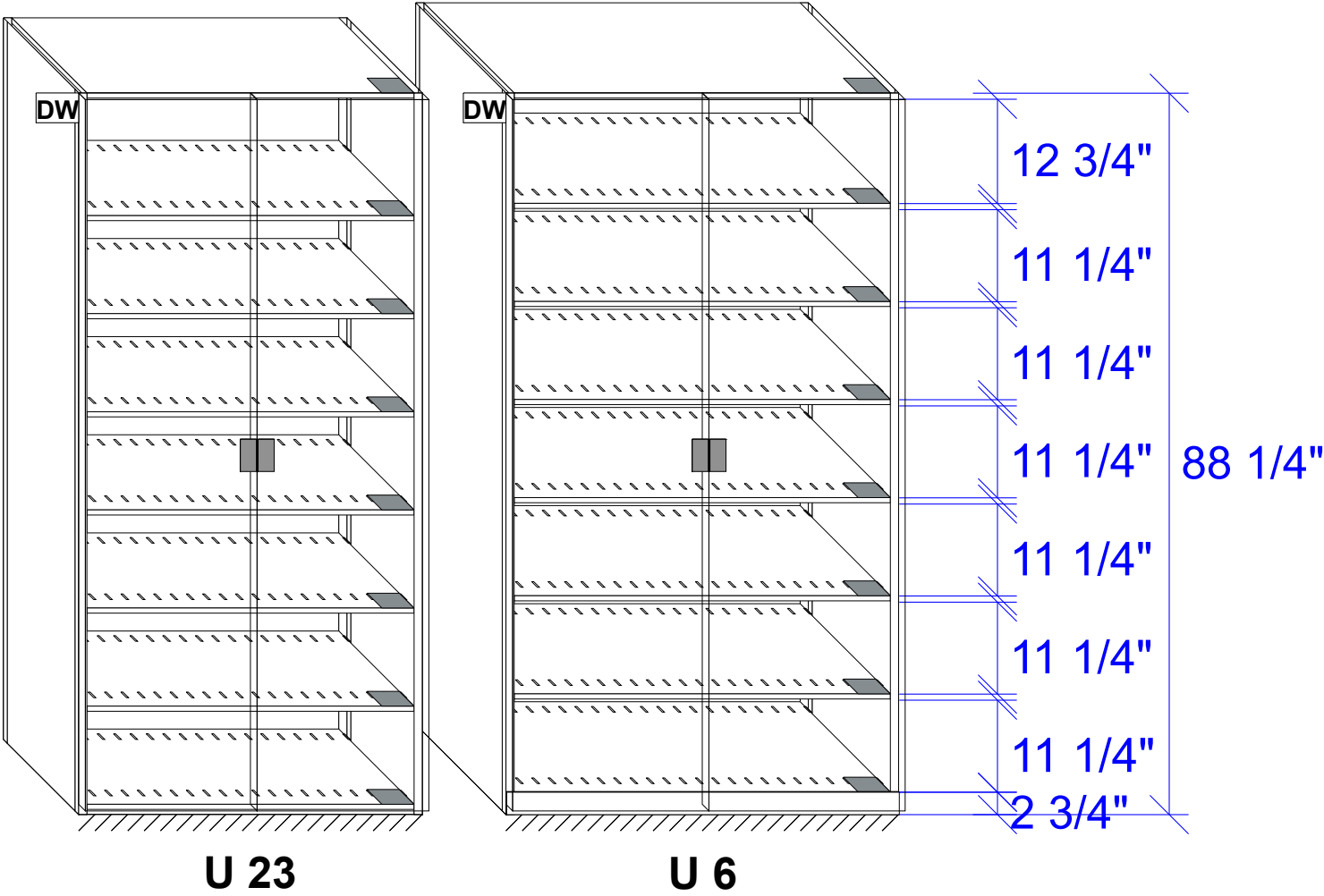
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APPROVAL
This drawing Approved By:

Dated _____

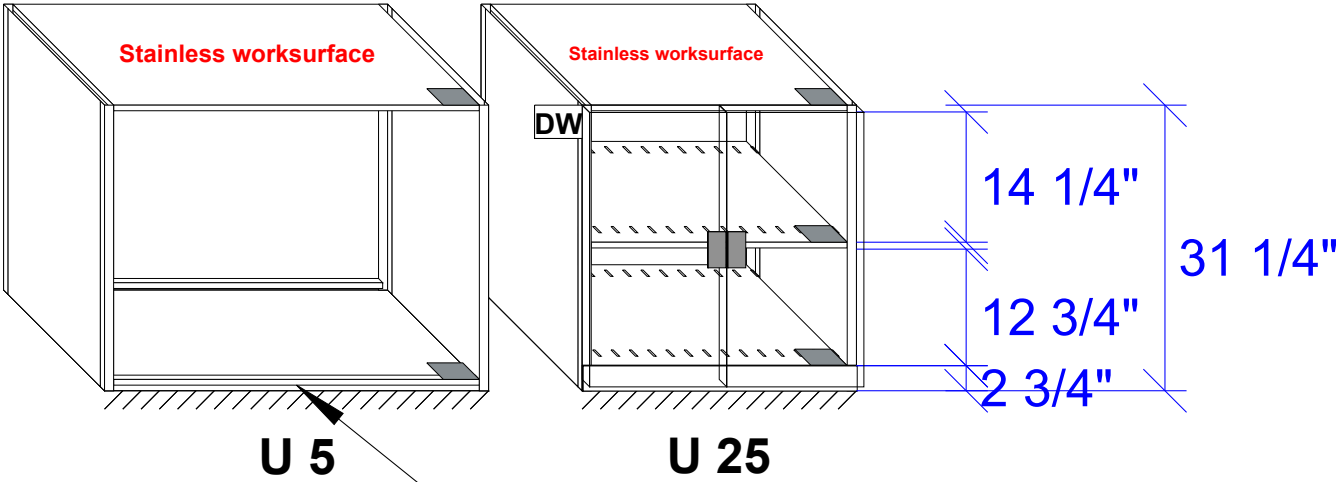
H88 1/4"
88 1/4" x 42" x 20"

H88 1/4"
88 1/4" x 48" x 24"



H31 1/4"
31 1/4" x 42" x 24"

H31 1/4"
31 1/4" x 30" x 24"



Project Name:
Nixa Police Department

Project #:

APPROVAL
This drawing Approved By: _____

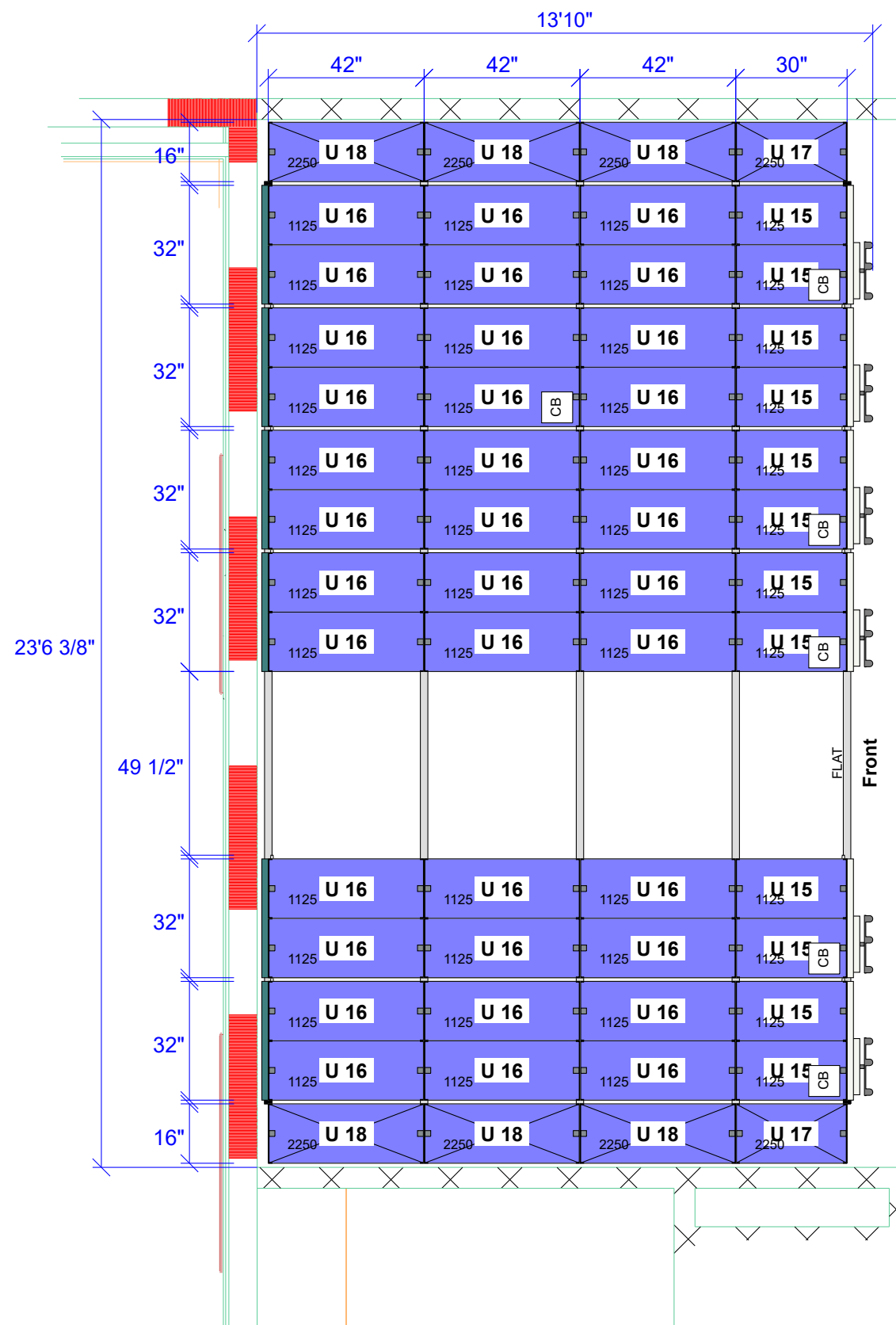
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Dated _____

Date Printed:
03/31/2025

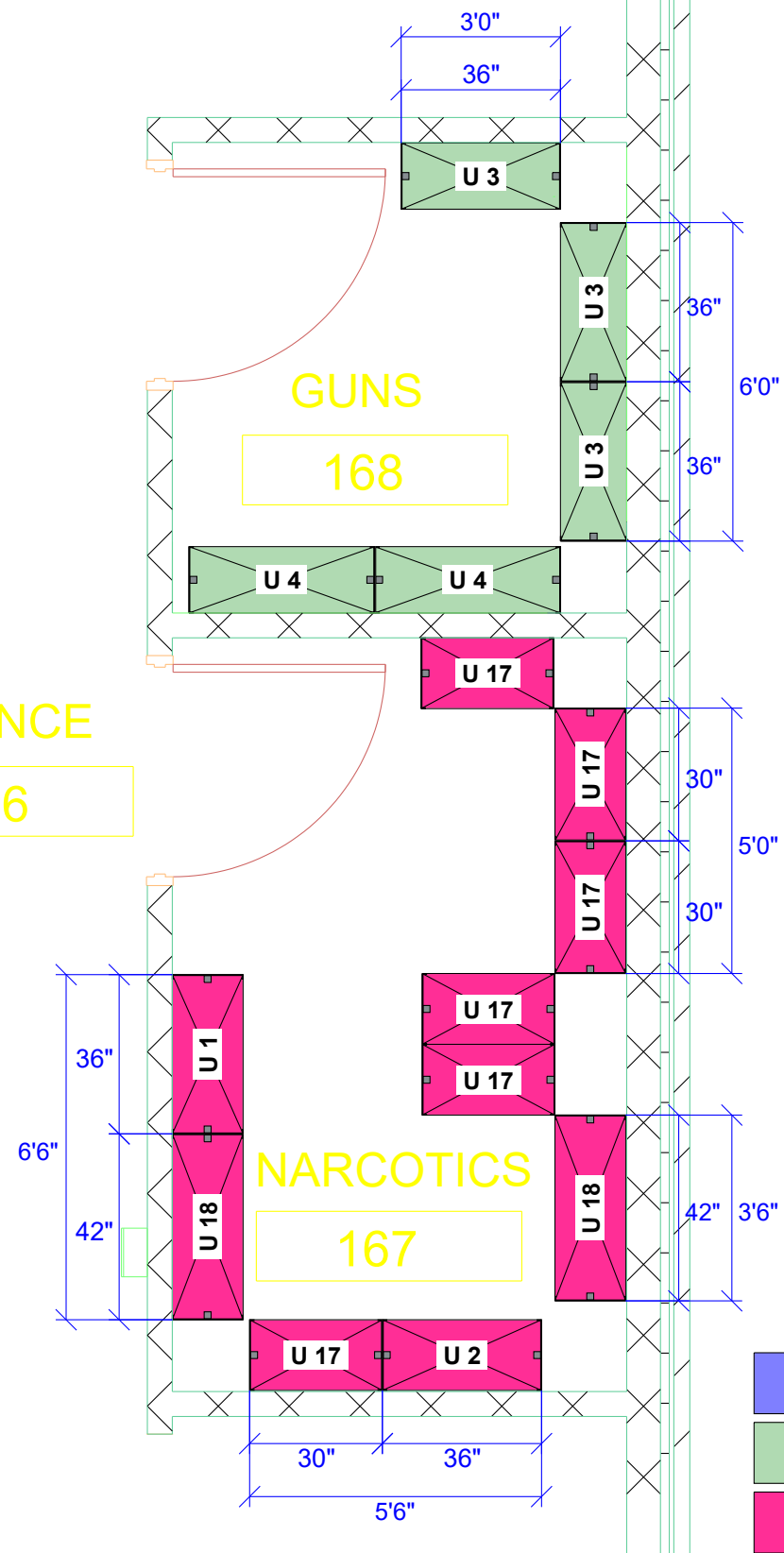
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Rev level:



EVIDENCE

166



- General Evidence
- Gun Evidence
- Drug Evidence



Project Name:
Nixa Police Department

Project #:

Drawn by:

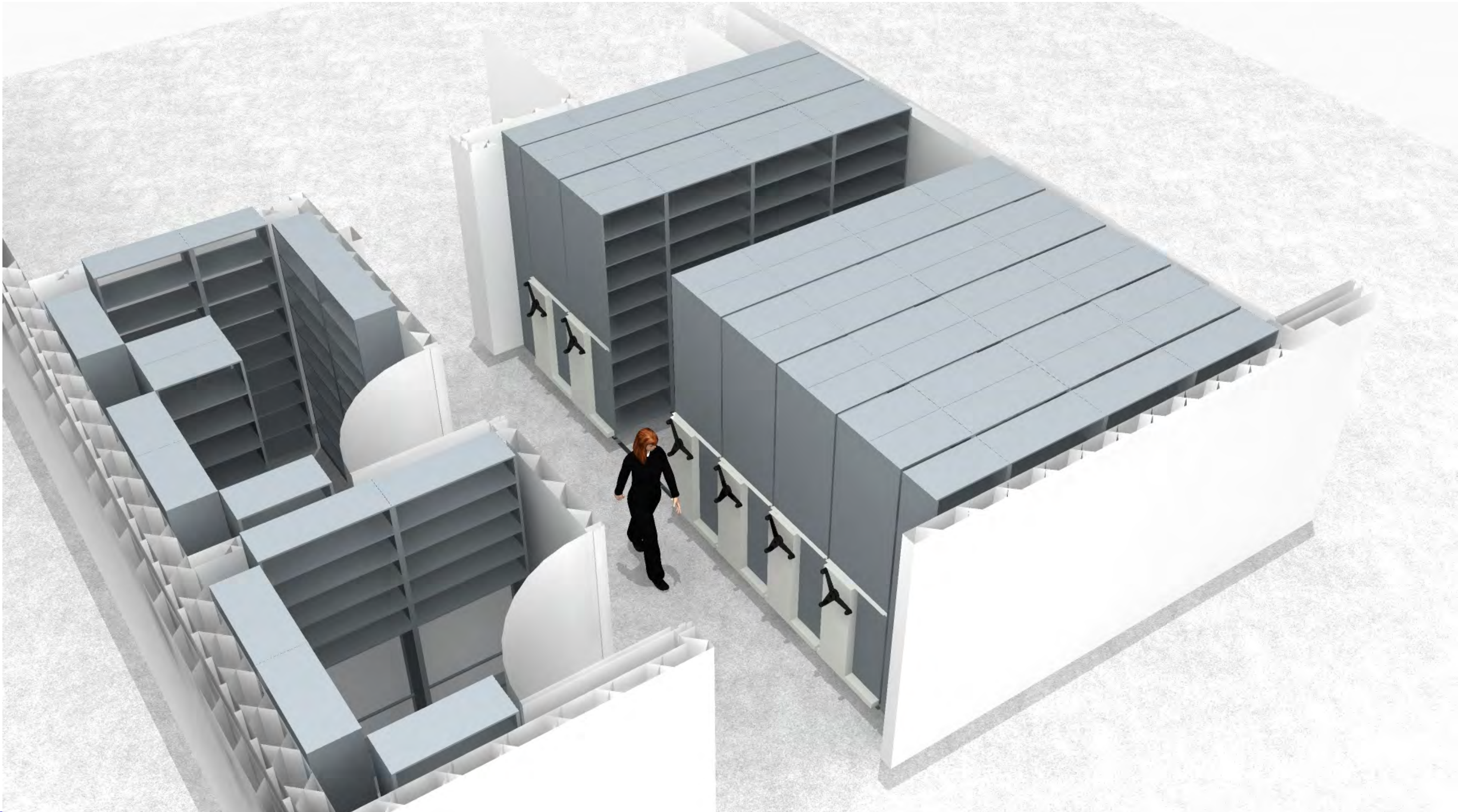
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Rev level:

APPROVAL
This drawing Approved By:

Dated _____



Project Name:
Nixa Police Department

Project #:

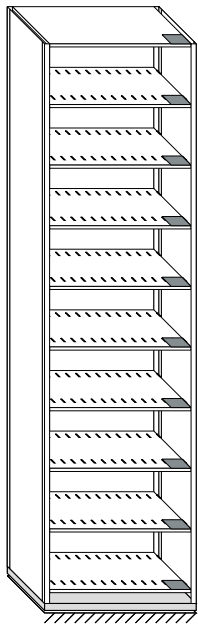
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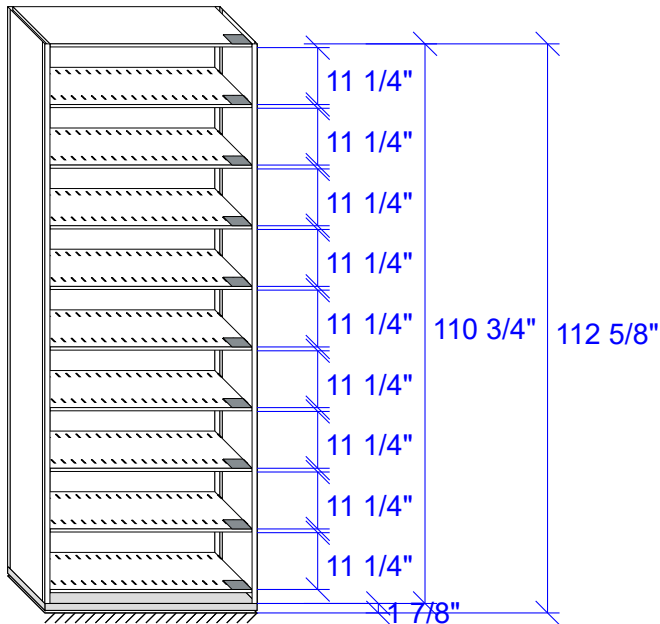
APPROVAL
This drawing Approved By: _____

H112 5/8"
110 3/4" x 30" x 16"



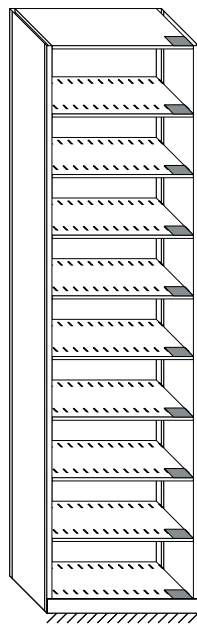
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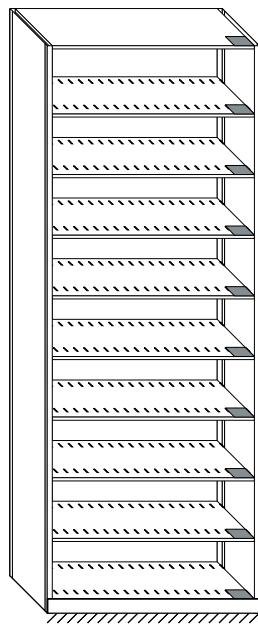
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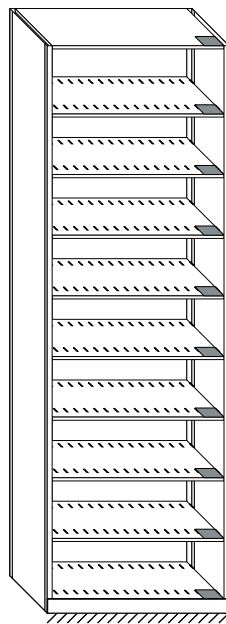
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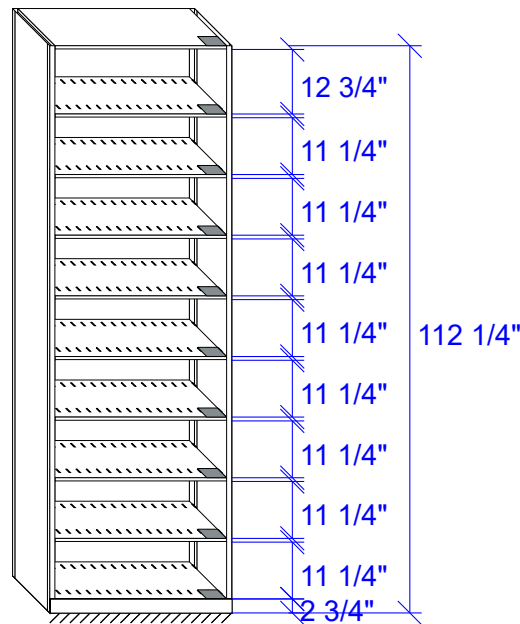
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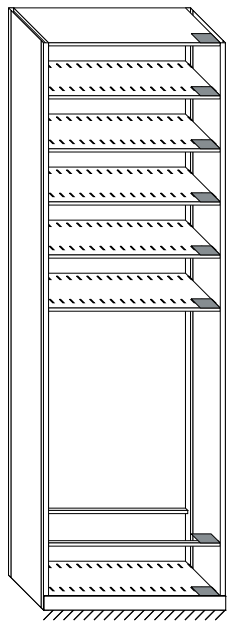
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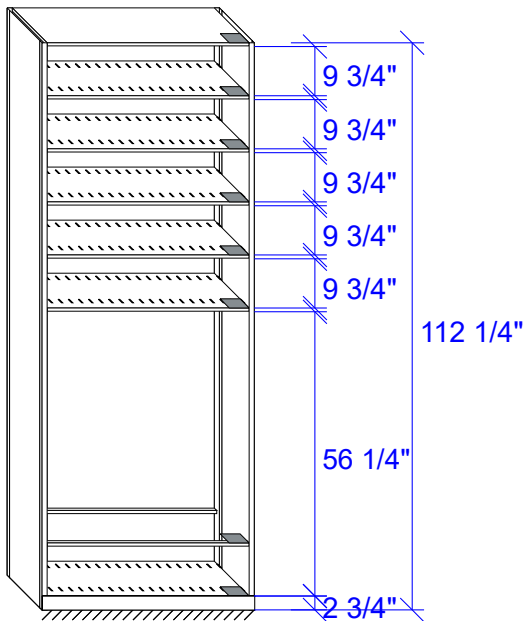
U 2

H112 1/4"
112 1/4" x 36" x 15"



U 3

H112 1/4"
112 1/4" x 42" x 15"



U 4



Project Name:

Nixa Police Department

Project #:

Drawn by:

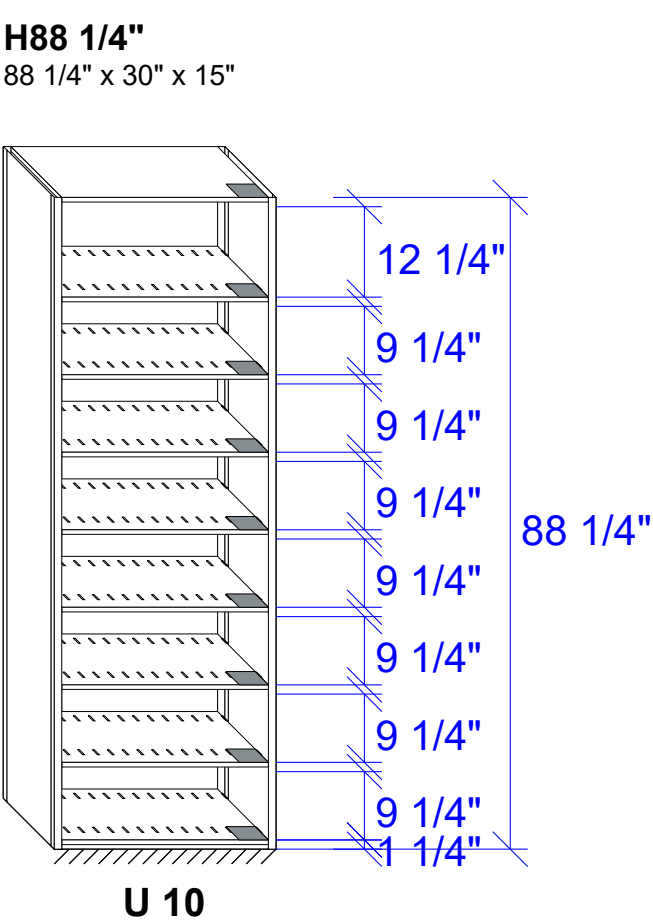
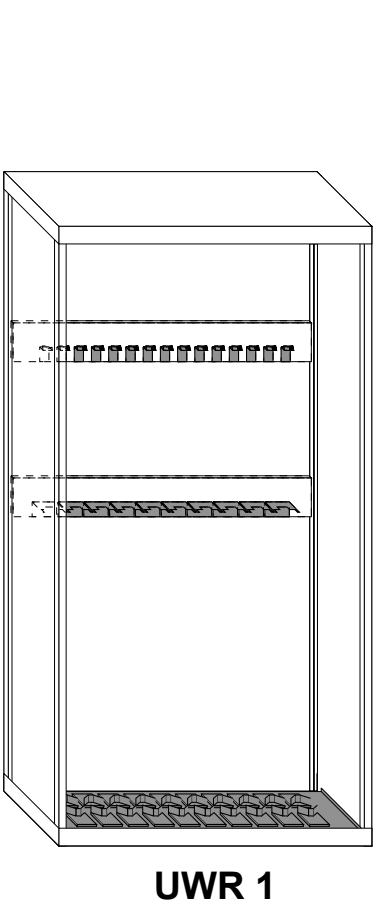
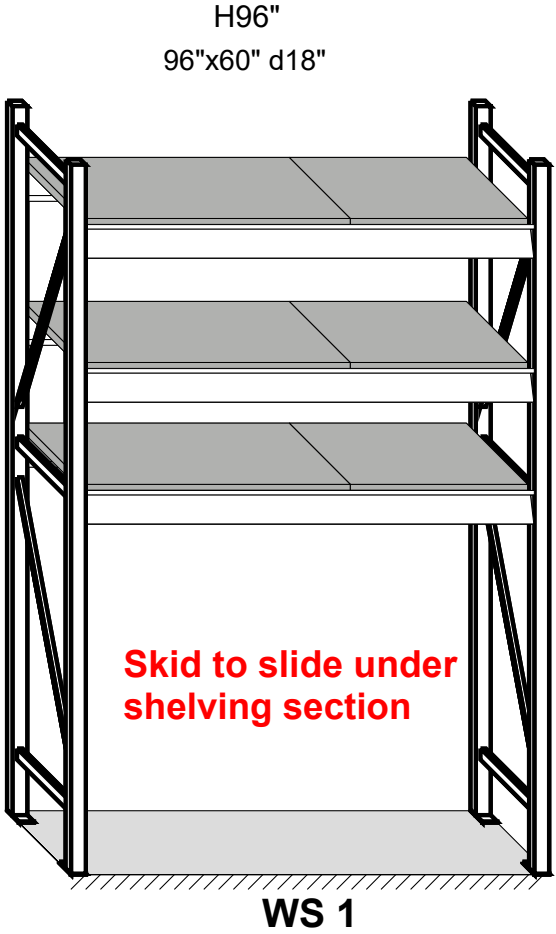
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03/31/2025

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Rev level:

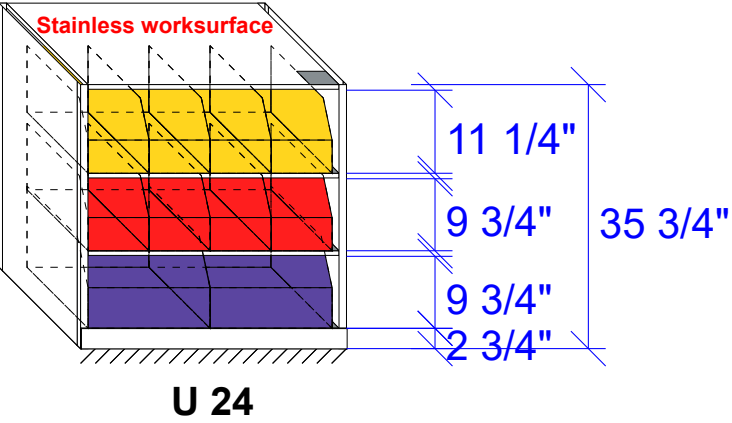
APPROVAL
This drawing Approved By:

Dated _____



Weapons Storage
above worksurface

H35 3/4"
35 3/4" x 36" x 24"



Project Name:
Nixa Police Department

Project #:

APPROVAL
This drawing Approved By: _____

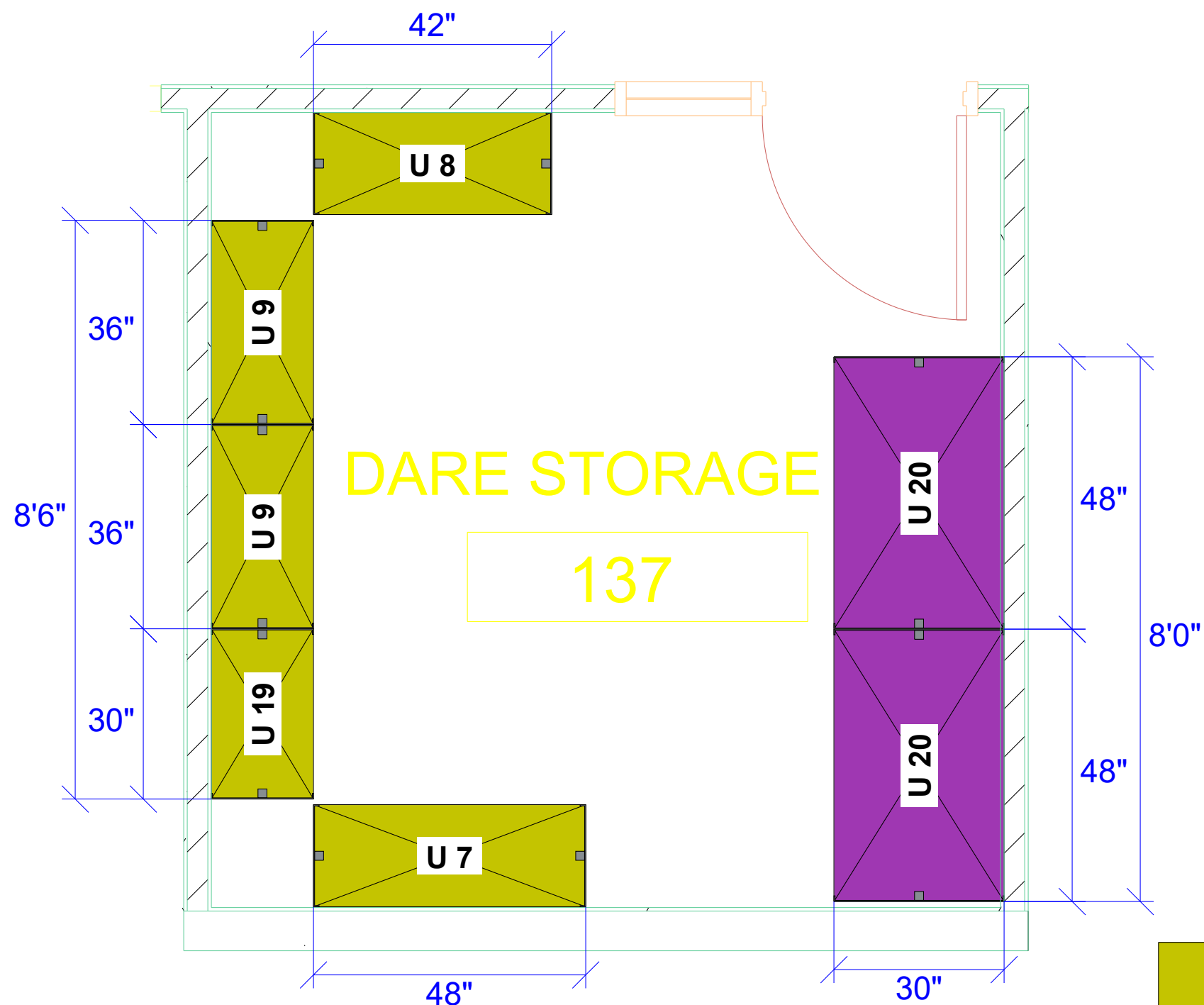
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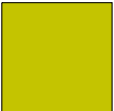

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Date Printed:
03/31/2025

Scale
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Rev level:



-  Dare Storage-General
-  Quartermaster Storage-Hanging



Project Name:
Nixa Police Department

Project #:

Drawn by:

Date Printed:
03/31/2025

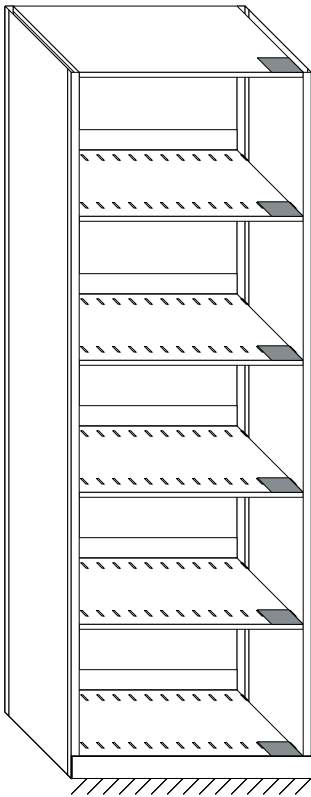
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Rev level:

APPROVAL
This drawing Approved By:

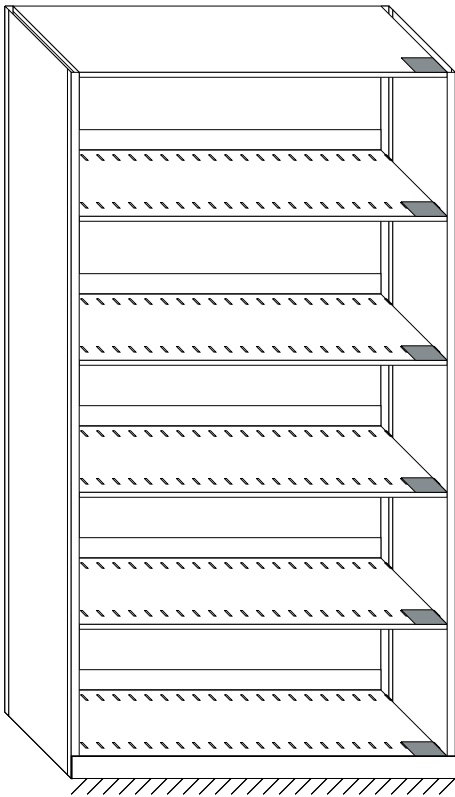
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H88 1/4"
88 1/4" x 30" x 18"



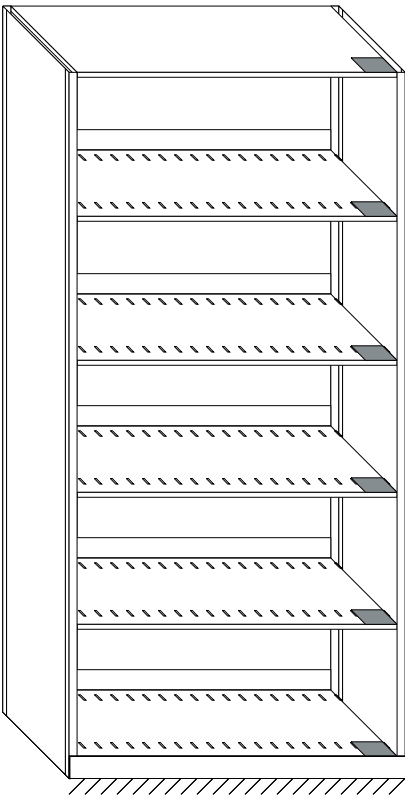
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H88 1/4"
88 1/4" x 48" x 18"



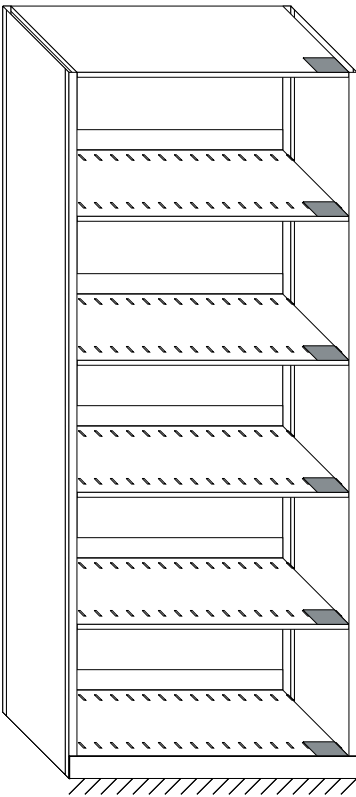
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H88 1/4"
88 1/4" x 42" x 18"

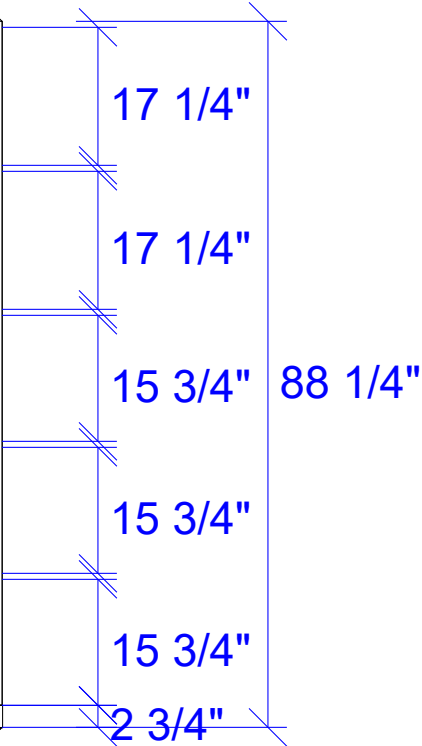


U 8

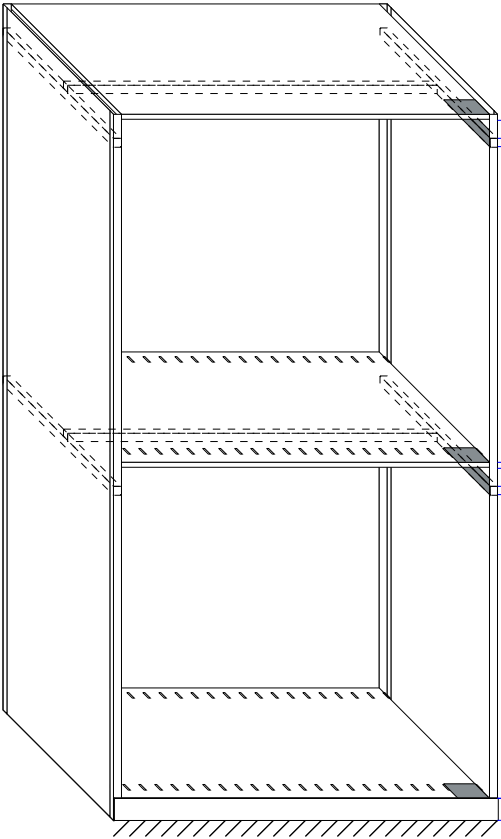
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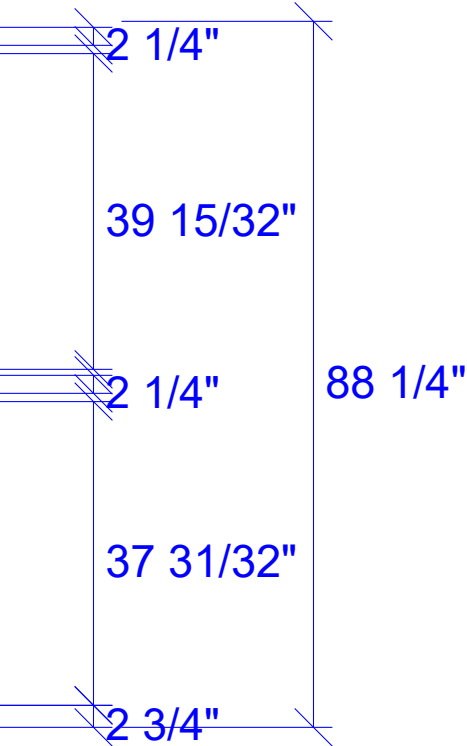
U 9



H88 1/4"
88 1/4" x 48" x 30"



U 20



Project Name:
Nixa Police Department

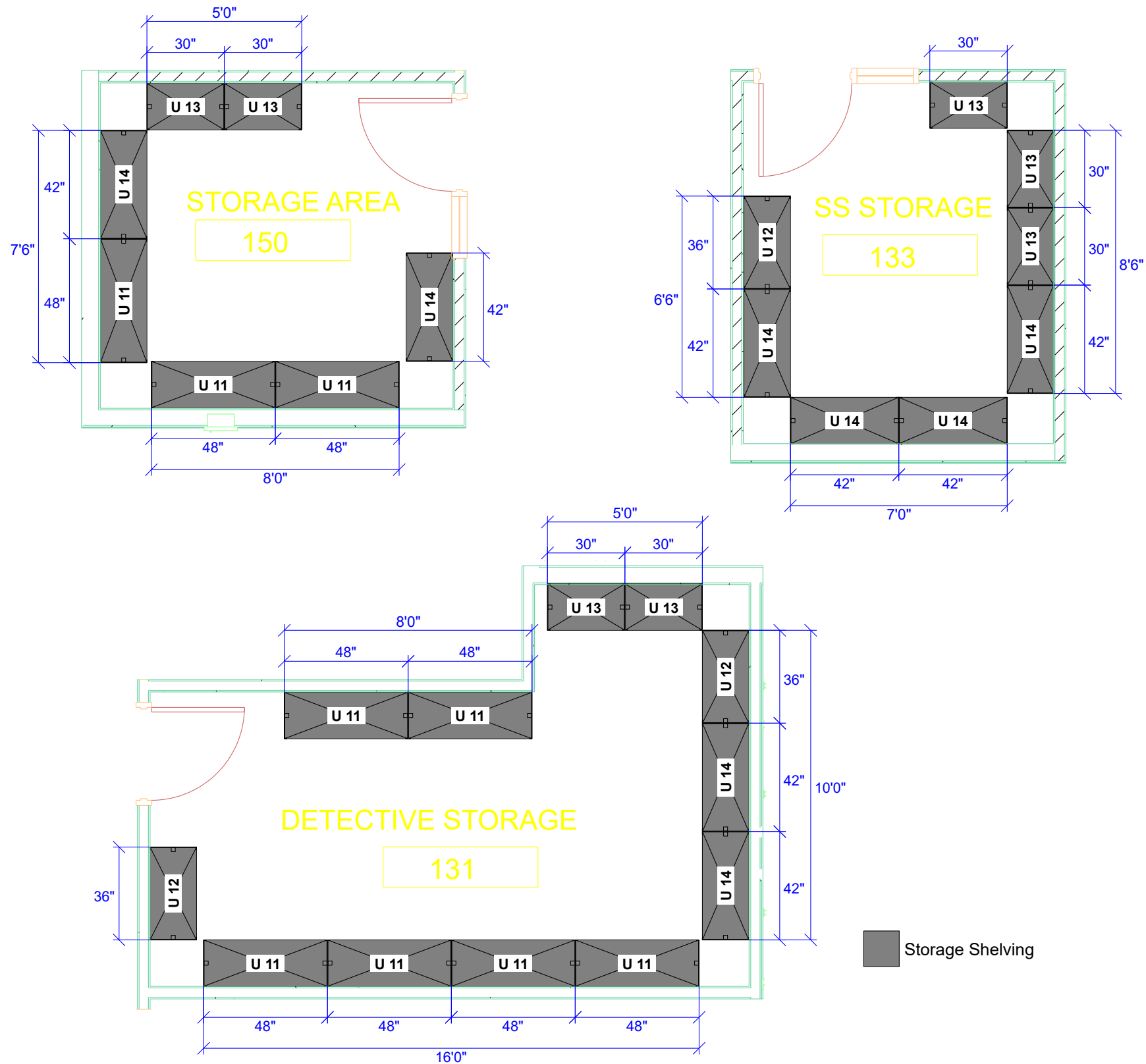
Project #:

Drawn by:

Date Printed:
03/31/2025
Dated _____

APPROVAL
This drawing Approved By: _____

Scale
1/2" = 1'
Rev level:



Project Name:
Nixa Police Department

Project #:

APPROVAL
This drawing Approved By: _____

Drawn by:

Dated _____

Date Printed:
03/31/2025

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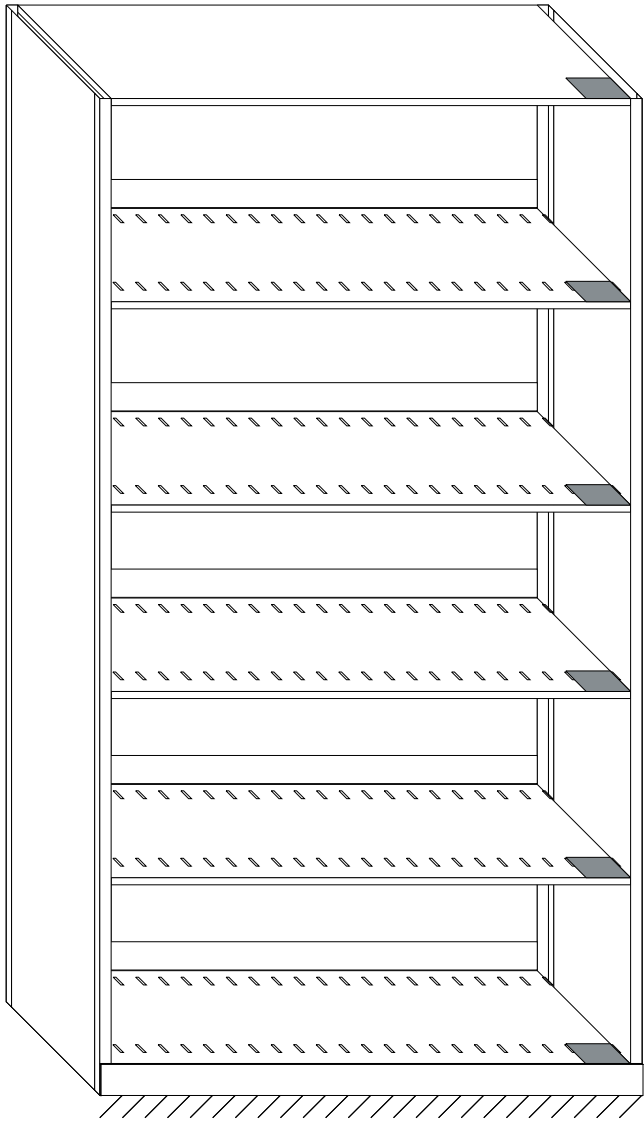
Rev level:

H88 1/4"
88 1/4" x 48" x 18"

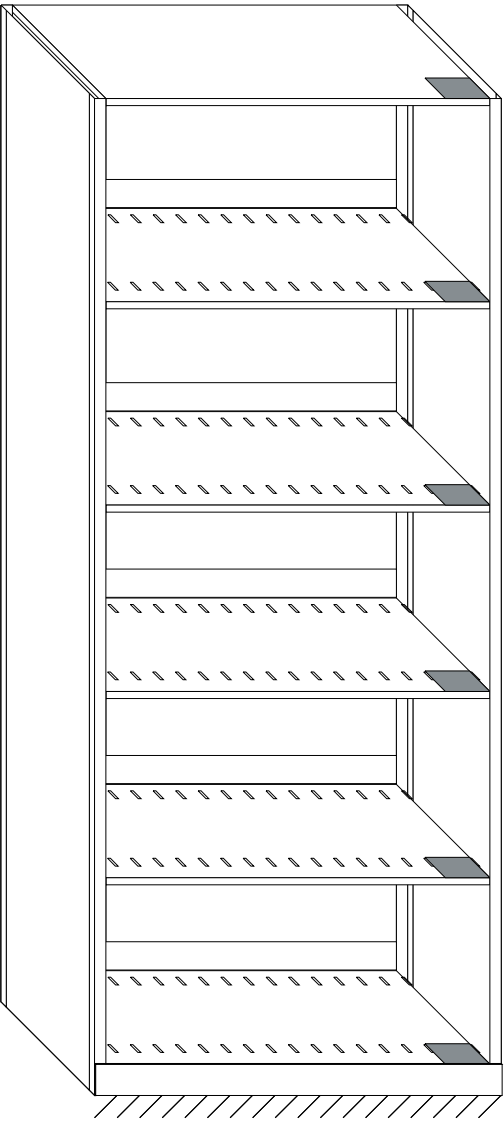
H88 1/4"
88 1/4" x 36" x 18"

H88 1/4"
88 1/4" x 30" x 18"

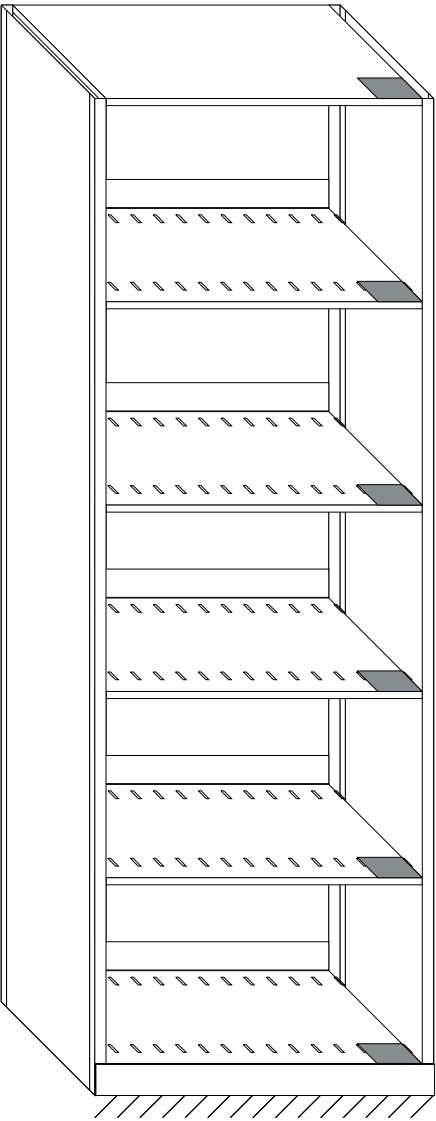
H88 1/4"
88 1/4" x 42" x 18"



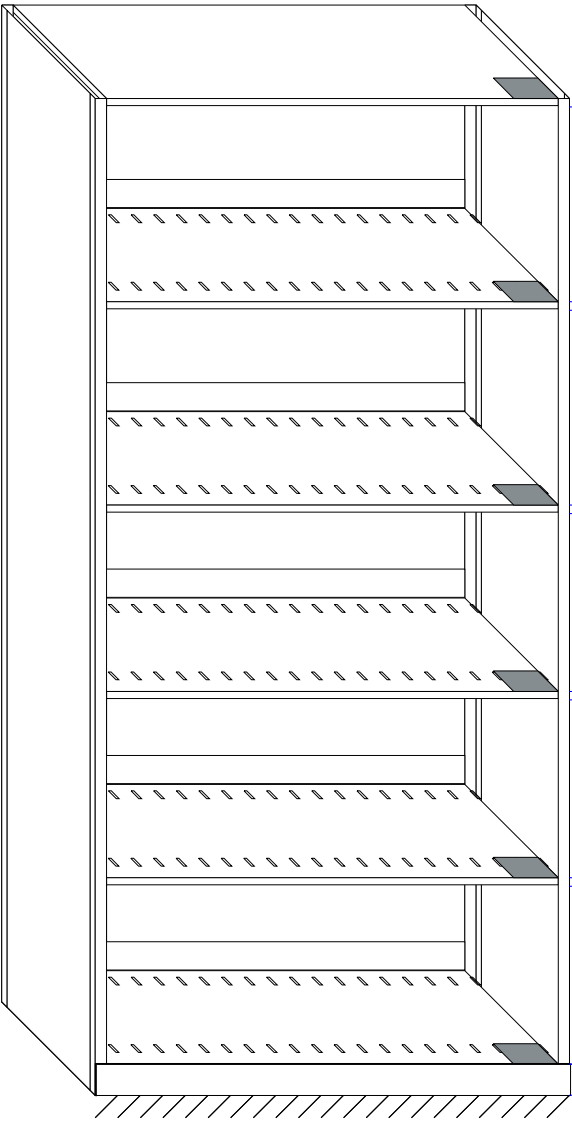
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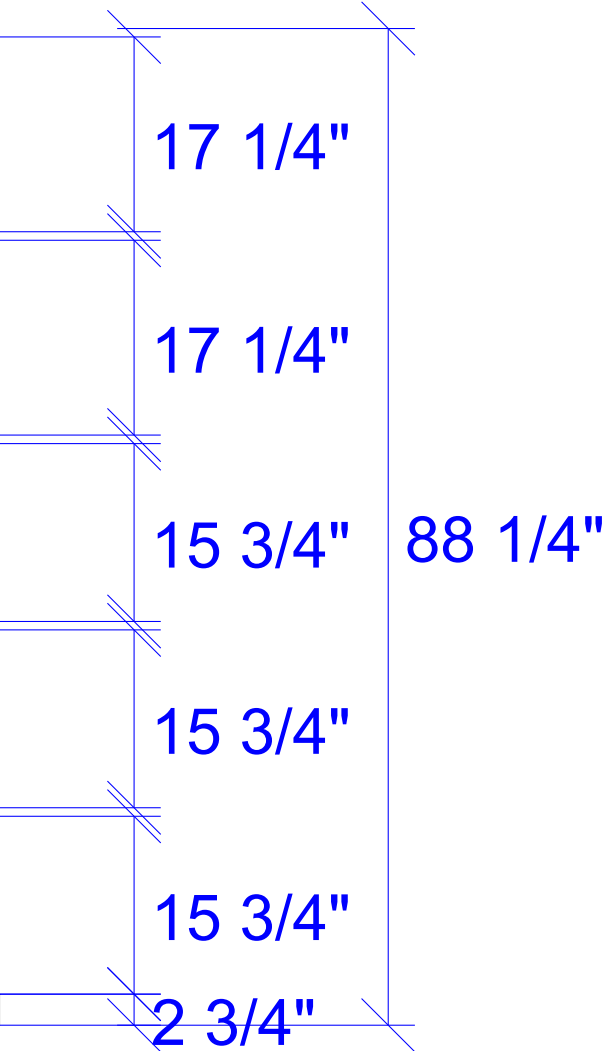
U 12



U 13



U 14



Project Name:
Nixa Police Department

Project #:

APPROVAL
This drawing Approved By: _____

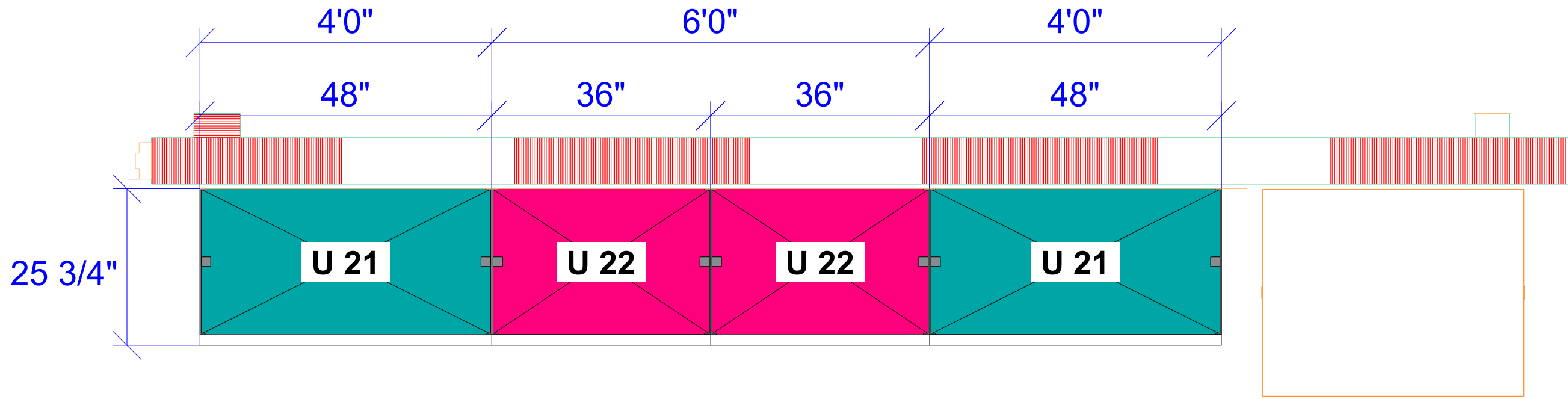
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Dated _____

Date Printed:
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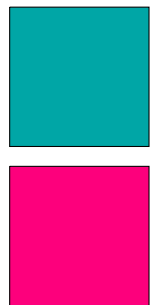
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Rev level:



SALLY PORT

170



Storage Shelving-Tall with Doors

Storage Shelving-Short with Doors and Stainless Steel Top



Project Name:

Nixa Police Department

Project #:

Drawn by:

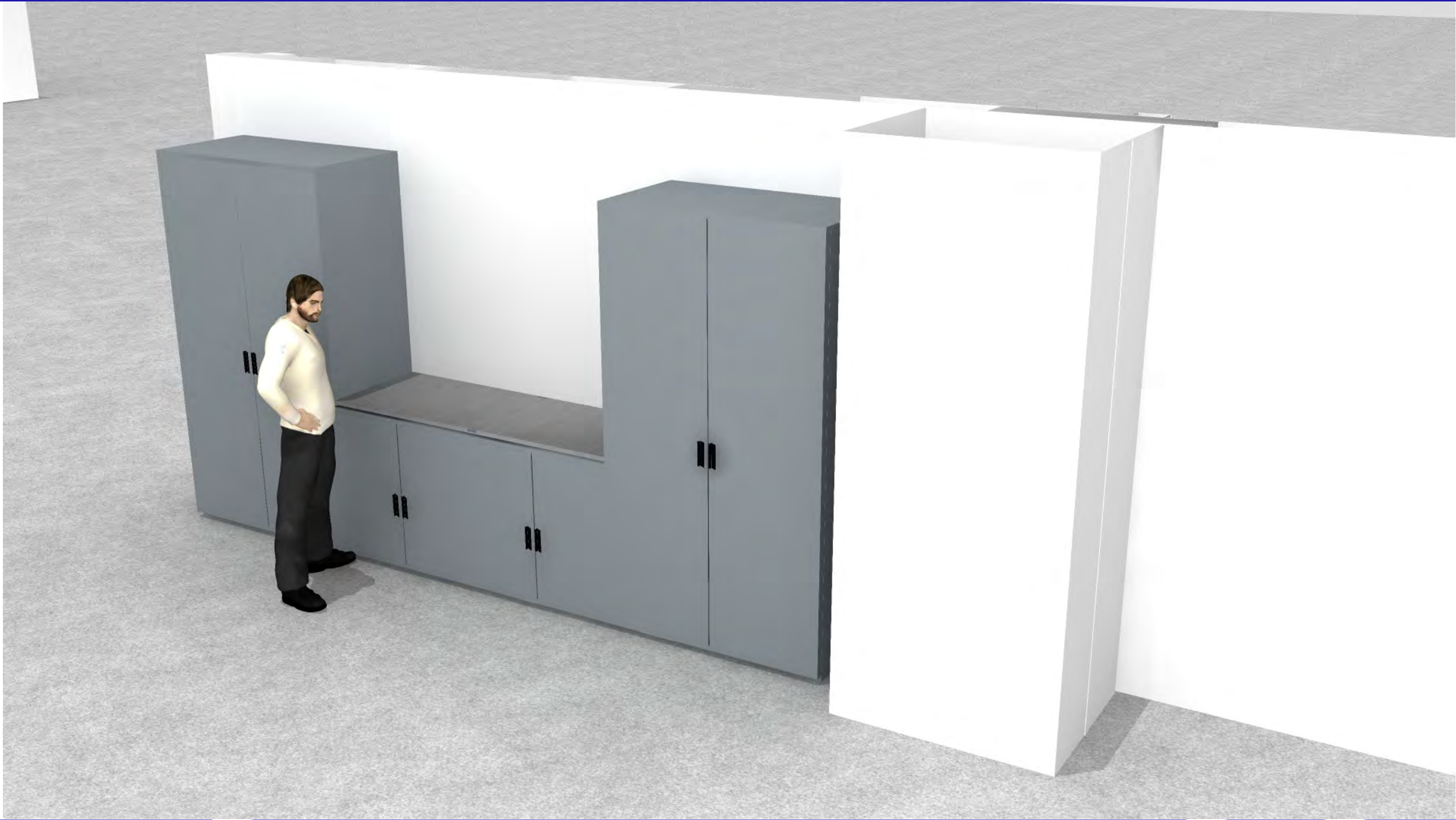
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03/31/2025

Scale
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Rev level:

APPROVAL
This drawing Approved By:

Dated _____



Project Name:
Nixa Police Department

Project #:

Drawn by:

Date Printed:
03/31/2025

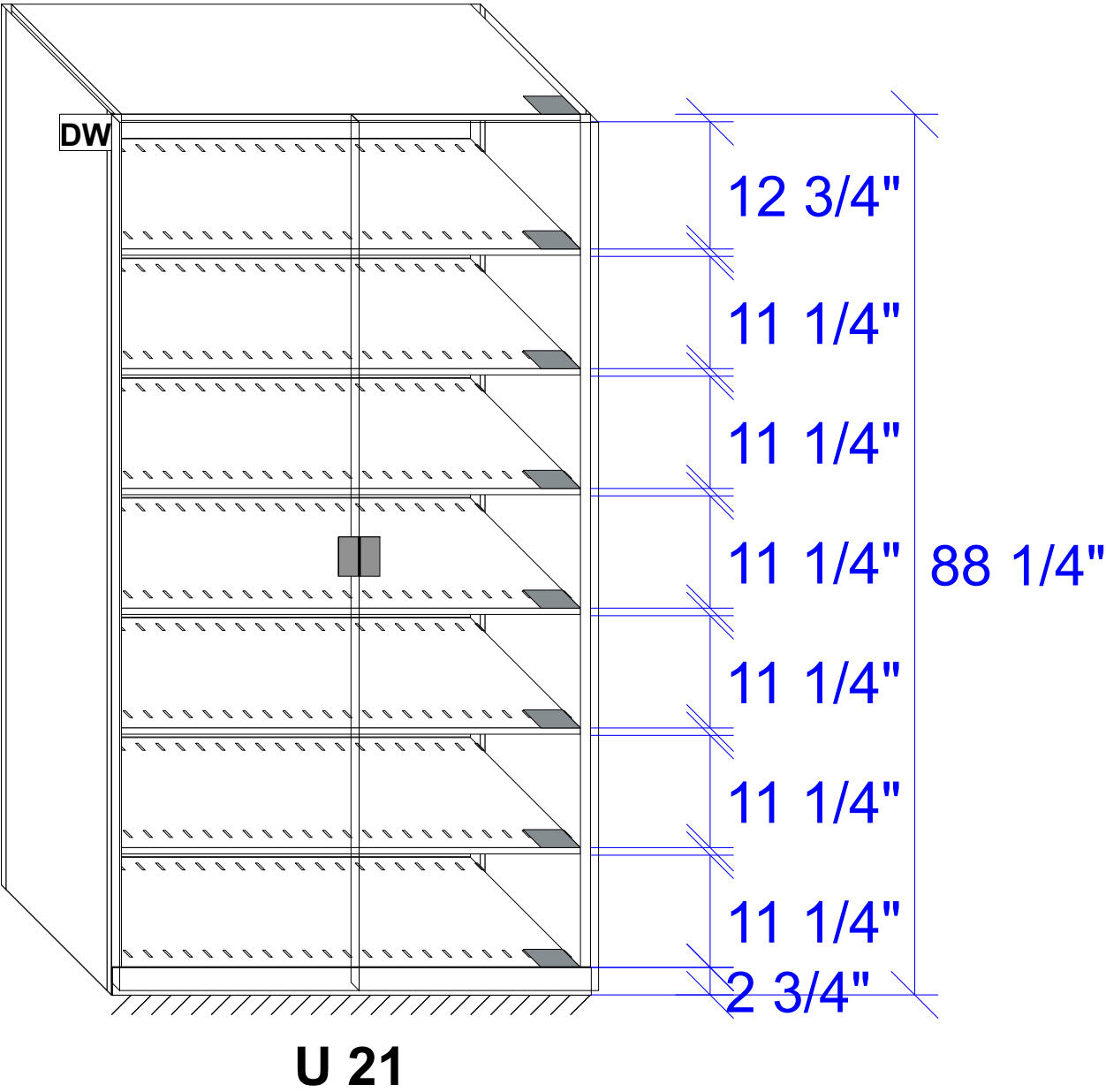
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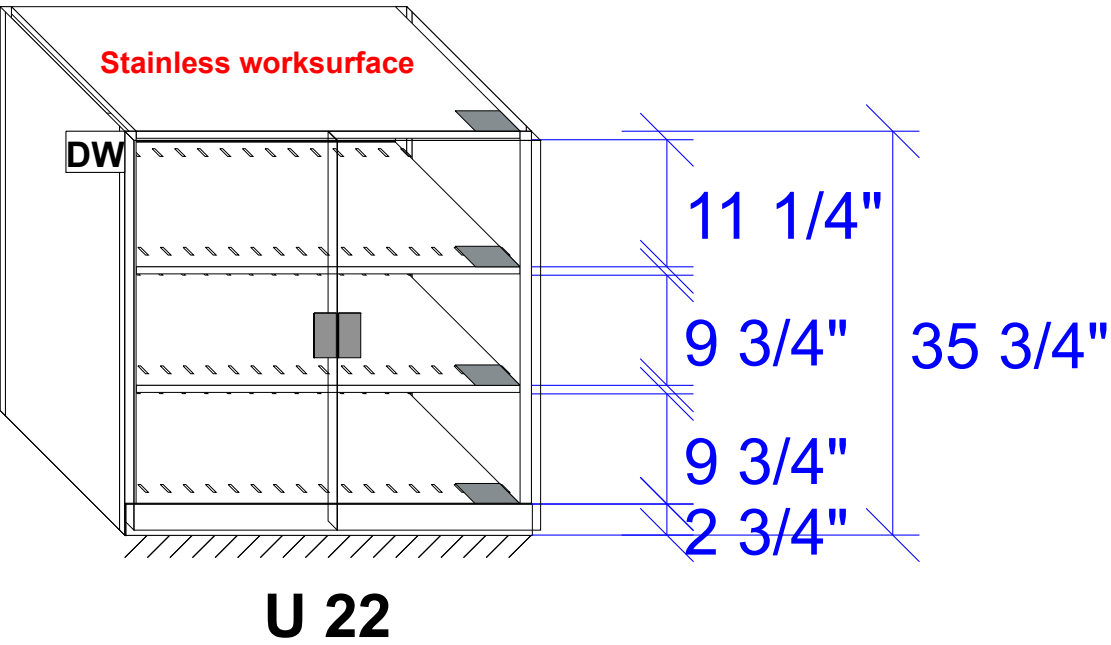
APPROVAL
This drawing Approved By:

Dated _____

H88 1/4"
88 1/4" x 48" x 24"



H35 3/4"
35 3/4" x 36" x 24"



Project Name:
Nixa Police Department

Project #:

APPROVAL
This drawing Approved By: _____

Drawn by:

Dated _____

Date Printed:
03/31/2025

Scale
1:17

Rev level:

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 01 1000 - SUMMARY
PART 1 GENERAL

- 1.1 PROJECT**
- A. Project Name: Nixa Police Department
 - B. Owner's Name: The City of Nixa.
 - C. Additional Project contact information is specified in Section 00 0103 - Project Directory.
 - D. The Project consists of the construction of a new 21,280 sf police facility and associated site elements .
- 1.2 CONTRACT DESCRIPTION**
- A. Contract Type: A single prime contract based on a Stipulated Price.
- 1.3 OWNER OCCUPANCY**
- A. Owner intends to occupy the Project upon Substantial Completion.
 - B. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
 - C. Schedule the Work to accommodate Owner occupancy.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 01 2300 - ALTERNATES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Description of Alternates.

1.2 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.

1.3 SCHEDULE OF ALTERNATES

- A. Alternate No. 01 - Covered Parking:
 - 1. Base Bid Item: No Work.
 - 2. Alternate Item: Provide associated footings and foundations for pre-engineered covered parking structure. Parking structure provided by others including gutters and downspouts and light fixtures. See Section 13 3419 and Civil, Structural, and Electrical Drawings.
- B. Alternate No. 02 - Water Line to Future Building:
 - 1. Base Bid Item: Install electrical service to future building. See Civil Drawings.
 - 2. Alternate Item: Install underground water service to future building. See Civil Drawings.
- C. Alternate No. 03 - Shade Structure at West Patio:
 - 1. Base Bid Item: No Work.
 - 2. Alternate Item: Provide 26'-8" by 17' steel shade structure adjacent to the building at the west patio. Provide associated footings and foundations, gutters and downspouts, and light fixtures. See Civil, Architectural, Structural, and Electrical drawings.
- D. Alternate No. 04 - Track installation:
 - 1. Base Bid Item: Landscaping at track area.
 - 2. Alternate Item: Provide new 1/10th mile asphalt walking track. See Civil drawings.
- E. Alternate No. 05 - Faraday Cage:
 - 1. Base Bid Item: Provide a prefabricated faraday cage in Room 134. Basis of Design: TMC Benchtop Faraday Cage 81-334-06.
 - 2. Alternate Item: Provide faraday cage protection to the walls around Room 134. Provide (1) layer Cyber CX Faraday EMF RF Shielding Copper Fabric Roll under gypsum board at all four walls and ceiling. Provide faraday door and grilles on all lights and ductwork.
- F. Alternate No. 06 - Lightning Protection:
 - 1. Base Bid Item: No Work.
 - 2. Alternate Item: Provide Lightning protection system per section 26 4113.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

ALTERNATES		01 2300 - 1
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 01 2500 - SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Procedural requirements for proposed substitutions.

1.2 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.
 - a. Unavailability.
 - b. Regulatory changes.
 - 2. Substitutions for Convenience: Proposed due to possibility of offering substantial advantage to the Project.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 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 or better for the substitution as for the specified product.
 - 3. Agrees to provide same or equivalent maintenance service and source of replacement parts, as applicable.
 - 4. 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.
 - 5. Waives claims for additional costs or time extension that may subsequently become apparent.
- B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Burden of proof is on proposer.
 - 1. Note explicitly any non-compliant characteristics.
- 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.
 - 2) Owner's, Architect's, and Contractor's names.
 - b. Substitution Request Information:
 - 1) Discrete and consecutive Substitution Request number, and descriptive subject/title.
 - 2) Indication of whether the substitution is for cause or convenience.
 - 3) Issue date.
 - 4) Reference to particular Contract Document(s) specification section number, title, and article/paragraph(s).
 - 5) Description of Substitution.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- 6) Reason why the specified item cannot be provided.
- 7) Differences between proposed substitution and specified item.
- 8) 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.
- 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.
- E. No Substitutions for specific items listed in the Finish and Material Schedule on Sheet A800. These are not to be substituted for design intent coordination.
 - 1. Wood Door - (WD-1 Stain)
 - 2. Wall Base - (RB-2)
 - 3. Wall Protection - (WP-1)
 - 4. Plastic Laminate 3 - (PLAM-3)
 - 5. Corner Guard 2 - (CG-2)
 - 6. Corner Guard 3 - (CG-3)

3.2 SUBSTITUTION PROCEDURES DURING PROCUREMENT

- A. Submittal Time Restrictions:
 - 1. Owner will consider requests for substitutions only if submitted at least 10 days prior to the date for receipt of bids.

3.3 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. 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. When acceptance will require revisions to Contract Documents.
 - 4. When specifications list 'No Substitutions' to specified products.

3.4 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.
 - 1. Architect's decision following review of proposed substitution will be noted on the submitted form.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

3.5 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.

3.6 CLOSEOUT ACTIVITIES

- A. See Section 01 7800 - Closeout Submittals, for closeout submittals.
- B. Include completed Substitution Request Forms as part of the Project record. Include both approved and rejected Requests.

END OF SECTION

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 01 3000 - ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. General administrative requirements.
- B. Electronic document submittal service.
- C. Preconstruction meeting.
- D. Progress meetings.
- E. Construction progress schedule.
- F. Progress photographs.
- G. Submittals for review, information, and project closeout.
- H. Number of copies of submittals.
- I. Requests for Interpretation (RFI) procedures.
- J. Submittal procedures.

1.2 RELATED REQUIREMENTS

- A. Section 01 6000 - Product Requirements: General product requirements.

1.3 GENERAL ADMINISTRATIVE REQUIREMENTS

- A. Comply with requirements of Section 01 7000 - 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. Requests for Interpretation (RFI).
 - 2. Requests for substitution.
 - 3. Shop drawings, product data, and samples.
 - 4. Test and inspection reports.
 - 5. Design data.
 - 6. Manufacturer's instructions and field reports.
 - 7. Applications for payment and change order requests.
 - 8. Progress schedules.
 - 9. Coordination drawings.
 - 10. Correction Punch List and Final Correction Punch List for Substantial Completion.
 - 11. Closeout submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 ELECTRONIC DOCUMENT SUBMITTAL SERVICE

- A. All documents transmitted for purposes of administration of the contract are to be in electronic (PDF or MS Excel) 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 and Architect are required to use this service.

ADMINISTRATIVE REQUIREMENTS		01 3000 - 1
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

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. Submittal Service: Use one of the following:
 1. Submittal Exchange.
 2. Newforma ConstructEx.
 3. ProCore.
 4. Autodesk Build.
- D. Project Closeout: Architect will determine when to terminate the service for the project and is responsible for obtaining archive copies of files for Owner.

3.2 PRECONSTRUCTION MEETING

- A. Schedule meeting after Notice of Award.
- B. Attendance Required:
 1. Owner.
 2. Architect.
 3. Contractor.
 4. Owner's Representative.
- 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. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 6. Scheduling.
- D. 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.

3.3 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the work at maximum monthly intervals.
- B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
- C. Attendance Required:
 1. Contractor.
 2. Owner.
 3. Architect.
 4. Contractor's superintendent.
 5. Owner's Representative.
- D. Inclusion of a link for virtual meetings or a call-in number for remote attendance is mandatory.

ADMINISTRATIVE REQUIREMENTS		01 3000 - 2
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- 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. Review long lead time items.
 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.

3.4 CONSTRUCTION PROGRESS SCHEDULE

- A. Within 10 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. 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 contractors 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.

3.5 PROGRESS PHOTOGRAPHS

- A. Submit photographs with each application for payment, taken not more than 3 days prior to submission of application for payment.
- B. Photography Type: Unedited Digital; electronic files.
- C. Provide photographs of site and construction throughout progress of work, acceptable to Architect.
- D. In addition to periodic, recurring views, take photographs of each of the following events:
 1. Completion of site clearing.
 2. Foundations in progress and upon completion.
 3. Structural framing in progress and upon completion.
 4. Enclosure of building, upon completion.
 5. Final completion, minimum of ten (10) photos.
- E. Views:
 1. Provide unedited 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.
- F. Digital Photographs: 24 bit color, minimum resolution of 1024 by 768, in JPG format; provide files unaltered by photo editing software.

ADMINISTRATIVE REQUIREMENTS		01 3000 - 3
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

1. Delivery Medium: Logged in a separate folder using the Electronic Document Submittal Service.
2. File Naming: Include project identification, date and time of view, and view identification.

3.6 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. 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.
 - b. Do not forward requests which solely require internal coordination between subcontractors.
 2. Prepare using software provided by the Electronic Document Submittal Service.
 3. Combine RFI and its attachments into a single electronic file. PDF format is preferred.
- C. 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 6000 - Product Requirements)
 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.
- D. 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.

ADMINISTRATIVE REQUIREMENTS		01 3000 - 4
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- E. Attachments: Include sketches, coordination drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.
- F. 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.
- G. 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.
- H. 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.

3.7 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 7800 - Closeout Submittals.

3.8 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. Other types indicated.
- B. Submit for Architect's knowledge as contract administrator or for Owner.

3.9 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 7800 - Closeout Submittals:
 - 1. Project record documents.

ADMINISTRATIVE REQUIREMENTS		01 3000 - 5
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

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.

3.10 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. 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.

3.11 SUBMITTAL PROCEDURES

- A. General Requirements:
 1. Use a single transmittal for related items.
 2. Sequentially identify each item using their specification section. For revised submittals use original number and a sequential numerical suffix.
 3. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
 4. Apply Contractor's stamp, signed or initialed and dated 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.
 5. 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.
 - b. For sequential reviews involving Architect's consultants, Owner, or another affected party, allow an additional 7 days.
 - c. For sequential reviews involving approval from authorities having jurisdiction (AHJ), in addition to Architect's approval, allow an additional 30 days.
 6. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.
 7. Provide space for Contractor's, Architect's, and Architect's Consultants' review stamps.
 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. Submit concurrently with related shop drawing submittal.
 4. 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. Do not reproduce Contract Documents to create shop drawings.

ADMINISTRATIVE REQUIREMENTS		01 3000 - 6
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

3. 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. Include with transmittal high-resolution image files of samples to facilitate electronic review and approval. Provide separate submittal page for each item image.

3.12 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. "No Exceptions Taken", or language with same legal meaning.
 - b. "Make Revisions Requested", or language with same legal meaning.
 - 1) At Contractor's option, submit corrected item, with review notations acknowledged and incorporated.
 2. Not Authorizing fabrication, delivery, and installation:
 - a. "Revise and Resubmit".
 - 1) Resubmit revised item, with review notations acknowledged and incorporated.
 - 2) Non-responsive resubmittals may be rejected.
 - b. "Rejected".
 - 1) 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

ADMINISTRATIVE REQUIREMENTS		01 3000 - 7
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 01 4000 - QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Quality assurance.
- B. References and standards.
- C. Testing and inspection agencies and services.
- D. Control of installation.
- E. Mock-ups.
- F. Tolerances.
- G. Manufacturers' field services.
- H. Defect Assessment.

1.2 QUALITY ASSURANCE

- A. Testing Agency Qualifications:
 - 1. Prior to start of work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
 - 2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.
- 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 Missouri.

1.3 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.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 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.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- 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.

3.2 MOCK-UPS

- A. Before installing portions of the Work where mock-ups are required, construct mock-ups in location and size indicated 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.
- B. Accepted mock-ups establish the standard of quality the Architect will use to judge the Work.
- C. 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 and Owner seven (7) working days in advance of dates and times when mock-ups will be constructed.
- E. Tests shall be performed under provisions identified in this section and identified in the respective product specification sections.
- F. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
- G. Obtain Architect's approval of mock-ups before starting work, fabrication, or construction.
 - 1. Architect will issue written comments within five (5) 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.
- H. Accepted mock-ups shall be a comparison standard for the remaining Work.
- I. 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.

3.3 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.

3.4 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.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

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.

3.5 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust, and balance equipment as applicable, and to initiate instructions when necessary.
- B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.6 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

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 01 4050 – REQUIRED SPECIAL INSPECTIONS

GENERAL

Project Name: Nixa Police Station

The following list of Special Inspections, which shall be for the above referenced project. Refer to the Construction Documents for additional information regarding specific testing requirements, frequency of testing, etc. This information is compiled in accordance with chapter 17 of the 2018 International Building Code.

The following list of special inspections applies equally to work performed on the jobsite and work performed in the fabricators shop. Special inspections of work performed in the fabricators shop are not required where the work is done on the premises of a fabricator registered and approved by the Engineer-of-Record to perform such work without special inspection.

SOILS (DIVISION 2 – SITEWORK)

1. Prior to placement of prepared fill, Geotechnical inspector shall determine that the site has been prepared in accordance with the Construction Documents.
2. During fill placement, the Geotechnical inspector shall determine that the material being used and the maximum lift thickness comply with the Construction Documents.
3. The Geotechnical inspector shall determine that the in-place dry density of the compacted fill complies with the Construction Documents.

CONCRETE CONSTRUCTION (SECTION 03 3000)

1. Periodic inspection of reinforcing steel and placement.
2. Inspection of reinforcing steel welding:
 - a. Welding of Reinforcing steel –
 - i. Periodic verification of weld ability of reinforcing steel other than ASTM A706.
 - ii. Continuous inspection of shear reinforcement.
 - iii. Periodic inspection of other reinforcing steel.
3. Continuous inspection of bolts to be installed in concrete prior to and during placement of concrete where allowable loads have been increased.
4. Periodic verification of required design mix.
5. Continuous inspection of sampling of fresh concrete for:
 - a. Slump
 - b. Air content
 - c. Temperature
 - d. Strength Tests
6. Continuous inspection of concrete and shotcrete placement for proper application techniques.
7. Periodic inspection of curing temperature and techniques.
8. Periodic inspection of precast concrete members.

STEEL CONTRUCTION (SECTION 05 1200)

1. Periodic inspection of material verification of high-strength bolts, nuts and washers.
 - a. Identification markings shall conform to ASTM standards specified in the Construction Documents.
 - b. Manufacturer's certificate of compliance required.
2. Inspection of high-strength bolting:
 - a. Periodic inspection of bearing-type connections.
 - b. Continuous inspection of slip-critical connections.
3. Material verification of structural steel:
 - a. Periodic identification of markings to conform to ASTM standards specified in the Construction Documents.
 - b. Manufacturer's certified mill test reports.
4. Material verification of weld filler materials:
 - a. Periodic identification of markings to conform to AWS specification in the Construction Documents.
 - b. Manufacturer's certificate of compliance.
5. Inspection of welding:
 - a. Structural steel-

REQUIRED SPECIAL INSPECTIONS		01 4050 - 1
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- i. Continuous inspection of complete and partial penetration groove welds.
 - ii. Continuous inspection of multi-pass fillet welds.
 - iii. Continuous inspection of fillet welds > 5/16".
 - iv. Periodic inspection of single-pass fillet welds < 5/16".
 - v. Periodic inspection of floor & deck welds.
- b. Welding of Reinforcing steel-
 - i. Periodic verification of weld ability of reinforcing steel other than ASTM A706.
 - ii. Continuous inspection of reinforcing steel resisting flexural and axial forces in intermediate and special moment frames and boundary elements of special reinforced concrete shear walls.
 - iii. Continuous inspection of shear reinforcement.
 - iv. Periodic inspection of other reinforcing steel.
- 6. Inspection of steel frame joint details for compliance with Construction Documents:
 - a. Periodic inspection of bracing and stiffening details.
 - b. Periodic inspection of member locations.
 - c. Periodic inspection of joint details at each connection.
- 7. Periodic inspection shall be performed for each of the following items:
 - a. Welded studs used for composite framing.
 - b. Welded sheet steel for cold-formed steel framing members such as studs and joists.
 - c. Welding of stair and railing components not covered in the list above.

SPRAY-APPLIED FIRE-RESISTANT MATERIALS (SECTION 07 8110)

- 1. The surfaces of structural members to receive spray-applied fire-resistant materials shall be inspected for compliance with the contract documents prior to application of the spray-applied fire-resistant materials.
- 2. Periodic inspection of the spray-applied fire-resistant materials shall verify application is in compliance with the Construction Documents including required density and bond strength.

END OF SECTION 014050

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 01 4339 - MOCKUPS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Administrative and procedural requirements for comprehensive mockups.

1.2 DEFINITIONS

- A. Mockups: Full-size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the work will be judged.

1.3 QUALITY ASSURANCE

- A. Mockups, General: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
 1. Build mockups in location and of size indicated or, if not indicated, as directed by the Architect.
 2. Notify the Architect and the Owner 7 days in advance
 3. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed during the construction at Project.
 4. Demonstrate the proposed range of aesthetic effects and workmanship.
 5. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
 6. Demolish and remove mockups, unless otherwise indicated.
- B. Preinstallation Conference: Conduct conference at Project site.
 1. Review requirements for construction of room mockup, and for protecting and maintaining mockup.
 2. Review procedures for reviewing, changing and approval of room mockup.

1.4 MOCK-UPS

- A. See Section 01 4000 - Quality Requirements for additional requirements.
- B. Construct Exterior Material and Envelope mock-up, 10 feet long by 10 feet tall, indicating exterior wall materials, weeps, flashings, framing, insulation, and weather barrier. Provide at least 2 linear feet of section 1/A350; 2 linear feet of section 1/A352; 3 linear feet of section 1/A351; and 3 linear feet of section 5/A351.
 1. All storefronts can be removed from this mockup and replaced with the adjacent exterior cladding material.
 2. Wall heights shall be condensed / shortened. Contractor shall ensure that all material transitions, horizontal and vertical metal panel joints, flashings, rowlocks and soldier courses are represented in the shortened mockup wall.
 3. The mockup should reflect the project document details and be installed exactly as indicated on the drawings. The purpose of the mockup is not only to review and achieve an approval on materials, but also to ensure the transition of materials results in a good water tight condition.
 4. Locate where directed by Architect.
 5. Mock-up may not remain as part of work.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

PART 2 PRODUCTS

2.1 MATERIALS AND COMPONENTS

- A. Refer to individual sections of the specifications in Divisions 03 through 12 for requirements for materials, systems, products, components and assemblies to be used in the mockups, including mockup testing procedures if applicable.

PART 3 EXECUTION - NOT USED

3.1 INSTALLATION

END OF SECTION

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 01 5000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Temporary utilities.
- B. Temporary sanitary facilities.
- C. Waste removal facilities and services.
- D. Project identification sign.
- E. Field offices.

1.2 TEMPORARY UTILITIES

- A. Provide and pay for all electrical power, lighting, water, heating and cooling, and ventilation required for construction purposes.

1.3 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
- B. Maintain daily in clean and sanitary condition.

1.4 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 and for public access to existing building.
- C. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.5 FENCING

- A. Construction: Contractor's option.
- B. Provide 6 foot high fence around construction site; equip with vehicular and pedestrian gates with locks.

1.6 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.

1.7 PROJECT IDENTIFICATION

- A. Provide project identification sign of design and construction indicated on drawings.
- B. Erect on site at location indicated by Owner.
- C. No other signs are allowed without Owner permission except those required by law.

1.8 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 6 persons.
- C. Locate offices a minimum distance of 30 feet from existing and new structures.

TEMPORARY FACILITIES AND CONTROLS		01 5000 - 1
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

TEMPORARY FACILITIES AND CONTROLS		01 5000 - 2
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 01 6000 - PRODUCT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Transportation, handling, storage and protection.
- B. Product option requirements.
- C. Substitution limitations.
- D. Procedures for Owner-supplied products.
- E. Maintenance materials, including extra materials, spare parts, tools, and software.

1.2 RELATED REQUIREMENTS

- A. Section 01 2500 - Substitution Procedures: Substitutions made during procurement and/or construction phases.
- B. Section 01 4000 - Quality Requirements: Product quality monitoring.
- C. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions: Requirements for VOC-restricted product categories.
- D. Section 01 7419 - Construction Waste Management and Disposal: Waste disposal requirements potentially affecting product selection, packaging and substitutions.

1.3 SUBMITTALS

- A. 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.
- B. 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.
- C. 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

2.1 NEW PRODUCTS

- A. Provide new products unless specifically required or permitted by Contract Documents.
- B. See Section 01 4000 - Quality Requirements, for additional source quality control requirements.
- C. Use of products having any of the following characteristics is not permitted:
 - 1. Made using or containing CFC's or HCFC's.
 - 2. Made of wood from newly cut old growth timber.
 - 3. Containing lead, cadmium, or asbestos.
- D. Where other criteria are met, Contractor shall give preference to products that:
 - 1. If used on interior, have lower emissions, as defined in Section 01 6116.
 - 2. If wet-applied, have lower VOC content, as defined in Section 01 6116.
 - 3. Result in less construction waste. See Section 01 7419

2.2 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.

PRODUCT REQUIREMENTS		01 6000 - 1
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

2.3 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

3.1 SUBSTITUTION LIMITATIONS

- A. See Section 01 2500 - Substitution Procedures.

3.2 OWNER-SUPPLIED PRODUCTS

- A. Owner's Responsibilities:
 1. Arrange for and deliver Owner reviewed shop drawings, product data, and samples, to Contractor.
 2. Arrange and pay for product delivery to site.
 3. On delivery, inspect products jointly with Contractor.
 4. Submit claims for transportation damage and replace damaged, defective, or deficient items.
 5. Arrange for manufacturers' warranties, inspections, and service.
- B. Contractor's Responsibilities:
 1. Review Owner reviewed shop drawings, product data, and samples.
 2. Receive and unload products at site; inspect for completeness or damage jointly with Owner.
 3. Handle, store, install and finish products.
 4. Repair or replace items damaged after receipt.

3.3 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.

3.4 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. See Section 01 7419.
- 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.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- 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

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 01 6116 - VOLATILE ORGANIC COMPOUND (VOC) CONTENT RESTRICTIONS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Requirements for Indoor-Emissions-Restricted products.
- B. Requirements for VOC-Content-Restricted products.

1.2 RELATED REQUIREMENTS

- A. Section 01 3000 - Administrative Requirements: Submittal procedures.

1.3 DEFINITIONS

- A. Indoor-Emissions-Restricted Products: All products in the following product categories, whether specified or not:
 - 1. Interior paints and coatings applied on site.
 - 2. Interior adhesives and sealants applied on site, including flooring adhesives.
 - 3. Flooring.
 - 4. Thermal and acoustical insulation.
- B. VOC-Content-Restricted Products: All products in the following product categories, whether specified or not:
 - 1. Interior paints and coatings applied on site.
 - 2. Interior adhesives and sealants applied on site, including flooring adhesives.
 - 3. Other products when specifically stated in the specifications.
- C. Interior of Building: Anywhere inside the exterior weather barrier.
- D. Adhesives: All gunnable, trowelable, liquid-applied, and aerosol adhesives, whether specified or not; including flooring adhesives, resilient base adhesives, and pipe jointing adhesives.
- E. Sealants: All gunnable, trowelable, and liquid-applied joint sealants and sealant primers, whether specified or not; including firestopping sealants and duct joint sealers.
- F. Inherently Non-Emitting Materials: Products composed wholly of minerals or metals, unless they include organic-based surface coatings, binders, or sealants; and specifically the following:
 - 1. Concrete.
 - 2. Clay brick.
 - 3. Metals that are plated, anodized, or powder-coated.
 - 4. Glass.
 - 5. Ceramics.
 - 6. Solid wood flooring that is unfinished and untreated.

1.4 REFERENCE STANDARDS

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency.
- B. ASTM D3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings.
- C. CARB (SCM) - Suggested Control Measure for Architectural Coatings; California Air Resources Board.
- D. SCAQMD 1113 - South Coast Air Quality Management District Rule No.1113.
- E. SCAQMD 1168 - Adhesive and Sealant Applications.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: For each VOC-restricted product used in the project, submit evidence of compliance.

VOLATILE ORGANIC COMPOUND (VOC) CONTENT RESTRICTIONS		01 6116 - 1
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

1.6 QUALITY ASSURANCE

- A. VOC Content Test Method: 40 CFR 59, Subpart D (EPA Method 24), or ASTM D3960, unless otherwise indicated.
 - 1. Evidence of Compliance: Acceptable types of evidence are:
 - a. Report of laboratory testing performed in accordance with requirements.
 - b. Published product data showing compliance with requirements.
- B. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

PART 2 PRODUCTS

2.1 MATERIALS

- A. All Products: Comply with the most stringent of federal, State, and local requirements, or these specifications.
- B. VOC-Content-Restricted Products: VOC content not greater than required by the following:
 - 1. Adhesives, Including Flooring Adhesives: SCAQMD 1168 Rule.
 - 2. Joint Sealants: SCAQMD 1168 Rule.
 - 3. Paints and Coatings: Each color; most stringent of the following:
 - a. 40 CFR 59, Subpart D.
 - b. SCAQMD 1113 Rule.
 - c. CARB (SCM).

PART 3 EXECUTION

3.1 FIELD QUALITY CONTROL

- A. Owner reserves the right to reject non-compliant products, whether installed or not, and require their removal and replacement with compliant products at no extra cost to Owner.
- B. Additional costs to restore indoor air quality due to installation of non-compliant products will be borne by Contractor.

END OF SECTION

VOLATILE ORGANIC COMPOUND (VOC) CONTENT RESTRICTIONS		01 6116 - 2
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 01 7000 - EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Examination, preparation, and general installation procedures.
- B. Pre-installation meetings.
- C. Cutting and patching.
- D. Surveying for laying out the work.
- E. Cleaning and protection.
- F. Starting of systems and equipment.
- G. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.
- H. General requirements for maintenance service.

1.2 SUBMITTALS

- A. See Section 01 3000 - 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.
 5. Work of Owner or separate Contractor.

1.3 QUALIFICATIONS

- A. For surveying work, employ a land surveyor registered in Missouri and acceptable to Architect. Submit evidence of surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate. Employ only individual(s) trained and experienced in collecting and recording accurate data relevant to ongoing construction activities,
- B. For field engineering, employ a professional engineer of the discipline required for specific service on Project, licensed in Missouri. Employ only individual(s) trained and experienced in establishing and maintaining horizontal and vertical control points necessary for laying out construction work on project of similar size, scope and/or complexity.
- C. For design of temporary shoring and bracing, employ a Professional Engineer experienced in design of this type of work and licensed in Missouri.

1.4 PROJECT CONDITIONS

- A. Use of explosives is not permitted.
- B. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- C. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.
- D. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- E. 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. Minimize amount of bare soil exposed at one time.

EXECUTION AND CLOSEOUT REQUIREMENTS		01 7000 - 1
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

2. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
 3. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
 4. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.
- F. 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.
- G. Pest and Rodent Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.

1.5 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. 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

2.1 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 6000 - Product Requirements.

PART 3 EXECUTION

3.1 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.

EXECUTION AND CLOSEOUT REQUIREMENTS		01 7000 - 2
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- 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.

3.2 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.

3.3 PREINSTALLATION MEETINGS

- A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.
- B. Require attendance of parties directly affecting, or affected by, work of the specific section.
- C. Notify Architect four days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
 - 1. Review conditions of examination, preparation and installation procedures.
 - 2. Review coordination with related work.
- E. 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.

3.4 LAYING OUT THE WORK

- A. Verify locations of survey control points prior to starting work.
- B. Promptly notify Architect of any discrepancies discovered.
- C. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
- D. Promptly report to Architect the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
- E. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect.
- F. Utilize recognized engineering survey practices.
- G. 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.
- H. Periodically verify layouts by same means.
- I. Maintain a complete and accurate log of control and survey work as it progresses.

3.5 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.

3.6 CUTTING AND PATCHING

- A. Whenever possible, execute the work by methods that avoid cutting or patching.

EXECUTION AND CLOSEOUT REQUIREMENTS		01 7000 - 3
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- 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 8400, 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.

3.7 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.

3.8 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. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.9 SYSTEM STARTUP

- A. Coordinate schedule for start-up of various equipment and systems.

EXECUTION AND CLOSEOUT REQUIREMENTS		01 7000 - 4
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- 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.

3.10 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.11 FINAL CLEANING

- A. Execute final cleaning prior to Substantial Completion.
- B. Use cleaning materials that are nonhazardous.
- C. 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.
- D. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- E. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- F. Clean filters of operating equipment.
- G. Clean debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains, and drainage systems.
- H. Clean site; sweep paved areas, rake clean landscaped surfaces.
- I. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.12 CLOSEOUT PROCEDURES

- A. Make submittals that are required by governing or other authorities.
 - 1. Provide copies to Owner.
 - 2. Provide copies to Architect and Owner.
- B. Accompany Project Coordinator 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.

EXECUTION AND CLOSEOUT REQUIREMENTS		01 7000 - 5
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

3.13 MAINTENANCE

- A. Provide service and maintenance of components indicated in specification sections.
- B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.
- C. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
- E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

END OF SECTION

EXECUTION AND CLOSEOUT REQUIREMENTS		01 7000 - 6
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 01 7419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 GENERAL

1.1 WASTE MANAGEMENT REQUIREMENTS

- A. Owner requires that this project generate the least amount of trash and waste possible.
- B. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.
- C. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.
- D. Methods of trash/waste disposal that are not acceptable are:
 - 1. Burning on the project site.
 - 2. Burying on the project site.
 - 3. Dumping or burying on other property, public or private.
 - 4. Other illegal dumping or burying.
- E. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, state and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

1.2 RELATED REQUIREMENTS

- A. Section 01 3000 - Administrative Requirements: Additional requirements for project meetings, reports, submittal procedures, and project documentation.
- B. Section 01 5000 - Temporary Facilities and Controls: Additional requirements related to trash/waste collection and removal facilities and services.
- C. Section 01 6000 - Product Requirements: Waste prevention requirements related to delivery, storage, and handling.
- D. Section 01 7000 - Execution and Closeout Requirements: Trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

1.3 DEFINITIONS

- A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.
- B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.
- C. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.
- D. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity, or reactivity.
- E. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.
- F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.
- G. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.
- H. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- I. Return: To give back reusable items or unused products to vendors for credit.
- J. Reuse: To reuse a construction waste material in some manner on the project site.
- K. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.
- L. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL		01 7419 - 1
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- M. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.
- N. Toxic: Poisonous to humans either immediately or after a long period of exposure.
- O. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.
- P. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

PART 3 EXECUTION

2.1 WASTE MANAGEMENT PROCEDURES

- A. See Section 01 3000 for additional requirements for project meetings, reports, submittal procedures, and project documentation.
- B. See Section 01 5000 for additional requirements related to trash/waste collection and removal facilities and services.
- C. See Section 01 6000 for waste prevention requirements related to delivery, storage, and handling.
- D. See Section 01 7000 for trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

2.2 WASTE MANAGEMENT PLAN IMPLEMENTATION

- A. Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.
- B. Communication: Distribute copies of the Waste Management Plan to job site foreman, each subcontractor, Owner, and Architect.
- C. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.
- D. Meetings: Discuss trash/waste management goals and issues at project meetings.
 - 1. Prebid meeting.
 - 2. Preconstruction meeting.
 - 3. Regular job-site meetings.
- E. Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors and installers.
 - 1. Provide containers as required.
 - 2. Provide adequate space for pick-up and delivery and convenience to subcontractors.
 - 3. Keep recycling and trash/waste bin areas neat and clean and clearly marked in order to avoid contamination of materials.
- F. Hazardous Wastes: Separate, store, and dispose of hazardous wastes according to applicable regulations.
- G. Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.
- H. Reuse of Materials On-Site: Set aside, sort, and protect separated products in preparation for reuse.
- I. Salvage: Set aside, sort, and protect products to be salvaged for reuse off-site.

END OF SECTION

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL		01 7419 - 2
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 01 7800 - CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Project record documents.
- B. Operation and maintenance data.
- C. Warranties and bonds.

1.2 RELATED REQUIREMENTS

- A. Section 01 3000 - 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.

1.3 SUBMITTALS

- A. Project Record Documents: Submit documents to Architect and Owner with claim for final Application for Payment.
- 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.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 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.
- 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.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

3. Changes made by Addenda and modifications.
- F. Record 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. Record drawings shall be completed within 20 days of substantial completion date.

3.2 OPERATION AND MAINTENANCE DATA

- A. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- B. 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.
- C. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.3 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.

END OF SECTION

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 01 9113 - GENERAL COMMISSIONING REQUIREMENTS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- B. OPR and BOD documentation are included by reference for information only.

1.2 SUMMARY

- A. The Commissioning Authority referenced herein is to be hired by the General Contractor. Information regarding the Commissioning Authority is provided for reference only. The contractor shall be responsible for coordinating with and providing field support to the Commissioning Authority for performance of commissioning duties.
- B. Section includes general requirements that apply to implementation of commissioning without regard to specific systems, assemblies, or components.
- C. Commissioning programs are comprised of systematic processes that provide documented confirmation building systems are installed and perform according to the criteria set forth in the design intent and satisfy the owner's operational needs.
- D. The commissioning process does not take away from or reduce the responsibility of the system designers, installing contractors, or general contractor to provide a finished and fully functioning product.
- E. Abbreviations. The following are common abbreviations used in the *Specifications* and in the *Commissioning Plan*. Definitions are found in Section 1.3.
 - 1. A/E – Architect and Design Engineers
 - 2. CxA – Commissioning Authority
 - 3. CC – Controls Contractor
 - 4. CM – Commissioning Manager
 - 5. Cx – Commissioning
 - 6. EC – Electrical Contractor
 - 7. GC – General Contractor
 - 8. MC – Mechanical Contractor
 - 9. OR – Owner's Representative
 - 10. TAB – Test and Balance Contractor
 - 11. Subs – Subcontractors to General
- F. The commissioning activities shall be developed, and customized for the project and the systems to be commissioned, in accordance with applicable industry standards and based on guidelines set forth in ASHRAE 1.1-2007 and current ACG Commissioning Guidelines.
- G. Related Sections:
 - 1. Division 22 Section "Commissioning of Plumbing Systems" for commissioning process activities for HVAC&R & Plumbing systems, assemblies, equipment, and components.
 - 2. Division 23 Section "Commissioning of HVAC Systems" for commissioning process activities for HVAC&R & Plumbing systems, assemblies, equipment, and components.
 - 3. Division 26 Section "Commissioning of Electrical Systems" for commissioning process activities for electrical systems, assemblies, equipment, and components.

1.3 SYSTEMS TO BE COMMISSIONED

- A. The following systems will be commissioned in this project.
 - 1. All Heating, Ventilating, Air Conditioning, and Refrigeration (HVAC&R) systems, including associated Building Automation Control System.

GENERAL COMMISSIONING REQUIREMENTS		01 9113 - 1
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

2. Lighting and Lighting Controls.
3. Domestic Hot Water Systems.
4. Other equipment and systems explicitly identified elsewhere in Contract Documents as requiring commissioning.

1.4 DEFINITIONS

- A. Acceptance Phase. Phase of construction after startup and initial checkout when functional performance tests, O&M documentation review and training occurs.
- B. Approval. Acceptance that a piece of equipment or system has been properly installed and is functioning in the tested modes according to the Contract Documents.
- C. Architect/Engineer (A/E): The prime consultant (architect) and sub-consultants who comprise the design team, generally the HVAC mechanical designer/engineer and the electrical designer/engineer.
- D. BOD: Basis of Design. A document that records concepts, calculations, decisions, and product selections used to meet the OPR and to satisfy applicable regulatory requirements, standards, and guidelines. The document includes both narrative descriptions and lists of individual items that support the design process.
- E. CxA: Commissioning Authority. An independent agent, not otherwise associated with the A/E team members or the Contractor to verify that the installed systems satisfy the owners project requirements. The CxA directs and coordinates the commissioning activities.
- F. Cx Plan: Commissioning Plan: A document that outlines the organization, schedule, allocation of resources, responsibilities of the commissioning team, and documentation requirements of the commissioning process.
- G. Data logging: Monitoring flows, temperatures, humidity, occupancy, sound levels, status, pressures, etc. of equipment and/or systems using stand-alone data loggers separate from the control system.
- H. Deferred Functional Tests : Functional tests that are performed after substantial completion due to partial occupancy, equipment, seasonal requirements, design or other site conditions that disallow the test from being performed.
- I. Deficiency: A condition in the installation or function of a component, piece of equipment or system that is not in compliance with code, industry standard, owner's requirements, or the contract documents.
- J. Design Intent: The dynamic of the design documents that provide the explanation of the ideas, concepts and criteria that are considered to be essential to the owner and success of the project. It is also initially the outcome of the programming and conceptual design phases.
- K. Factory Testing: Testing of equipment at the factory or on-site by factory personnel with an Owner's representative present.
- L. Functional Performance Test (FPT): Test of the dynamic function and operation of completed installations of equipment and systems using manual (direct observation) and/or monitoring methods. Functional testing is the dynamic testing of systems (rather than just components) under full operation. Systems are tested under various modes and are demonstrated to operate through all the control system's sequences of operation and components are verified to be responding as the sequences state. The commissioning authority develops the functional test procedures in a sequential written form, coordinates, oversees and documents the actual testing, which is performed by the installing contractor or vendor. FPTs are performed after pre-functional checklists are completed by the contractor, test and balance is finalized without issues, controls checkout is complete and documented, and equipment and system startup are complete.
- M. General Contractor (GC): The general contractor for this project. May generally refer to all the GC's subcontractors as well. Also referred to as the Contractor, in some contexts.

GENERAL COMMISSIONING REQUIREMENTS		01 9113 - 2
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- N. Monitoring: The recording of parameters (flow, temperature, current, status, pressure, etc.) of equipment operation using dataloggers or the trending capabilities of control systems.
- O. Non-Compliance: See Deficiency.
- P. Non-Conformance: See Deficiency.
- Q. OPR: Owner's Project Requirements. A document that details the functional requirements of a project and the expectations of how it will be used and operated. These include Project goals, measurable performance criteria, cost considerations, benchmarks, success criteria, and supporting information.
- R. Pre-functional Checklist: A record of equipment installation provided by the CxA to the Sub. Equipment checklists are primarily static inspections to verify that installation is in compliance with project documents and document procedures to prepare the equipment or system for initial operation. Pre-functional checklist items may include simple testing of the function of a component, a piece of equipment or system. Equipment checklists augment and are to be combined with the installing contractor's quality assurance means and methods and the manufacturer's start-up checklist. The Pre-functional Checklists shall be completed by the installing contractors, reviewed and signed by the GC, and submitted to the CxA prior to functional testing. Pre-Functional Checklist sign offs and entries are to follow and remain current with construction progress.
- S. Sampling: Functionally testing only a fraction of the total number of identical or near identical pieces of equipment.
- T. Seasonal Performance Tests: FPTs that are deferred until the system(s) will experience conditions closer to their design conditions.
- U. Systems, Subsystems, Equipment, and Components: Where these terms are used together or separately, they shall mean "as-built" systems, subsystems, equipment, and components.
- V. Startup: The initial starting or activating of dynamic equipment, including executing pre-functional checklists.
- W. Subcontractors: The subcontractors to the GC who provide and install building components and systems.
- X. Trending: Monitoring using the building control system.

1.5 COORDINATION

- A. **Commissioning Team**. The members of the commissioning team consist of the Commissioning Authority (CxA), the Owner's Representative (OR), assigns of the General Contractor (GC or Contractor), the architect and design engineers (A/E), the applicable Mechanical Contractors (MC), [HVAC & Plumbing], the Electrical Contractor (EC), the TAB representative, the Building Automation Controls Contractor (CC), any other necessary installing subcontractors or suppliers of equipment.
- B. **Management**. The CxA directs and coordinates the commissioning activities and reports to the OR. All members work together to fulfill their contracted responsibilities and meet the objectives of the Contract Documents.
- C. **Scheduling**. The CxA will work with the GC according to established protocols to schedule the commissioning activities. The CxA will provide sufficient notice to the GC for scheduling commissioning activities. The GC will integrate all commissioning activities into the master schedule. All parties will address scheduling problems and make necessary notifications in a timely manner in order to expedite the commissioning process.
- D. The CxA will provide the initial schedule of primary commissioning events at the commissioning kickoff meeting. The *Commissioning Plan* provides a format for this schedule. As construction progresses all necessary additional detailed schedules are developed by the CxA. The Commissioning Plan also provides a format for detailed schedules.

GENERAL COMMISSIONING REQUIREMENTS		01 9113 - 3
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

1.6 COMMISSIONING PROCESS

- A. **Commissioning Plan.** The commissioning plan is developed and updated by the commissioning authority and provides guidance in the execution of the commissioning process. The *specifications* will take precedence over the *Commissioning Plan*.
- B. **Commissioning Process.** The following narrative provides a brief overview of the typical commissioning tasks during construction and the general order in which they occur.
 1. The Commissioning Plan will be presented and discussed during the Commissioning Kickoff Meeting. The meeting will be conducted by the CxA and will review the commissioning process, commissioning schedule, and team member responsibilities.
 2. Additional commissioning meetings will be required throughout construction, scheduled by the CxA with necessary parties attending, to plan, scope, coordinate, schedule future activities and resolve issues.
 3. The CxA shall conduct a review of all necessary related design documents and amended directives prior to equipment installation and acceptance.
 4. Submittals and associated equipment documentation is submitted to the CxA. The CxA shall review contractor submittals applicable to systems being commissioned for compliance with the project specifications, OPR and BOD. The review shall be concurrent to the A/E submittal review.
 5. Pre-functional Checklists are provided by the CxA for each piece of equipment and/or system to be commissioned. The Subs, as directed by the CxA, under their own incentive, execute and document the pre-functional checklists and perform startup and initial checkout. The GC shall review the completed checklists, sign to acknowledge to the best of their ability the checklists are complete, and provide to the CxA. The CxA documents that the checklists and startup were completed according to the approved plans. This may include the CxA witnessing start-up of selected equipment.
 6. The CxA develops specific equipment and system functional performance test procedures. The Subs shall review the procedures and provide comment within two (2) weeks after issuance.
 7. The functional test procedures are executed by the Subs, under the direction of, and documented by the CxA. Required participants for functional testing will be provided in advance by the CxA on each functional test procedure test form.
 8. Items of non-compliance in material, installation, setup, and/or operation will be documented by the CxA and shall be corrected by the responsible subcontractor and at their expense. Additional efforts and any additional cost associated with non-conformance shall be subject to terms outlined in Section 3.6 B (Non-Conformance).
 9. Commissioning functional testing shall be completed as a requirement for project Substantial Completion.
 10. The CxA will verify that the requirements for training operating personnel and building occupants have been completed.

1.7 COMMISSIONING TEAM

- A. Members appointed by Contractor(s):
 1. CxA: The designated person, company, or entity that plans, schedules, and coordinates the commissioning team to implement the commissioning process. The General Contractor will engage the CxA under the general contract.
 2. Individuals, each having the authority to act on behalf of the entity he or she represents, explicitly organized to implement the commissioning process through coordinated action. The commissioning team shall consist of, but not be limited to, representatives of the Contractor, including Project superintendent and subcontractors, installers, suppliers, and specialists deemed appropriate by the CxA.

GENERAL COMMISSIONING REQUIREMENTS		01 9113 - 4
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- B. Members appointed by the Owner:
 - 1. Representatives of the facility user and operation and maintenance personnel.
 - 2. Architect and engineering design professionals.

1.8 OWNER'S RESPO

- A. Provide all appropriate project documentation to the CxA and Contractor for information and use.
- B. Assign operation and maintenance personnel and schedule them to participate in commissioning team activities.
- C. Follow the Commissioning Plan.
- D. Attend commissioning kickoff meeting and additional meetings as necessary.

1.9 ARCHITECT / ENGINEERS (A/E) RESPONSIBILITIES

- A. The AE shall participate in and perform commissioning process activities including, but not limited to, the following:
 - 1. Attend the commissioning kickoff meeting and selected commissioning team meetings.
 - 2. Perform normal submittal review, construction observation, as-built drawing preparation, O&M manual preparation, etc., as contracted.
 - 3. Provide as necessary the Basis of Design (BOD), Owner's Project Requirements (OPR) documentation and any design narrative and sequence documentation requested by the CxA. The designers shall assist (along with the contractors) in clarifying the operation and control of commissioned equipment in areas where the specifications, control drawings or equipment documentation may not be sufficient for writing detailed testing procedures.
 - 4. Provide written response to each commissioning design review comment, submittal review comment, and design-related construction phase deficiency within two (2) weeks of issuance by the CxA.
 - 5. Participate in the resolution of non-compliance, non-conformance and design deficiencies identified during commissioning during design, construction, acceptance, and warranty-period commissioning.

1.10 GENERAL CONTRACTOR'S RESPONSIBILITIES

- A. Contractor shall assign representatives with expertise and authority to act on its behalf and shall schedule them to participate in, and perform commissioning process activities including, but not limited to, the following:
 - 1. Facilitate the coordination of the commissioning work by the CxA and ensure that commissioning activities are being scheduled into the master schedule.
 - 2. Follow the Commissioning Plan.
 - 3. Attend commissioning kickoff meetings and additional meetings as necessary. Assist in coordination and scheduling of meetings as requested by the CxA.
 - 4. Review and approve the final *Commissioning Plan*.
 - 5. Furnish a copy of all construction documents, addenda, requests for information, change orders and approved submittals and shop drawings related to commissioned equipment to the CxA.
 - 6. Review and approve the functional performance test procedures submitted by the CxA within two (2) weeks of issuance by the CxA.
 - 7. With the assistance of the subcontractors, coordinate and ensure that the commissioning process functional test procedures are executed for each system. Coordinate retesting as required.
 - 8. Review commissioning progress and deficiency reports. Evaluate performance deficiencies identified in test reports and, in collaboration with entity responsible for system and equipment installation, recommend corrective action.
 - 9. Coordinate the resolution of non-compliance and design deficiencies identified in all phases of commissioning. Review commissioning progress and deficiency reports and provide written

GENERAL COMMISSIONING REQUIREMENTS		01 9113 - 5
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

response to each issue within two (2) weeks of issuance by the CxA and weekly until the issue is resolved.

10. Upon completion of equipment installation and within one (1) week of scheduled commissioning functional testing, review, approve, and sign the completed Pre-functional Checklists and provide copies to the CxA for each piece of equipment and/or system to be commissioned. The Subs, under their own direction, execute and document the pre-functional checklists and perform startup and initial checkout.
11. Collect and review Training Agendas and provide copies to the CxA for review. Provide the Training Plan and coordinate the training of Owner personnel.
12. Within two (2) weeks of scheduled commissioning functional testing, in coordination with the controls contractor, provide a list of final settings, setpoints, ranges, schedules, and / or trend logs required by the CxA.

1.11 SUB CONTRACTOR'S RESPONSIBILITIES

- A. Contractor shall assign representatives with expertise and authority to act on its behalf and shall schedule them to participate in and perform commissioning process activities including, but not limited to, the following:
 1. Follow the Commissioning Plan.
 2. Attend commissioning kickoff meeting and additional commissioning meetings.
 3. Accept full responsibility, complete and sign each Commissioning Pre-functional Checklist for systems to be commissioned as provided by the CxA at least one (1) week prior to functional testing.
 4. Perform commissioning functional test procedures under the direction of the CxA.
 5. Review and respond to each Commissioning Issue as identified on commissioning progress and deficiency reports. Where responsible for system and equipment installation, recommend corrective action for all issues identified. Provide a written response to each issue within one (1) weeks of issuance by the CxA and weekly until the issue is resolved.
 6. Execute the resolution of non-compliance and deficiencies identified. Perform retesting as required.
 7. Include all special tools and instruments (only available from vendor, specific to a piece of equipment) required for testing equipment according to these Contract Documents in the base bid price to the Contractor, except for stand-alone data logging equipment that may be used by the CxA.
 8. Provide information requested by CxA regarding equipment sequence of operation and testing procedures.
 9. Provide equipment Training Agenda for each system to be commissioned within six (6) weeks of submittal acceptance. Conduct operations & maintenance training per project specifications.

1.12 TEMPERATURE CONTROLS CONTRACTOR'S RESPONSIBILITIES

- A. Contractor shall assign representatives with expertise and authority to act on its behalf and shall schedule them to participate in and perform commissioning process activities including, but not limited to, the following:
 1. Follow the Commissioning Plan.
 2. Attend commissioning kickoff meeting and additional commissioning meetings.
 3. Complete and sign each Commissioning Pre-functional Checklist for systems to be commissioned as provided by the CxA at least one (1) week prior to functional testing.
 4. Perform commissioning functional test procedures under the direction of the CxA.
 5. Review and respond to each Commissioning Issue as identified on commissioning progress and deficiency reports. Where responsible for system and equipment installation, recommend

GENERAL COMMISSIONING REQUIREMENTS		01 9113 - 6
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

corrective action for all issues identified. Provide a written response to each issue within one (1) weeks of issuance by the CxA and weekly until the issue is resolved.

6. Execute the resolution of non-compliance and deficiencies identified. Perform retesting as required.
7. Provide information requested by CxA regarding equipment sequence of operation and testing procedures.
8. Provide equipment Training Agenda for system within six (6) weeks of submittal acceptance. Conduct operations & maintenance training per project specifications.
- B. The Controls Contractor shall establish the necessary BAS user interface in the building for use during controls programming, checkout, and commissioning.
- C. Prior to commissioning Functional Performance Testing, the Contractor is required to provide Point-to-Point checkout documentation, loop tuning documentation and constants for each loop of the building systems, and a record of sensor field calibration. Any documentation that is modified after submission shall be recorded and resent as As-Built records.
- D. A sensor calibration table listing the referencing the location and the frequency at which calibration should be performed for all sensors and actuators, separated by system, sub-system, and type. The calibration requirements shall be submitted both in the O&M manuals and separately in a standalone document containing all sensors for inclusion in the commissioning documentation.
- E. The Controls Contractor shall provide graphical trending through the DDC control system of systems being commissioned. Trending requirements will be dictated by the CxA and included with the Functional Performance Test Procedures and/or determined while execution of testing. The trend log points, sampling rate, graphical plot configuration, and duration will be dictated by the CxA. At anytime during the Commissioning Process the CxA may dictate changes to aspects of trending as deemed necessary for proper system analysis. No changes in trending requirements will be a basis for additional service change orders by the Contractor. The Controls Contractor shall be responsible for producing data and graphical representations of the trended DDC points that show each system operating properly during steady state conditions as well as during the functional tests. The Controls Contractor is required to provide, but not limited to, the following trend requirements and trend submissions:
 1. The Controls Contractor shall submit pre-testing trends one week in advance of functional testing for each system. Any pre-test trend analysis comments generated by the Commissioning Team will be addressed and resolved by the Contractor prior to the execution of Functional Performance Testing.
 2. The Controls Contractor shall submit trends for the duration of Functional Testing.
 3. The Controls Contractor shall submit post-testing trends as requested by the CxA to verify operation, seasonal operation, and/or deficiency resolution.

1.13 CXA'S RESPONSIBILITIES

- A. The CxA is not responsible for design concept, design criteria, compliance with codes, design or general construction scheduling, cost estimating, or construction management. The CxA may assist with problem-solving non-conformance or deficiencies. The primary role of the CxA is to develop and coordinate the execution of a testing plan, observe and document performance that systems are functioning in accordance with the documented design intent and in accordance with the Contract Documents. The Contractors will provide all tools or the use of tools to start, check-out and functionally test equipment and systems, except for specified testing with portable data-loggers, which shall be supplied and installed as necessary by the CxA.
 1. Coordinate and direct the commissioning activities using consistent protocols and forms, centralized documentation, clear and regular communications and consultations with all necessary parties, frequently updated timelines and schedules and technical expertise.

GENERAL COMMISSIONING REQUIREMENTS		01 9113 - 7
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

2. Create, execute, and revise, as necessary, the Commissioning Plan.
3. Coordinate the commissioning work and ensure that commissioning activities are being scheduled into the master schedule.
4. Review the owner's project requirements and basis of design documents for clarity and completeness.
5. Plan and conduct a commissioning kickoff meeting and other commissioning meetings. Provide meeting minutes within one (1) week of meeting date.
6. Review and comment on normal Contractor submittals applicable to systems being commissioned for overall clarity and completeness and that submitted equipment and materials are coordinated with the intent of the project plans and specifications. These commissioning reviews shall be concurrent with the A/E reviews.
7. Assist in the resolution of issues identified during the commissioning process. Maintain a master deficiency and resolution log (Issues Log). Provide the commissioning team with written progress reports and test results with recommended actions.
8. Write and distribute Pre-functional Checklists and Functional Test Procedures. Incorporate comments from the commissioning team as required.
9. Perform site visits, as necessary, to observe component and system installations. Attend selected planning and job-site meetings to obtain information on construction progress. Review construction meeting minutes for revisions/substitutions relating to the commissioning process. Assist in resolving any discrepancies.
10. Review and approve completed Pre-functional Checklists through onsite observation and review of contractor reports and startup documentation.
11. Analyze any functional performance trend logs and monitoring data to verify performance.
12. Coordinate, witness and approve manual functional performance tests performed by installing contractors. Coordinate retesting as necessary until satisfactory performance is achieved.
13. Verify that the training requirements for operating personnel and building occupants have been completed. Review training agendas and training plan prior to onsite operations and maintenance training.
14. Provide a Final Commissioning Report.

1.14 COMMISSIONING DOCUMENTATION

- A. Provide the following information to the CxA for inclusion in the commissioning plan:
 1. Plan for delivery and review of submittals, systems manuals, and other documents and reports.
 2. Process and schedule for completing construction checklists and manufacturer's prestart and startup checklists for HVAC&R systems, assemblies, equipment, and components to be verified and tested.
 3. Certificate of completion certifying that installation, prestart checks, and startup procedures have been completed.
 4. Certificate of readiness certifying that HVAC&R systems, subsystems, equipment, and associated controls are ready for testing.
 5. Test and inspection reports and certificates.
 6. Corrective action documents.
 7. Verification of testing, adjusting, and balancing reports.

PART 2 PRODUCTS

2.1 TEST EQUIPMENT

- A. All standard testing equipment required to perform startup and initial checkout and required functional performance testing shall be provided by the Division contractor for the equipment being tested. For

GENERAL COMMISSIONING REQUIREMENTS		01 9113 - 8
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

example, the mechanical contractor of Division 23 shall ultimately be responsible for all standard testing equipment for the HVAC system and controls system in Division 23, except for equipment specific to and used by TAB in their commissioning responsibilities. The appropriate two-way communication means required during testing procedures shall be determined through coordination and input from the owner as not to interfere with any ongoing surrounding operations.

- B. All testing equipment shall be of sufficient quality and accuracy to test and/or measure system performance with the tolerances specified in the *Specifications*. If not otherwise noted, the following minimum requirements apply: Temperature sensors and digital thermometers shall have a certified calibration within the past year to an accuracy of 0.5°F and a resolution of [+ or - 0.1°F]. Pressure sensors shall have an accuracy of + or - 2.0% of the value range being measured (not full range of meter) and have been calibrated within the last year. All equipment shall be calibrated according to the manufacturer's recommended intervals and when dropped or damaged. Calibration tags shall be affixed or certificates readily available.

PART 3 EXECUTION

3.1 MEETINGS

- A. Commissioning Kickoff Meeting. The CxA will schedule, plan and conduct a commissioning kickoff meeting with the entire commissioning team in attendance. The Commissioning Plan shall be reviewed and discussed. Meeting minutes will be distributed to all parties by the CxA.
- B. Miscellaneous Commissioning Meetings. The commissioning team shall attend additional commissioning meetings as planned and conducted by the CxA. These meetings will cover coordination, commissioning scheduling, planning issues, and deficiency resolution. For efficiency, commissioning meetings shall be coordinated, as practical and possible to coincide with other meetings such as routine progress meetings.

3.2 REPORTING

- A. The CxA will provide regular reports to the GC and the OR, with increasing frequency as construction and commissioning progresses, including keeping the commissioning team apprised of commissioning progress and scheduling changes through memos, progress reports, test reports, and meeting minutes.
- B. The CxA shall provide the Commissioning Issues Log and updates to the commissioning team.
- C. A Final Commissioning Report by the CxA will be provided to the OR, focusing on documenting the executed commissioning process. All acquired commissioning documentation, logs, minutes, reports, deficiency lists, communications, findings, unresolved issues, etc., will be included with the Final Commissioning Report. Completed pre-functional checklists and executed functional tests will also be included.
- D. The final Operations & Maintenance Manuals for the commissioned systems shall be provided to the CxA for review. The CxA's review of the completed O&M manuals shall verify content is complete, sufficient, well organized and suitable for owner use.

3.3 SUBMITTALS

- A. The commissioning process requires Submittal review simultaneously with engineering review for all equipment associated with systems to be commissioned.
- B. The Commissioning authority will review and provide comment on submittals related to the commissioned equipment for general conformance to the Contract Documents as it relates to the commissioning process. Commissioning reviews are primarily focused to confirm clarity and completeness of submittal packages. The Commissioning authority will formally notify the GC, Owner Representative, or A/E appropriately, regarding any items of concern. Items of concern may include but not be limited to, additional information needed, non-conformance, contradictions and/or lack of

GENERAL COMMISSIONING REQUIREMENTS		01 9113 - 9
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

coordination between equipment and systems as well as any concerns with continued operations and maintainability.

- C. The final approval of submittals are the responsibility of the Design Team, though the CxA will review and offer comment and recommendation.
- D. Contractor's responsibility for deviations in submittals from requirements of the Contract Documents is not relieved by the Commissioning Authority's review.

3.4 PRE-FUNCTIONAL CHECKLISTS

- A. The following procedures apply to all equipment to be commissioned, according to Section 1.3, Systems to be Commissioned.
- B. Equipment pre-functional checklists will be created by the CxA and distributed to the commissioning team for completion. No sampling strategies are used. The completion of the form with contractor signature ensures that functional performance testing may proceed without unnecessary delays. Equipment startup reports and associated required contractor test reports shall be attached to the associated pre-functional checklists. The completed pre-functional checklists shall be submitted to the CxA no later than one (1) week in advance of functional testing.
 - 1. When formally signing off on or, confirming checklist items, signatures may be required of other Subs for verification of completion of their work.
 - 2. The CxA shall verify the sub-contractor's checklists procedures at his/her discretion as deemed practical and necessary.
 - 3. The Subs and vendors shall execute startup and provide the CxA with a signed and dated copy of the completed start-up and pre-functional tests and checklists.
 - 4. Only individuals that have direct knowledge and witnessed that a line-item task on the pre-functional checklist was performed shall initial or check that item off.
 - 5. The Subs shall clearly list any outstanding items of the initial start-up and pre-functional procedures that were not completed successfully, at the bottom of the Pre-functional Checklist form or on an attached sheet.
 - 6. The installing Subs or vendors shall correct all areas that are deficient or incomplete in the checklists and tests in a timely manner and shall notify the CxA as soon as outstanding items have been corrected and resubmit an updated start-up report and a Statement of Correction on the original non-compliance report.
 - 7. Items left incomplete, which later cause deficiencies or delays during functional testing may result in back charges to the responsible party.

3.5 FUNCTIONAL PERFORMANCE TESTING

- A. This sub-section applies to all commissioning functional testing for all divisions.
- B. The general list of equipment to be commissioned is found in Section 019100, Part 1.3.
- C. Coordination and Scheduling. The Subs shall provide sufficient notice to the CxA regarding their completion schedule for the equipment checklists and startup of all equipment and systems. The CxA will schedule functional tests through the GC and affected Subs. The CxA shall direct, witness and document the functional testing of all equipment and systems. The Subs shall execute the tests.
 - 1. Functional testing is conducted after equipment testing and startup has been satisfactorily completed.
 - 2. Functional testing is intended to occur one (1) week after completed Pre-functional Checklists are submitted to the CxA.
 - 3. The air balancing and water balancing must be completed, and the Test & Balance report reviewed and approved by the engineer prior to any HVAC functional testing by the CxA.

GENERAL COMMISSIONING REQUIREMENTS		01 9113 - 10
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

4. Testing proceeds from components to subsystems to systems. When the proper performance of all interacting individual systems has been achieved, the interface or coordinated responses between systems is checked.
- D. Execution of Functional Testing. The CxA shall direct, witness, and document Functional Testing. Each system should be operated through all modes of operation (seasonal, occupied, unoccupied, warm-up, cool-down, part- and full-load) where there is a specified system response. Verifying each sequence in the sequences of operation is required. Sample methods may be permitted as described in the Commissioning Plan.
- E. Deficiency Resolution: The CxA will document and recommend solutions to issues discovered during equipment installation and functional testing, however the burden of responsibility to solve, correct and demonstrate resolution of identified issues is with the GC, Subs and A/E.

3.6 DOCUMENTATION, NON-CONFORMANCE AND APPROVAL OF

- A. **Documentation.** The CxA shall witness and document the results of all functional performance tests using the specific procedural forms developed for that purpose. Prior to testing, these forms are provided to the GC for review and approval and to the Subs for review. The CxA will include the filled out forms in the O&M manuals.
- B. **Non-Conformance:**
 1. The CxA will record the results of the functional test on the procedure or test form. All deficiencies or non-conformance issues shall be noted and reported to the GC on a standard non-compliance form. This form will be labeled the "Issues/Resolutions Log" or I/R Log.
 2. Corrections of minor deficiencies identified may be made during the tests at the discretion of the CxA. In such cases the deficiency and resolution will be documented on the procedure form.
 3. Every effort will be made to expedite the testing process and minimize unnecessary delays, while not compromising the integrity of the procedures. However, the CxA will not be pressured into overlooking deficient work or loosening acceptance criteria to satisfy scheduling or cost issues, unless there is an overriding reason to do so at the request of the OR.
 4. As tests progress and a deficiency is identified, the CxA discusses the issue with the executing contractor.
 - a. When there is no dispute on the deficiency and the Sub accepts responsibility to correct it:
 - 1) The CxA documents the deficiency and the Sub's response and intentions, and they go on to another test or sequence. After the day's work, the CxA submits the non-compliance reports to the GC for signature, if required. A copy is provided to the Sub, OR & A/E. The Sub corrects the deficiency, signs the statement of correction at the bottom of the non-compliance form certifying that the equipment is ready to be retested and sends it back to the CxA.
 - 2) The CxA reschedules the test, and the test is repeated.
 - b. If there is a dispute about a deficiency, regarding whether it is a deficiency or who is responsible:
 - 1) The deficiency shall be documented on the non-compliance form with the Sub's response and a copy given to the GC and to the Sub representative assumed to be responsible. The OR and A/E will also be copied.
 - 2) Resolutions are made at the lowest management level possible. Other parties are brought into the discussions as needed. Final interpretive authority is with the A/E. Final acceptance authority is with the Project Manager.
 - 3) The CxA documents the resolution process.
 - 4) Once the interpretation and resolution have been decided, the appropriate party corrects the deficiency, signs the statement of correction on the non-compliance form

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

and provides it to the CxA. The CxA reschedules the test, and the test is repeated until satisfactory performance is achieved.

5. Cost of Retesting:
 - a. The cost for the *Sub* to retest a pre-functional or functional test, if they are responsible for the deficiency, shall be theirs. If they are not responsible, any cost recovery for retesting costs shall be negotiated with the general contractor.
 - b. For a deficiency identified, not related to any pre-functional checklist or start-up fault, the following shall apply: The CxA will direct the retesting of the equipment once at no "charge" to the contractor for their time. However, the CxA's and contractor's time for a second retest will be charged to the GC, who may choose to recover costs from the responsible Sub.
 - c. The time for the CxA to direct any retesting required because a specific *pre-functional* checklist or start-up test item, reported to have been successfully completed, but determined during functional testing to be faulty, will be back charged to the GC, who may choose to recover costs from the party responsible for executing the faulty pre-functional test.
6. The Contractor shall respond in writing to the CxA and GC at least as often as commissioning meetings are being scheduled concerning the status of each apparent outstanding discrepancy identified during commissioning. Discussion shall cover explanations of any disagreements and proposals for their resolution.
7. Any required retesting by any contractor shall not be considered a justified reason for a claim of delay or for a time extension by the prime contractor.
- C. **Failure Due to Manufacturer Defect.** If 10% of, or three (whichever is greater) identical pieces (size alone does not constitute a difference) of equipment fail to perform to the Contract Documents (mechanically or substantively) due to manufacturing defect, not allowing it to meet its submitted performance specification, all identical units may be considered unacceptable. In such case, the Contractor and/or manufacturer shall replace or repair all identical items, at their expense and extend the warranty accordingly, if the original equipment warranty had begun. The replacement/repair work shall proceed with reasonable speed beginning within one week from when parts can be obtained
- D. **Successful Functional Testing.** The CxA notes each satisfactorily demonstrated function on the test form. Formal approval of the functional test is made later after review by the CxA, owner's representative, and by the GC, if necessary. The CxA recommends acceptance of each test to the OR as noted on the functional performance test form. The OR gives final approval on each test using the same form, providing a signed copy to the CxA and the Contractor.

3.7 TRAINING OF OWNER PERSONNEL

- A. The general contractor shall be responsible for training coordination and scheduling and ultimately for ensuring that training is completed.
- B. The CxA shall be responsible for reviewing and approving the content and adequacy of the training of Owner personnel for commissioned equipment.
 1. Each Sub and vendor responsible for training will submit a written training agenda to the CxA for review and approval prior to training. The agenda will cover the following elements:
 - a. Equipment (included in training)
 - b. Intended audience
 - c. Location of training
 - d. Objectives
 - e. Subjects covered (description, duration of discussion, special methods, etc.)
 - 1) Equipment Description
 - 2) O&M Manual Review

GENERAL COMMISSIONING REQUIREMENTS		01 9113 - 12
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- 3) Safety and Emergency Shutoff
- 4) Disable/Enable, General Sequence of Operation, and Typical Operation
- 5) Current Setpoint and Operating Parameters
- 6) Demonstration of Alarms and Safeties
- 7) Troubleshooting and Diagnostics
- 8) General Maintenance Procedures
- f. Duration of training on each subject
- g. Methods (classroom lecture, video, site walk-through, actual operational demonstrations, written handouts, etc.)
- h. Instructor and qualifications and contact information.
- i. For the primary HVAC equipment, the Controls Contractor shall provide a short discussion of the control of the equipment during the mechanical or electrical training conducted by others.

3.8 WRITTEN WORK PRODUCTS

- A. The commissioning process generates a number of written work products described in various parts of the *Specifications*. The *Commissioning Plan* lists all the formal written work products, describes briefly their contents, who is responsible to create them, their due dates, who receives and approves them and the location of the specification to create them. In summary, the written products are:

	Product:	Developed By:
1	Final Commissioning Plan	CxA
2	Cx Meeting Minutes	CxA
3	Commissioning Schedules	CxA with CG
4	Sequence Clarifications	Subs and A/E as needed
5	Pre-functional Checklists	CxA (completed by installing contractors and verified complete by general contractors)
6	Equipment Startup and Checkout	Subs
7	Test and Balance Report	TAB
8	Issues / Resolutions Log (deficiencies)	CxA (responses required by Subs and GC)
9	Functional Test Forms	CxA (executed by Subs; documented by CxA)
10	O&M Manuals	Subs
11	O&M Training Agendas	Subs
12	Final Commissioning Report	CxA

END OF SECTION

GENERAL COMMISSIONING REQUIREMENTS		01 9113 - 13
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 03 0516 - UNDERSLAB VAPOR BARRIER

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Sheet vapor barrier under concrete slabs on grade.

1.2 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.
- B. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.

1.3 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit manufacturers' data on manufactured products.
- C. Manufacturer's Installation Instructions: Indicate installation procedures and interface required with adjacent construction.

PART 2 PRODUCTS

2.1 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. Basis of Design:
 - a. Stego Industries LLC; Stego Wrap Vapor Barrier (15-mil): www.stegoindustries.com/#sle.
 - b. Substitutions: See Section 01 6000 - 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

3.1 EXAMINATION

- A. Verify that surface over which vapor barrier is to be installed is complete and ready before proceeding with installation of vapor barrier.

3.2 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

UNDERSLAB VAPOR BARRIER - STEGO		03 0516 - 1
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 03 3000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section specifies cast-in place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:
 - 1. Foundations / Footings.
 - 2. Slabs-on-grade.
 - 3. Elevated slabs.
 - 4. Equipment pads and bases.
- B. Related Sections include the following:
 - 1. Division 2 Section "Earthwork" for drainage fill under slabs-on-grade.
 - 2. Division 2 Section "Cement Concrete Pavement" for concrete pavement and walks.
 - 3. Division 2 Section "Decorative Cement Concrete Pavement" for decorative concrete pavement and walks.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
 - 1. Indicate amounts of mixing water to be withheld for later addition at Project site.
- C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.
- D. Formwork Shop Drawings: Prepared by or under the supervision of a qualified professional engineer detailing fabrication, assembly, and support of formwork.
 - 1. Shoring and Reshoring: Indicate proposed schedule and sequence of stripping formwork, shoring removal, and installing and removing reshoring.
- E. Welding certificates.
- F. Qualification Data: For Installer.
- G. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:
 - 1. Aggregates. Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.
- H. Material Certificates: For each of the following, signed by manufacturers:
 - 1. Cementitious materials.
 - 2. Admixtures.
 - 3. Form materials and form-release agents.
 - 4. Steel reinforcement and accessories.
 - 5. Waterstops.
 - 6. Curing compounds.
 - 7. Floor and slab treatments.
 - 8. Bonding agents.
 - 9. Adhesives.
 - 10. Vapor retarders.
 - 11. Semirigid joint filler.
 - 12. Joint-filler strips.
 - 13. Repair materials.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- I. Minutes of preinstallation conference.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.
- B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- C. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from one source, and obtain admixtures through one source from a single manufacturer.
- D. Welding: Qualify procedures and personnel according to AWS D1.4, "Structural Welding Code-- Reinforcing Steel."
- E. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
 1. ACI 301, "Specification for Structural Concrete," Sections 1 through 5.
 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
- F. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.
- G. Mockups: Cast concrete panels to demonstrate typical joints, surface finish, texture, tolerances, and standard of workmanship.
 1. Build panel approximately 200 sq. ft. for slab-on-grade and 100 sq. ft. for formed surface in the location indicated or, if not indicated, as directed by Architect.
 2. Approved panels may become part of the completed Work if undisturbed at time of Substantial Completion.
- H. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."
 1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
 - a. Contractor's superintendent.
 - b. Independent testing agency responsible for concrete design mixtures.
 - c. Ready-mix concrete manufacturer.
 - d. Concrete subcontractor.
 2. Review and concrete protection.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.
- B. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
 2. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.2 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

1. Plywood, metal, or other approved panel materials.
- B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Forms for Cylindrical Columns, Pedestals, and Supports: Metal, glass-fiber-reinforced plastic tubes that will produce surfaces with gradual or abrupt irregularities not exceeding specified formwork surface class. Provide units with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.
- D. Void Forms: Biodegradable paper surface, treated for moisture resistance, structurally sufficient to support weight of plastic concrete and other superimposed loads.
- E. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.
- F. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
 1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
- G. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
 1. Furnish units that will leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
 2. Furnish ties that, when removed, will leave holes no larger than 1 inch in diameter in concrete surface.
 3. Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.

2.3 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
- B. Low-Alloy-Steel Reinforcing Bars: ASTM A 706/A 706M, deformed.
- C. Plain-Steel Wire: ASTM A 82, plain, cold-drawn steel.
- D. Deformed-Steel Wire: ASTM A 496.
- E. Plain-Steel Welded Wire Reinforcement: ASTM A 185, plain, fabricated from as-drawn steel wire into flat sheets.
- F. Deformed-Steel Welded Wire Reinforcement: ASTM A 497, flat sheet.

2.4 REINFORCEMENT ACCESSORIES

- A. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60, plain-steel bars, cut bars 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. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:
 1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.
 2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.
 3. For zinc-coated reinforcement, use galvanized wire or dielectric-polymer-coated wire bar supports.

2.5 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
 1. Portland Cement: ASTM C 150, Type I/II, Supplement with the following:
 - a. Fly Ash: ASTM C 618, Class C or F, 20% maximum.
 - b. Type I only at polished slabs; no fly ash allowed.
- B. Silica Fume: ASTM C 1240, amorphous silica.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- C. Normal-Weight Aggregates: ASTM C 33, coarse aggregate or better, graded. Provide aggregates from a single source.
 - 1. Maximum Coarse-Aggregate Size: 1 inch nominal.
 - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- D. Water: ASTM C 94/C 94M and potable.

2.6 ADMIXTURES

- A. Air-Entraining Admixture: ASTM C 260.
- B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will 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 C 494/C 494M, Type A.
 - 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
 - 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
 - 4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
 - 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
 - 6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.
- C. Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete and complying with ASTM C 494/C 494M, Type C.
 - 1. Available Products:
 - a. Boral Material Technologies, Inc.; Boral BCN.
 - b. Euclid Chemical Company (The); Eucon CIA.
 - c. Grace Construction Products, W. R. Grace & Co.; DCI.
 - d. Master Builders, Inc.; Rheocrete CNI.
 - e. Sika Corporation; Sika CNI.
- D. Non-Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, non-set-accelerating, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete.
 - 1. Available Products:
 - a. Axim Concrete Technologies; Catexol 1000CI.
 - b. Boral Material Technologies, Inc.; Boral BCN2.
 - c. Grace Construction Products, W. R. Grace & Co.; DCI-S.
 - d. Master Builders, Inc.; Rheocrete 222+.
 - e. Sika Corporation; FerroGard-901.

2.7 WATERSTOPS

- A. Flexible PVC Waterstops: CE CRD-C 572, for embedding in concrete to prevent passage of fluids through joints. Factory fabricate corners, intersections, and directional changes.
 - 1. Available Manufacturers:
 - a. Bometals, Inc.
 - b. Greenstreak.
 - c. Meadows, W. R., Inc.
 - d. Murphy, Paul Plastics Co.
 - e. Progress Unlimited, Inc.
 - f. Tamms Industries, Inc.
 - g. Vinylex Corp.
 - 2. Profile: Ribbed without center bulb.
 - 3. Dimensions: 6 inches by 3/8 inch thick; nontapered.
- B. 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.
 - 1. Available Products:
 - a. Colloid Environmental Technologies Company; Volclay Waterstop-RX.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- b. Concrete Sealants Inc.; Conseal CS-231.
- c. Greenstreak; Swellstop.
- d. Henry Company, Sealants Division; Hydro-Flex.
- e. JP Specialties, Inc.; Earthshield Type 20.
- f. Progress Unlimited, Inc.; Superstop.
- g. TCMiraDRI; Mirastop.

2.8 VAPOR RETARDERS

- A. Plastic Vapor Retarder: ASTM E 1745, Class C or polyethylene sheet, ASTM D 4397, not less than 15 mils thick. Include manufacturer's recommended adhesive or pressure-sensitive joint tape.

- 1. Available Products:
 - a. Fortifiber Corporation; Moistop Plus.
 - b. Raven Industries Inc.; Dura Skrim 6.
 - c. Reef Industries, Inc.; Griffolyn Type-65.
 - d. Stego Industries, LLC; Stego Wrap, 15 mils.

2.9 FLOOR AND SLAB TREATMENTS

- A. Penetrating Liquid Floor Treatment: Clear, chemically reactive, waterborne solution of inorganic silicate or silicate materials and proprietary components; odorless; colorless; that penetrates, hardens, and densifies concrete surfaces.

- 1. Available Products:
 - a. Burke by Edoco; Titan Hard.
 - b. ChemMasters; Chemisil Plus.
 - c. ChemTec International; ChemTec One.
 - d. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company; Intraseal.
 - e. Dayton Superior Corporation; Day-Chem Sure Hard.
 - f. Euclid Chemical Company (The); Euco Diamond Hard.
 - g. Kaufman Products, Inc.; SureHard.
 - h. L&M Construction Chemicals, Inc.; Seal Hard.
 - i. Meadows, W. R., Inc.; Liqui-Hard.
 - j. ProSoCo, Inc.; Consolideck LS.
 - k. Symons Corporation, a Dayton Superior Company; Buff Hard.

2.10 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

- 1. Available Products:
 - a. Burke by Edoco; BurkeFilm.
 - b. ChemMasters; Spray-Film.
 - c. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company; Aquafilm.
 - d. Dayton Superior Corporation; Sure Film.
 - e. Euclid Chemical Company (The); Eucobar.
 - f. Kaufman Products, Inc.; Vapor Aid.
 - g. L&M Construction Chemicals, Inc.; E-Con.
 - h. MBT Protection and Repair, Div. of ChemRex; Confilm.
 - i. Meadows, W. R., Inc.; Sealtight Evapre.
 - j. Sika Corporation, Inc.; SikaFilm.
 - k. Symons Corporation, a Dayton Superior Company; Finishing Aid.
 - l. US Mix Products Company; US Spec Monofilm ER.

- 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 C 171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

1. Available Products:
 - a. Burke by Edoco; Aqua Resin Cure.
 - b. ChemMasters; Safe-Cure Clear.
 - c. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company; W.B. Resin Cure.
 - d. Dayton Superior Corporation; Day Chem Rez Cure (J-11-W).
 - e. Euclid Chemical Company (The); Kurez DR VOX.
 - f. Kaufman Products, Inc.; Thinfil 420.
 - g. L&M Construction Chemicals, Inc.; L&M Cure R.
 - h. Meadows, W. R., Inc.; 1100 Clear.
 - i. Symons Corporation, a Dayton Superior Company; Resi-Chem Clear Cure.
 - j. Tamms Industries, Inc.; Horncure WB 30.
 - k. Unitex; Hydro Cure 309.
 - l. US Mix Products Company; US Spec Maxcure Resin Clear.

2.11 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.
- B. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.
- C. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:
 1. Types I and II, non-load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.
- D. Reglets: Fabricate reglets of not less than 0.0217-inch- thick, galvanized steel sheet. Temporarily fill or cover face opening of reglet to prevent intrusion of concrete or debris.
- E. Dovetail Anchor Slots: Hot-dip galvanized steel sheet, not less than 0.0336 inch thick, with bent tab anchors. Temporarily fill or cover face opening of slots to prevent intrusion of concrete or debris.

2.12 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 C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
 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 according to ASTM C 109/C 109M.
- B. Repair Overlayment: 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 C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
 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 according to ASTM C 109/C 109M.

2.13 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, according to ACI 301.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

1. Use a qualified independent 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: 20 percent (no fly ash allowed at polished concrete floor areas).
- C. Limit water-soluble, chloride-ion content in hardened concrete to 0.06 percent by weight of cement.
- D. Admixtures: Use admixtures according to 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, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.
 4. Use corrosion-inhibiting admixture in concrete mixtures where indicated.

2.14 CONCRETE MIXTURES FOR BUILDING ELEMENTS

- A. Footings, Grade Beams, and Foundation Walls: Proportion normal-weight concrete mixture as follows:
 1. Minimum Compressive Strength: 4000 psi at 28 days.
 2. Maximum Water-Cementitious Materials Ratio: 0.45.
 3. Slump Limit: 4 inches, 8 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.
 4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 1-inch nominal maximum aggregate size.
- B. Slabs-on-Grade, Elevated Composite Slabs, Concrete Toppings: Proportion normal-weight concrete mixture as follows:
 1. Minimum Compressive Strength: 4000 psi at 28 days.
 2. Maximum Water-Cementitious Materials Ratio: 0.45.
 3. Minimum Cementitious Materials Content: 520 lb/cu. yd.
 4. Slump Limit: 4 inches, plus or minus 1 inch.
 5. Air Content: Do not allow air content of troweled finished floors to exceed 3 percent.
 6. Maximum slump for concrete containing high-range water reducing admixture (superplasticizer) shall be 7 inches after admixture is added to concrete having a 2- to 3-inch slump.
 - a. General Contractor is to supply all concrete truck pour slips **within (7) days** of specific pour.
 7. Note: Tests shall be at the point of placement, not at the truck.

2.15 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.16 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, and furnish batch ticket information.
 1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

1. Class A, 1/8 inch for smooth-formed finished surfaces.
2. Class B, 1/4 inch for rough-formed finished surfaces.
- D. Construct forms tight enough to prevent loss of concrete mortar.
- E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
 1. Install keyways, reglets, recesses, and the like, for easy removal.
 2. Do not use rust-stained steel form-facing material.
- F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- H. Chamfer exterior corners and edges of permanently exposed concrete.
- I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
- J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 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. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISI's "Code of Standard Practice for Steel Buildings and Bridges."
 2. 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. Install dovetail anchor slots in concrete structures as indicated.

3.3 REMOVING AND REUSING FORMS

- A. General: 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 24 hours after placing concrete, if concrete is hard enough to not be damaged by form-removal operations and curing and protection operations are maintained.
 1. Leave formwork for beam soffits, joists, slabs, and other structural elements that supports weight of concrete in place until concrete has achieved at least 70 percent of its 28-day design compressive strength.
 2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.
- B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.
- C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.4 SHORES AND RESHORES

- A. Comply with ACI 318 and ACI 301 for design, installation, and removal of shoring and reshoring.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

1. Do not remove shoring or reshoring until measurement of slab tolerances is complete.
- B. In multistory construction, extend shoring or reshoring over a sufficient number of stories to distribute loads in such a manner that no floor or member will be excessively loaded or will induce tensile stress in concrete members without sufficient steel reinforcement.
- C. Plan sequence of removal of shores and reshore to avoid damage to concrete. Locate and provide adequate reshoring to support construction without excessive stress or deflection.

3.5 VAPOR RETARDERS

- A. Plastic Vapor Retarders: Place, protect, and repair vapor retarders according to ASTM E 1643 and manufacturer's written instructions.
 1. Lap joints 6 inches and seal with manufacturer's recommended tape.

3.6 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
 1. Do not cut or puncture vapor retarder. 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 would reduce bond to concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
 1. Weld reinforcing bars according to AWS D1.4, where indicated.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- E. Install welded wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3.7 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. 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. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
 2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
 3. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
 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. Locate 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.
 7. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:
 1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
 2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- D. Isolation Joints in Slabs-on-Grade: 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.
 - 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 Division 7 Section "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: 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.

3.8 WATERSTOPS

- A. Flexible Waterstops: Install in construction joints and at other joints indicated to form a continuous diaphragm. Install in longest lengths practicable. Support and protect exposed waterstops during progress of the Work. Field fabricate joints in waterstops according to manufacturer's written instructions.
- B. Self-Expanding Strip Waterstops: Install in construction joints and at other locations indicated, according to manufacturer's written instructions, adhesive bonding, mechanically fastening, and firmly pressing into place. Install in longest lengths practicable.

3.9 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect.
- C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.
 - 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 will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
 - 1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
 - 2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
 - 3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. 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. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 - 2. Maintain reinforcement in position on chairs during concrete placement.
 - 3. Screed slab surfaces with a straightedge and strike off to correct elevations.
 - 4. Slope surfaces uniformly to drains where required.
 - 5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- F. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 - 1. 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.
 - 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- G. Hot-Weather Placement: Comply with ACI 301 and as follows:
 - 1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 - 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

3.10 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 - 1. Apply to concrete surfaces not exposed to public view.
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 - 1. Apply to concrete surfaces exposed to public view.
- C. Rubbed Finish: Apply the following to smooth-formed finished as-cast concrete where indicated:
 - 1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.
- D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.11 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch in 1 direction.
 - 1. Apply scratch finish to surfaces indicated.
- C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.
 - 1. Apply float finish to surfaces to receive trowel finish and to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing, or sand-bed terrazzo.
- D. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
 - 1. Apply a trowel finish to surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.
 - 2. Finish surfaces to the following tolerances, according to ASTM E 1155, for a randomly trafficked floor surface:

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- a. Specified overall values of flatness, F(F) 30; and of levelness, F(L) 20; with minimum local values of flatness, F(F) 24; and of levelness, F(L) 15.
 - b. At polished concrete floor areas, specified overall values of flatness, F(F) 50; and of levelness, F(L) 30; with minimum local values of flatness, F(F) 35; and of levelness, F(L) 20.
3. Finish and measure surface so gap at any point between concrete surface and an unleveled, freestanding, 10-foot- long straightedge resting on 2 high spots and placed anywhere on the surface does not exceed 3/16 inch.
- E. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces indicated. While concrete is still plastic, slightly scarify surface with a fine broom.
 1. Comply with flatness and levelness tolerances for trowel finished floor surfaces.
- F. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.
 1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

3.12 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. 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: Provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates from manufacturer furnishing machines and equipment.
- D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in inserts and accessories as shown on Drawings. Screed, tamp, and trowel-finish concrete surfaces.

3.13 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.
- D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.
- E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
 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. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
 - b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
 - c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies will not interfere with bonding of floor covering used on Project.
3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
 - a. After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer.

3.14 LIQUID FLOOR TREATMENTS

- A. Penetrating Liquid Floor Treatment: Prepare, apply, and finish penetrating liquid floor treatment according to manufacturer's written instructions.
 1. Remove curing compounds, sealers, oil, dirt, laitance, and other contaminants and complete surface repairs.
 2. Apply liquid until surface is saturated, scrubbing into surface until a gel forms; rewet; and repeat brooming or scrubbing. Rinse with water; remove excess material until surface is dry. Apply a second coat in a similar manner if surface is rough or porous.
- B. Sealing Coat: Uniformly apply a continuous sealing coat of curing and sealing compound to hardened concrete by power spray or roller according to manufacturer's written instructions.
- C. Refer to Room Finish Schedule and Division 9 Section "Interior Finish Schedule" for locations.

3.15 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.
- B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half 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 in solid concrete, but not less than 1 inch in depth. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. 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 will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
 3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.
- D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
 1. Repair finished surfaces containing defects. Surface defects include 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.
 2. After concrete has cured at least 14 days, correct high areas by grinding.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. 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.

3.16 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage a qualified testing and inspecting agency to sample materials, perform field tests and inspections, and prepare test reports.

B. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to 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 will provide 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 C 143/C 143M; 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. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; 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 C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
5. Compression Test Specimens: ASTM C 31/C 31M.
 - a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.
6. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.
 - a. Test one field-cured specimens at 7 days and one set of two specimens at 28 days.
 - 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.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

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.
9. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
10. 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.
11. Additional Tests: 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. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.
12. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
13. Correct deficiencies in the Work that test reports and inspections indicate does not comply with the Contract Documents.

C. Measure floor and slab flatness and levelness according to ASTM E 1155 within 48 hours of finishing.

END OF SECTION 03 3000

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 03 3005 - MOISTURE VAPOR REDUCING ADMIXTURE FOR CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Moisture vapor reducing admixture (MVRA) for cast-in-place concrete slabs.

1.2 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Finishing of concrete surface to tolerance; floating, troweling, and similar operations; curing.

1.3 REFERENCE STANDARDS

- A. ASTM C157/C157M - Standard Test Method for Length Change of Hardened Hydraulic-Cement Mortar and Concrete.
- B. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete.
- C. ASTM D5084 - Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Conduct preinstallation meeting at least one week prior to start of work of this section. Require attendance by affected installers.

1.5 SUBMITTALS

- A. See 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Include manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
- C. Mix Design: Include MVRA manufacturer approval of proposed concrete mix design.
- D. Material Test Report: Document that products of this section comply with specified requirements.
- E. Proposed Curing Methods and Products: Submit proposed methods and products for concrete finishing and curing prior to preinstallation meeting.
- F. Field Quality Control Submittals: Include project name and number, date of MVRA application, name of testing agency, location of concrete batch in work, mix proportions, materials, and test result.
- G. Warranty Documentation: Manufacturer warranty; ensure forms have been completed in Owner's name and registered with manufacturer.

1.6 QUALITY ASSURANCE

- A. MVRA Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years of documented experience.
- B. Moisture Testing: By MVRA manufacturer's representative.
- C. Do not proceed with placement of concrete with MVRA until MVRA manufacturer has reviewed proposed concrete finishing and curing methods and products.
- D. Do not proceed with placement of concrete with MVRA unless MVRA manufacturer's representative is present.
- E. Obtain MVRA from single manufacturer.

1.7 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Slabs with Moisture Vapor Reducing Admixture (MVRA): Provide warranty to cover cost of flooring failures due to moisture migration from slabs for life of concrete. Include:
 1. Removal of failed flooring or roofing.
 2. Topical moisture remediation system.

MOISTURE VAPOR REDUCING ADMIXTURE FOR CAST-IN-PLACE CONCRETE		03 3005 - 1
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

3. Replacement of original flooring or roofing materials with comparable.

PART 2 PRODUCTS

2.1 MOISTURE VAPOR REDUCING ADMIXTURE

- A. Moisture Vapor Reducing Admixture (MVRA): ASTM C494/C494M, Type S; liquid, inorganic admixture free of volatile organic compounds (VOCs); formulated to react with cementitious material to integrally and permanently restricting capillary systems formed during curing.
 1. Location: Provide admixture in all interior slabs.
 2. Hydraulic Conductivity: 19.7×10^{-8} fps, minimum, when tested according to ASTM D5084.
 3. Concrete Shrinkage Reduction at 28 Days: 50 percent, minimum, when compared to mix design without MVRA and both tested according to ASTM C157/C157M.
 4. Toxicity: None.
 5. Odor: None.
 6. Flammability: None.
 7. VOC: Zero.
 8. Solvent: Water.
 9. Freezing Temperature: 32 degrees F.
 10. Hazardous Vapors: None.
 11. Capillary Break: Calcium silicate hydrate.
 12. Specific Gravity: 1.044.
 13. Products:

PART 3 EXECUTION

3.1 INSTALLATION

- A. Dispense MVRA according to mix design and manufacturer's printed instructions.
- B. Add MVRA to concrete according to manufacturer's printed instructions.
- C. Do not use shrinkage-reducing admixture (SRA) in same concrete batch with MVRA.
- D. Place and cure concrete as specified in Section 03 3000.

3.2 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Independent testing agency will perform field quality control tests as specified in Section 01 4000 - Quality Requirements.
- C. Provide free access to concrete operations at project site and cooperate with appointed testing agency.
- D. Slab Testing: Cooperate with manufacturer of specified MVRA to allow access for sampling and testing concrete for compliance with warranty requirements.
- E. Provide testing agency with one 4-inch diameter cylinder per each day of MVRA concrete placement.
- F. Maintain four concrete test cylinders for one year from date of Substantial Completion.
- G. Test cylinders as required by MRVA manufacturer.
- H. Demonstrate test cylinders comply with requirements specified in Part 2.
- I. Field Quality Control Reports:
 1. Submit test results to Architect, Contractor, and MVRA manufacturer, within 48 hours of testing.
 2. Include project name, project number, date of MVRA application, name of testing agency, location of concrete in work, concrete mix design, and waterproofing capability.
- J. Defective Concrete: Concrete not complying with specified requirements.

MOISTURE VAPOR REDUCING ADMIXTURE FOR CAST-IN-PLACE CONCRETE		03 3005 - 2
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- K. When test results indicate concrete does not comply with specified requirements, conduct additional tests as directed by Architect. Cost of additional testing shall be borne by Contractor when defective concrete is identified.
- L. Repair or replacement of defective concrete will be determined by Architect.

END OF SECTION

MOISTURE VAPOR REDUCING ADMIXTURE FOR CAST-IN-PLACE CONCRETE		03 3005 - 3
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 03 3511 - CONCRETE FLOOR FINISHES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Surface treatments.
- B. Clear coatings.

1.2 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Finishing of concrete surface to tolerance; floating, troweling, and similar operations; curing.

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the work with concrete floor placement and concrete floor curing.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's published data on each finishing product, including information on compatibility of different products and limitations.

1.5 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

2.1 COATINGS

- A. Clear Coatings: Clear coating recommended by manufacturer for finishing concrete floors and slabs.
 - 1. Gloss: High gloss.
 - 2. Type: Acrylic polymer-based
 - a. Products:
 - 1) H&C Concrete; Clearsheild SB.
 - 2) Substitutions: See Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.1 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.

3.2 GENERAL

- A. Apply materials in accordance with manufacturer's instructions.

3.3 COATING APPLICATION

- A. Verify that surface is free of previous coatings, sealers, curing compounds, water repellents, laitance, efflorescence, fats, oils, grease, wax, soluble salts, residues from cleaning agents, and other impediments to adhesion.
- B. Verify that water vapor emission from concrete and relative humidity in concrete are within limits established by coating manufacturer.
- C. Protect adjacent non-coated areas from drips, overflow, and overspray; immediately remove excess material.
- D. Apply coatings in accordance with manufacturer's instructions, matching approved mock-ups for color, special effects, sealing and workmanship.

CONCRETE FLOOR FINISHES		03 3511 - 1
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

3.4 PROTECTION

- A. Protect installed coatings from subsequent construction operations.
- B. Do not permit traffic over unprotected floor surface.

END OF SECTION

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 04 0511 - MASONRY MORTARING AND GROUTING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Mortar for masonry.
- B. Grout for masonry.

1.2 RELATED REQUIREMENTS

- A. Section 04 2000 - Unit Masonry: Installation of mortar and grout.
- B. Section 04 2613 - Masonry Veneer: Installation of mortar.
- C. Section 08 1113 - Hollow Metal Doors and Frames: Products and execution for grouting steel door frames installed in masonry.

1.3 REFERENCE STANDARDS

- A. ASTM C5 - Standard Specification for Quicklime for Structural Purposes.
- B. ASTM C91/C91M - Standard Specification for Masonry Cement.
- C. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.
- D. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar.
- E. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes.
- F. ASTM C270 - Standard Specification for Mortar for Unit Masonry.
- G. ASTM C404 - Standard Specification for Aggregates for Masonry Grout.
- H. ASTM C476 - Standard Specification for Grout for Masonry.
- I. ASTM C780 - Standard Test Methods for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry.
- J. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete.
- K. ASTM C1019 - Standard Test Method for Sampling and Testing Grout for Masonry.
- L. ASTM C1714/C1714M - Standard Specification for Preblended Dry Mortar Mix for Unit Masonry.
- M. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Include design mix and indicate whether the Proportion or Property specification of ASTM C270 is to be used. Also include required environmental conditions and admixture limitations.
- C. Samples: Submit two samples of mortar, illustrating mortar color and color range.
- D. Reports: Submit reports on mortar indicating compliance of mortar to property requirements of ASTM C270 and test and evaluation reports per ASTM C780.
- E. Reports: Submit reports on grout indicating compliance of component grout materials to requirements of ASTM C476 and test and evaluation reports to requirements of ASTM C1019.

1.5 QUALITY ASSURANCE

- A. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Maintain packaged materials clean, dry, and protected against dampness, freezing, and foreign matter.

1.7 FIELD CONDITIONS

- A. Cold and Hot Weather Requirements: Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

MASONRY MORTARING AND GROUTING		04 0511 - 1
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

PART 2 PRODUCTS

2.1 MORTAR AND GROUT APPLICATIONS

- A. At Contractor's option, mortar and grout may be field-mixed from packaged dry materials or made from factory premixed dry materials with addition of water only.
 - 1. Measurement of sand exclusively by shovel shall not be allowed.
- B. Mortar Color: Natural gray unless otherwise indicated.
- C. Mortar Mix Designs: ASTM C270, Property Specification.
 - 1. Masonry below grade and in contact with earth: Type S.
 - 2. Exterior Masonry Veneer: Type N.
 - a. Color: Solomon Colors, Inc. 80X Light Chocolate, or approved equal.
 - 1) Colored grout intended for use in exterior masonry veneer, planter, and dumpster enclosure (types MV-1, MV-2, and MV-3).
 - 3. Exterior, Loadbearing Masonry: Type S.
 - 4. Exterior, Non-loadbearing Masonry: Type N.
 - 5. Interior, Loadbearing Masonry: Type N.
 - 6. Interior, Non-loadbearing Masonry: Type N.
- D. Grout Mix Designs:
 - 1. Bond Beams and Lintels: 3,000 psi strength at 28 days; 8-10 inches slump; provide premixed type in accordance with ASTM C 94/C 94M.
 - a. Fine grout for spaces with smallest horizontal dimension of 2 inches or less.
 - b. Coarse grout for spaces with smallest horizontal dimension greater than 2 inches.
 - 2. Engineered Masonry: 3,000 psi strength at 28 days; 8-10 inches slump; provide premixed type in accordance with ASTM C 94/C 94M.
 - a. Fine grout for spaces with smallest horizontal dimension of 2 inches or less.
 - b. Coarse grout for spaces with smallest horizontal dimension greater than 2 inches.
 - 3. Hollow Metal Frames: 1,500 psi (10.34 MPa) strength at 28 days; 4" slump; mix in accordance with ASTM C476.
 - a. Fine grout for spaces with smallest horizontal dimension 2 inches or less.
 - b. Coarse grout for spaces with smallest horizontal dimension greater than 2 inches.
 - c. Light consistency grout (greater than 4 inch slump) is allowed for intermediate mullions and muntins of sidelites and borrow lites.
 - d. USE OF GYPSUM BASED GROUT IS NOT PERMITTED.

2.2 MATERIALS

- A. Packaged Dry Material for Mortar for Unit Masonry: Premixed Portland cement, hydrated lime, and sand; complying with ASTM C1714/C1714M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.
 - 1. Color: Standard gray.
- B. Packaged Dry Material for Grout for Masonry: Premixed cementitious materials and dried aggregates; capable of producing grout of the specified strength in accordance with ASTM C476 with the addition of water only.
 - 1. Type: Fine.
- C. Portland Cement: ASTM C150/C150M.
 - 1. Type: Type I - Normal; ASTM C150/C150M.
 - 2. Color: Standard gray.
- D. Masonry Cement: ASTM C91/C91M.
 - 1. Type: Type N; ASTM C91/C91M.

MASONRY MORTARING AND GROUTING		04 0511 - 2
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

2. Colored Mortar: Premixed cement as required to match Architect's color sample.
3. Manufacturers:
 - a. Solomon Colors; Solomon Colors Concentrated A, H, and X
Series: www.solomoncolors.com/#sle.
- E. Hydrated Lime: ASTM C207, Type S.
- F. Quicklime: ASTM C5, non-hydraulic type.
- G. Mortar Aggregate: ASTM C144.
- H. Grout Aggregate: ASTM C404.
- I. Pigments for Colored Mortar: Pure, concentrated mineral pigments specifically intended for mixing into mortar and complying with ASTM C979/C979M.
 1. Color(s): To match Architect's sample(s) when incorporated into specified mix design(s).
- J. Water: Clean and potable.
- K. Bonding Agent: Epoxy type.
- L. Other Admixtures: Air-entraining, accelerators, retarders, anti-freeze compounds, or other admixtures for mortar or grout, other than noted above, are not allowed.
- M. Addition of admixtures or re-tempering of mortar at the mixer to extend its use will not be permitted.

2.3 MORTAR MIXING

- A. Thoroughly mix mortar ingredients using mechanical batch mixer, in accordance with ASTM C270 and in quantities needed for immediate use.
- B. Maintain sand uniformly damp immediately before the mixing process.
- C. Do not use anti-freeze compounds to lower the freezing point of mortar.
- D. If water is lost by evaporation, re-temper only within two hours of mixing.

2.4 GROUT MIXING

- A. Mix grout in accordance with ASTM C94/C94M.
- B. Thoroughly mix grout ingredients in quantities needed for immediate use in accordance with ASTM C476 for fine and coarse grout.

PART 3 EXECUTION

3.1 PREPARATION

- A. Apply bonding agent to existing concrete surfaces.
- B. Plug clean-out holes for grouted masonry with brick masonry units. Brace masonry to resist wet grout pressure.

3.2 INSTALLATION

- A. Install mortar and grout to requirements of section(s) in which masonry is specified.
- B. Do not install grout in lifts greater than 16 inches without consolidating grout by rodding.

3.3 GROUTING

- A. Structural Drawings indicate walls to be grouted for structural purposes. Architectural Drawings indicate walls that are to be fully grouted for security or fire rating purposes. Review both completely and grout walls accordingly.
- B. Grout lintel blocks above masonry openings and each jamb full height.
- C. Perform all grouting by means of low-lift technique. Do not employ high-lift grouting.
- D. Low-Lift Grouting:
 1. Limit height of pours to 16 inches.
 2. Limit height of masonry to 16 inches above each pour.
 3. Pour grout only after vertical reinforcing is in place; place horizontal reinforcing as grout is poured. Prevent displacement of bars as grout is poured.

MASONRY MORTARING AND GROUTING		04 0511 - 3
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

4. Place grout for each pour continuously and consolidate immediately; do not interrupt pours for more than 1-1/2 hours.

E. Consolidation:

1. Consolidate grout pours 12 inches or less in height by mechanical vibration or by puddling.
2. Consolidate pours exceeding 12 inches in height by mechanical vibration and reconsolidate by mechanical vibration after initial water loss and settlement has occurred - typically within 2 to 4 minutes after placement of grout.

F. Grouting of Steel Frames:

1. An independent testing agency will perform field tests, in accordance with provisions of Section 01 4000 - Quality Requirements.
2. Test and evaluate mortar in accordance with ASTM C780 procedures.
3. Test and evaluate grout in accordance with ASTM C1019 procedures.

3.4 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field tests, in accordance with provisions of Section 01 4000 - Quality Requirements.
- B. Test and evaluate mortar in accordance with ASTM C780 procedures.
- C. Test and evaluate grout in accordance with ASTM C1019 procedures.

END OF SECTION

MASONRY MORTARING AND GROUTING		04 0511 - 4
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION – 04 2000 - UNIT MASONRY

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Concrete masonry units (CMUs).
 - 2. Mortar and grout.
 - 3. Reinforcing steel.
 - 4. Masonry joint reinforcement.
 - 5. Ties and anchors.
 - 6. Embedded flashing.
 - 7. Miscellaneous masonry accessories.
 - 8. Anchored Masonry Veneer.
 - 9. Cavity-wall insulation.
- B. Products Installed but not Furnished under This Section:
 - 1. Steel lintels in unit masonry.
 - 2. Steel shelf angles for supporting unit masonry.
- C. Related Requirements:
 - 1. Section 033000 "Cast-in-Place Concrete" for installing dovetail slots for masonry anchors.
 - 2. Section 071900 "Water Repellents" for water repellents applied to unit masonry.
 - 3. Section 076200 "Sheet Metal Flashing and Trim" for exposed sheet metal flashing and for furnishing manufactured reglets installed in masonry joints.

1.2 DEFINITIONS

- A. CMU(s): Concrete masonry unit(s).
- B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.3 PERFORMANCE REQUIREMENTS

- A. Provide structural unit masonry that develops indicated net-area compressive strengths at 28 days.
 - 1. Determine net-area compressive strength of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) according to Tables 1 and 2 in ACI 530.1/ASCE 6/TMS 602.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For the following:
 - 1. Reinforcing Steel: Detail bending and placement of unit masonry reinforcing bars. Comply with ACI 315, "Details and Detailing of Concrete Reinforcement."
 - 2. Fabricated Flashing: Detail corner units, end-dam units, and other special applications.
- C. Samples for Verification: For each type and color of the following:
 - 1. Special brick shapes.
 - 2. Colored mortar.
 - 3. Weep holes and vents.
 - 4. Accessories embedded in masonry.

1.5 INFORMATIONAL SUBMITTALS

- A. List of Materials Used in Constructing Mockups: List generic product names together with manufacturers, manufacturers' product names, model numbers, lot numbers, batch numbers, source of supply, and other information as required to identify materials used. Include mix proportions for mortar and grout and source of aggregates.
 - 1. Submittal is for information only. Neither receipt of list nor approval of mockup constitutes approval of deviations from the Contract Documents unless such deviations are specifically brought to the attention of Architect and approved in writing.
- B. Qualification Data: For testing agency.
- C. Material Certificates: For each type and size of the following:

UNIT MASONRY		04 2000 - 1
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

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.
2. Cementitious materials. Include brand, type, and name of manufacturer.
3. Mortar admixtures.
4. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
5. Grout mixes. Include description of type and proportions of ingredients.
6. Reinforcing bars.
7. Joint reinforcement.
8. Anchors, ties, and metal accessories.
- D. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.
 1. Include test reports, according to ASTM C 1019, for grout mixes required to comply with compressive strength requirement as indicated.
- E. 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 Tables 1 and 2 in ACI 530.1/ASCE 6/TMS 602.
- F. Cold-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Qualified according to ASTM C 1093 for testing indicated.
- B. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.
- C. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.
- D. Masonry Standard: Comply with ACI 530.1/ASCE 6/TMS 602 unless modified by requirements in the Contract Documents.
- E. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 1. Build mockup of typical wall area.
 2. Build mockups for each type of exposed unit masonry construction in sizes approximately 60 inches long by 60 inches high by full thickness, including face and backup wythes and accessories.
 - a. Include a sealant-filled joint at least 16 inches long in exterior wall mockup.
 - b. Include lower corner of window opening framed with stone trim at upper corner of exterior wall mockup. Make opening approximately 12 inches wide by 16 inches high.
 - c. Include through-wall flashing installed for a 24-inch length in corner of exterior wall mockup approximately 16 inches down from top of mockup, with a 12-inch length of flashing left exposed to view (omit masonry above half of flashing).
 - d. Include metal studs, sheathing, air barrier, veneer anchors, flashing, cavity drainage material, and weep holes in exterior masonry-veneer wall mockup.
 3. Where masonry is to match existing, erect mockups adjacent and parallel to existing surface.
 4. Clean one-half of exposed faces of mockups with masonry cleaner as indicated.
 5. Protect accepted mockups from the elements with weather-resistant membrane.
 6. Approval of mockups is for color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; and aesthetic qualities of workmanship.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- a. Approval of mockups is also for other material and construction qualities specifically approved by Architect in writing.
 - b. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless such deviations are specifically approved by Architect in writing.
- 7. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- F. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination."

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- D. Deliver preblended, dry mortar mix in moisture-resistant containers designed for use with dispensing silos. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in covered weatherproof dispensing silos.
- E. Store masonry accessories, including metal items, to prevent damage, staining, corrosion and accumulation of dirt and oil.

1.8 PROJECT CONDITIONS

- A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
 - 1. Extend cover a minimum of 24 inches down both sides of walls and hold cover securely in place.
 - 2. Where one wythe of multiwythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches down face next to unconstructed wythe and hold cover in place.
- B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least three days after building masonry walls or columns.
- C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
 - 1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
 - 2. Protect sills, ledges, and projections from mortar droppings.
 - 3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
 - 4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.
- D. 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 ACI 530.1/ASCE 6/TMS 602.
 - 1. 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.
- E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

PART 2 - PRODUCTS

2.1 MASONRY UNITS, GENERAL

- A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6, except as modified by requirements in the Contract Documents.
- B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects will be exposed in the completed Work.
- C. Fire-Resistance Ratings: Comply with requirements for fire-resistance-rated assembly designs indicated.

2.2 CONCRETE MASONRY UNITS

- A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.
 - 1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
 - 2. Provide square-edged units for outside corners unless otherwise indicated.
- B. Integral Water Repellent: Provide units made with integral water repellent for exposed units and where indicated.
 - 1. Integral Water Repellent: Liquid polymeric, integral water-repellent admixture that does not reduce flexural bond strength. Units made with integral water repellent, when tested according to ASTM E 514 as a wall assembly made with mortar containing integral water-repellent manufacturer's mortar additive, with test period extended to 24 hours, shall show no visible water or leaks on the back of test specimen.
- C. CMUs: ASTM C 90.
 - 1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 1900 psi.
 - 2. Density Classification: Lightweight at locations above grade and not exposed to weather, and normal weight at locations exposed to weather and below grade.
 - 3. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.
 - 4. Exposed Faces: Provide color and texture matching the range represented by Architect's sample.

2.3 MASONRY LINTELS

- A. Masonry Lintels: Prefabricated or built-in-place masonry lintels made from bond beam CMUs with reinforcing bars placed as indicated and filled with coarse grout. Cure precast lintels before handling and installing. Temporarily support built-in-place lintels until cured.

2.4 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.
- D. Aggregate for Mortar: ASTM C 144.
 - 1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
 - 2. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
- E. Aggregate for Grout: ASTM C 404.
- F. Water-Repellent Admixture: Liquid water-repellent mortar admixture intended for use with CMUs containing integral water repellent by same manufacturer.
- G. Water: Potable.

2.5 REINFORCEMENT

- A. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, Grade 60 .
- B. Masonry Joint Reinforcement, General: ASTM A 951/A 951M.

UNIT MASONRY		04 2000 - 4
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

1. Interior Walls: Hot-dip galvanized, carbon steel.
 2. Exterior Walls: Hot-dip galvanized, carbon steel.
 3. Wire Size for Side Rods: 0.187-inch diameter.
 4. Wire Size for Cross Rods: 0.187-inch diameter.
 5. Wire Size for Veneer Ties: 0.187-inch diameter.
 6. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches o.c.
 7. Provide in lengths of not less than 10 feet .
- C. Masonry Joint Reinforcement for Single-Wythe Masonry: Either ladder or truss type with single pair of side rods.
- D. Masonry Joint Reinforcement for Multiwythe Masonry:
1. Ladder type with 1 side rod at each face shell of hollow masonry units more than 4 inches wide, plus 2 side rods at each wythe of masonry 4 inches wide or less.
 2. Tab type, either ladder or truss design, with 1 side rod at each face shell of backing wythe and with rectangular tabs sized to extend at least halfway through facing wythe but with at least 5/8-inch cover on outside face.
 3. Adjustable (two-piece) type, either ladder or truss design, with one side rod at each face shell of backing wythe and with separate adjustable ties with pintle-and-eye connections having a maximum adjustment of 1-1/4 inches. Size ties to extend at least halfway through facing wythe but with at least 5/8-inch cover on outside face. Ties have hooks or clips to engage a continuous horizontal wire in the facing wythe.
 - a. Use where facing wythe is of different material than backup wythe.
- E. Masonry Joint Reinforcement for Veneers Anchored with Seismic Masonry-Veneer Anchors: Single 0.187-inch-diameter, hot-dip galvanized, carbon-steel continuous wire.

2.6 TIES AND ANCHORS

- A. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated.
1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82/A 82M; with ASTM A 153/A 153M, Class B-2 coating.
 2. Steel Sheet, Galvanized after Fabrication: ASTM A 1008/A 1008M, Commercial Steel, with ASTM A 153/A 153M, Class B coating.
 3. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- B. Adjustable Anchors for Connecting to Concrete: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
1. Connector Section: Dovetail tabs for inserting into dovetail slots in concrete and attached to tie section; formed from 0.060-inch-thick, steel sheet, galvanized after fabrication.
 2. Tie Section: Triangular-shaped wire tie, sized to extend within 1 inch of masonry face, made from 0.187-inch- diameter, hot-dip galvanized steel wire.
- C. Adjustable Masonry-Veneer Anchors:
1. General: Provide anchors that allow vertical adjustment but resist tension and compression forces perpendicular to plane of wall, for attachment over sheathing to wood or metal studs, and as follows:
 - a. Structural Performance Characteristics: Capable of withstanding a 100-lbf load in both tension and compression without deforming or developing play in excess of 0.05 inch .
 2. Wire Ties: Triangular-, rectangular-, or T-shaped wire ties fabricated from 0.187-inch- diameter, hot-dip galvanized-steel wire unless otherwise indicated.
 3. Screw-Attached, Masonry-Veneer Anchors: Units consisting of a wire tie and a metal anchor section.
 - a. Anchor type and attachment to comply with S.I.P. manufacturer recommendations. Attachment to meet substrate pull-out requirements and veneer load requirements.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- b. Anchor Section: Rib-stiffened, sheet metal plate with screw holes top and bottom, 2-3/4 inches wide by 3 inches high; with projecting tabs having slotted holes for inserting vertical legs of wire tie specially formed to fit anchor section.
- c. Anchor Section: Sheet metal plate, 1-1/4 inches wide by 9 inches long, with screw holes top and bottom and with raised rib-stiffened strap, 5/8 inch wide by 5-1/2 inches long, stamped into center to provide a slot between strap and plate for inserting wire tie.
- d. Anchor Section: Sheet metal plate, 1-1/4 inches wide by 6 inches long, with screw holes top and bottom and with raised rib-stiffened strap, 5/8 inch wide by 3-5/8 inches long, stamped into center to provide a slot between strap and plate for inserting wire tie.
- e. Anchor Section: Gasketed sheet metal plate, 1-1/4 inches wide by 6 inches long, with screw holes top and bottom; top and bottom ends bent to form pronged legs of length to match thickness of insulation or sheathing; and raised rib-stiffened strap, 5/8 inch wide by 6 inches long, stamped into center to provide a slot between strap and plate for inserting wire tie. Provide anchor manufacturer's standard, self-adhering, modified bituminous gaskets manufactured to fit behind anchor plate and extend beyond pronged legs.
- f. Anchor Section: Corrosion-resistant, self-drilling, eye-screw designed to receive wire tie. Eye-screw has spacer that seats directly against framing and is same thickness as sheathing and has gasketed, washer head that covers hole in sheathing.
- 4. Slip-in, Masonry-Veneer Anchors: Units consisting of a wire tie section and an anchor section designed to interlock with metal studs and be slipped into place as sheathing is installed.
 - a. Wire-Type Anchor: Bent wire anchor section with an eye to receive the wire tie. Wire tie has a vertical leg that slips into the eye of anchor section and allows vertical adjustment. Both sections are made from 3/16-inch , hot-dip galvanized wire.
- 5. Stainless-Steel Drill Screws for Steel Studs: Proprietary fastener consisting of carbon-steel drill point and 300 Series stainless-steel shank, complying with ASTM C 954 except manufactured with hex washer head and neoprene or EPDM washer, No. 10 diameter by length required to penetrate steel stud flange with not less than three exposed threads.
- 6. Polymer-Coated, Steel Drill Screws for Steel Studs: ASTM C 954 except manufactured with hex washer head and neoprene washer, No. 10 (4.8-mm) diameter by length required to penetrate steel stud flange with not less than 3 exposed threads, and with organic polymer coating with salt-spray resistance to red rust of more than 800 hours per ASTM B 117.
- 7. For Veneer over Concrete Backup Wall: Flexible Ties (rated for provided airspace, spaced at 16" on center vertically and 24" on center horizontally) with continuous 9 GA. Wire embedded in veneer joints and S.I.S. type clips. See Wall Type sheet and Structural General Notes sheet.

2.7 MISCELLANEOUS ANCHORS

- A. Unit Type Inserts in Concrete: Cast-iron or malleable-iron wedge-type inserts.
- B. Anchor Bolts: Headed or L-shaped steel bolts complying with ASTM A 307, Grade A ; with ASTM A 563 hex nuts and, where indicated, flat washers; hot-dip galvanized to comply with ASTM A 153/A 153M, Class C; of dimensions indicated.
- C. Postinstalled Anchors: Torque-controlled expansion anchors or chemical anchors.
 - 1. Load Capacity: Capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.
 - 2. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5 unless otherwise indicated.
 - 3. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 stainless-steel bolts, ASTM F 593 , and nuts, ASTM F 594 .

2.8 EMBEDDED FLASHING MATERIALS

- A. Metal Flashing: Provide metal flashing complying with SMACNA's "Architectural Sheet Metal Manual" " and as follows:

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

1. Provide as indicated in drawings.
2. Stainless Steel: ASTM A 240/A 240M, Type 304, 0.016 inch thick.
3. Fabricate continuous flashings in sections 96 inches long minimum, but not exceeding 12 feet . Provide splice plates at joints of formed, smooth metal flashing.
4. Fabricate through-wall flashing with snaplock receiver on exterior face where indicated to receive counterflashing.
5. Fabricate through-wall flashing with drip edge where indicated. Fabricate by extending flashing 1/2 inch out from wall, with outer edge bent down 30 degrees and hemmed.
6. Fabricate metal drip edges for ribbed metal flashing from plain metal flashing of same metal as ribbed flashing and extending at least 3 inches into wall with hemmed inner edge to receive ribbed flashing and form a hooked seam. Form hem on upper surface of metal so that completed seam will shed water.
7. Metal Drip Edge: Fabricate from stainless steel. Extend at least 3 inches into wall and 1/2 inch out from wall, with outer edge bent down 30 degrees and hemmed.
8. Metal Flashing Terminations: Fabricate from stainless steel. Extend at least 3 inches (75 mm) into wall and out to exterior face of wall. At exterior face of wall, bend metal back on itself for 3/4 inch (19 mm) and down into joint 3/8 inch (10 mm) to form a stop for retaining sealant backer rod.
9. Metal Expansion-Joint Strips: Fabricate from stainless steel to shapes indicated.
- B. Flexible Flashing: Use the following unless otherwise indicated:
 1. Self-adhering flexible flashing: composite impermeable membrane consisting of butyl and HDPP facer that has a pressure-sensitive, clear adhesive that will not drool when exposed to UV or heat.
 - a. EXOAIR 110AT by TREMCO, Inc. or equal.
 2. Properties:
 - a. Self-Adhesive Sheet: 22 mil. thick.
 - b. Tensile Strength: 28lbf/in per ASTM D 882.
 - c. Ultimate Elongation: 25 percent.
 - d. Shore A Hardness: 83 per ASTM D 2240.
 3. Accessories: Provide primer, sealant, stainless steel termination bars, preformed corners, end dams, other special shapes, and seaming materials produced by flashing manufacturer.
 4. Apply to clean, dry surfaces.
 5. Extend flashing beyond the wall face and cut flush with the outside face of veneer. A drip edge is not required.
 6. Install per manufacturer's recommendations. Verify compatibility with insulation materials and weather barriers prior to installation.
 7. Primer for Flexible Flashing: Product recommended in writing by flexible flashing manufacturer for substrate.
- C. Application: Unless otherwise indicated, use the following:
 1. Where flashing is indicated to receive counterflashing, use metal flashing.
 2. Where flashing is indicated to be turned down at or beyond the wall face, use metal flashing.
 3. Where flashing is partly exposed and is indicated to terminate at the wall face, use flexible flashing trimmed to the face of the wall.
 4. Where flashing is fully concealed, use metal flashing or flexible flashing.
- D. Single-Wythe CMU Flashing System: System of CMU cell flashing pans and interlocking CMU web covers made from high-density polyethylene incorporating chemical stabilizers that prevent UV degradation. Cell flashing pans have integral weep spouts that are designed to be built into mortar bed joints and weep collected moisture to the exterior of CMU walls and that extend into the cell to prevent clogging with mortar.
- E. Solder and Sealants for Sheet Metal Flashings: As specified in Section 076200 "Sheet Metal Flashing and Trim."

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- F. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.
- G. Termination Bars for Flexible Flashing: Stainless steel bars 1/8 inch by 1 inch.

2.9 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene.
- B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D 2000, Designation M2AA-805 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.
- C. Bond-Breaker Strips: Asphalt-saturated, organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).
- D. Weep/Vent Products: Use the following unless otherwise indicated:
 - 1. Cellular Plastic Weep/Vent: One-piece, flexible extrusion made from UV-resistant polypropylene copolymer, full height and width of head joint and depth 1/8 inch less than depth of outer wythe, in color selected from manufacturer's standard.
- E. Cavity Drainage Material: Install in cavity wall at all thru wall flashing / weep locations. Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.
 - 1. Products: Subject to compliance with requirements,
 - a. Advanced Building Products Inc.; Mortar Break.
 - b. Archovations, Inc.; CavClear Masonry Mat.
 - c. Dayton Superior Corporation, Dur-O-Wal Division; Polytite MortarStop.
 - d. Mortar Net USA, Ltd.; Mortar Net.
 - 2. Provide one of the following configurations:
 - a. Trapezoidal shaped Mortar Net with Insect Barrier MN 10-2: 10" high x 2" thick material that prevent clogging with mortar droppings.

2.10 CAVITY-WALL INSULATION

- A. Polyisocyanurate Board Insulation: ASTM C 1289, Type I (aluminum-foil-faced), Class 2 (glass-fiber-reinforced).
- B. Adhesive: Type recommended by insulation board manufacturer for application indicated.

2.11 MASONRY CLEANERS

- A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.

2.12 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. For exterior masonry, use portland cement-lime mortar.
 - 4. For reinforced masonry, use portland cement-lime mortar.
- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- C. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.
 - 1. For masonry below grade or in contact with earth, use Type M (2500PSI).
 - 2. For reinforced masonry, use Type S (1800PSI).

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

3. For exterior, above-grade, load-bearing and non-load-bearing walls and parapet walls; for interior load-bearing walls; for interior non-load-bearing partitions; and for other applications where another type is not indicated, use Type N (750 PSI).
- D. Grout for Unit Masonry: Comply with ASTM C 476.
 1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 1.15.1 in ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.
 2. Proportion grout in accordance with ASTM C 476, Table 1 or paragraph 4.2.2 for specified 28-day compressive strength as indicated.
 3. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C 143/C 143M.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.
 2. Verify site conditions are ready to receive work.
 3. Inspect materials for fit and finish prior to installation. Do not set unacceptable units.
 4. Verify that foundations are within tolerances specified.
 5. Verify that reinforcing dowels are properly placed.
 6. Verify that substrates are free of substances that impair mortar bond.
 7. Beginning of installation means acceptance of existing conditions.
- B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.
- B. Build chases and recesses to accommodate items specified in this and other Sections.
- C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.
- D. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
- E. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.
 1. Mix units from several pallets or cubes as they are placed.
- F. Wetting of Brick: Wet brick before laying if initial rate of absorption exceeds 30 g/30 sq. in. per minute when tested per ASTM C 67. Allow units to absorb water so they are damp but not wet at time of laying.

3.3 TOLERANCES

- A. Dimensions and Locations of Elements:
 1. For dimensions in cross section or elevation do not vary by more than plus 1/2 inch or minus 1/4 inch.
 2. For location of elements in plan do not vary from that indicated by more than plus or minus 1/2 inch.
 3. For location of elements in elevation do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.
- B. Lines and Levels:
 1. For bed joints and top surfaces of bearing walls do not vary from level by more than 1/4 inch in 10 feet , or 1/2 inch maximum.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet , 1/4 inch in 20 feet , or 1/2 inch maximum.
3. For vertical lines and surfaces do not vary from plumb by more than 1/4 inch in 10 feet , 3/8 inch in 20 feet , or 1/2 inch maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet , 1/4 inch in 20 feet , or 1/2 inch maximum.
5. For lines and surfaces do not vary from straight by more than 1/4 inch in 10 feet , 3/8 inch in 20 feet , or 1/2 inch maximum.
6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet , or 1/2 inch maximum.
7. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch except due to warpage of masonry units within tolerances specified for warpage of units.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch .
2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch .
4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch. Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch.
5. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16 inch from one masonry unit to the next.

3.4 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in bond pattern indicated on Drawings; do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
- C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 4-inches . Bond and interlock each course of each wythe at corners. Do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
- D. Stopping and Resuming Work: Stop work by racking back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.
- E. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- F. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.
- G. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below and rod mortar or grout into core.
- H. Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.
- I. Build non-load-bearing interior partitions full height of story to underside of solid floor or roof structure above unless otherwise indicated.
 1. Install compressible filler in joint between top of partition and underside of structure above.
 2. Fasten partition top anchors to structure above and build into top of partition. Grout cells of CMUs solidly around plastic tubes of anchors and push tubes down into grout to provide 1/2-inch

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

clearance between end of anchor rod and end of tube. Space anchors 48 inches o.c. unless otherwise indicated.

3. Wedge non-load-bearing partitions against structure above with small pieces of tile, slate, or metal. Fill joint with mortar after dead-load deflection of structure above approaches final position.
4. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Section 078446 "Fire-Resistive Joint Systems."

3.5 MORTAR BEDDING AND JOINTING

- A. Lay hollow brick and CMUs as follows:
 1. With face shells fully bedded in mortar and with head joints of depth equal to bed joints.
 2. With webs fully bedded in mortar in all courses of piers, columns, and pilasters.
 3. With webs fully bedded in mortar in grouted masonry, including starting course on footings.
 4. With entire units, including areas under cells, fully bedded in mortar at starting course on footings where cells are not grouted.
 5. Fully bed units and fill cells with mortar at anchors and ties as needed to fully embed anchors and ties in mortar.
- B. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Butter corner of joints. Do not deeply furrow bed joints or slush head joints.
 1. Fully bond intersections and external corners.
 2. Do not adjust masonry units after laying. Where resetting of masonry is required, remove, clean units, and reset in new mortar.
 3. Install loose steel lintels as scheduled. Set angle back from face of block 1/2 inch and cut unit to fit around leg of angle. Angle shall not be visible on face of wall.
- C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.
- D. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.

3.6 COMPOSITE MASONRY

- A. Bond wythes of composite masonry together using one of the following methods:
 1. Individual Metal Ties: Provide ties as shown installed in horizontal joints, but not less than one metal tie for 2.67 sq. ft. of wall area spaced not to exceed 24 inches o.c. horizontally and 16 inches o.c. vertically. Stagger ties in alternate courses. Provide additional ties within 12 inches of openings and space not more than 36 inches apart around perimeter of openings. At intersecting and abutting walls, provide ties at no more than 24 inches o.c. vertically.
 - a. Where bed joints of wythes do not align, use adjustable (two-piece) type ties.
 2. Masonry Joint Reinforcement: Installed in horizontal mortar joints.
 - a. Where bed joints of both wythes align, use ladder-type reinforcement extending across both wythes.
 - b. Where bed joints of wythes do not align, use adjustable (two-piece) type reinforcement.
 3. Header Bonding: Provide masonry unit headers extending not less than 3 inches into each wythe. Space headers not over 12 inches clear horizontally and 16 inches clear vertically.
- B. Bond wythes of composite masonry together using bonding system indicated on Drawings.
- C. Collar Joints: Solidly fill collar joints by parging face of first wythe that is laid and shoving units of other wythe into place.
- D. Corners: Provide interlocking masonry unit bond in each wythe and course at corners unless otherwise indicated.
 1. Provide continuity with masonry joint reinforcement at corners by using prefabricated L-shaped units as well as masonry bonding.
- E. Intersecting and Abutting Walls: Unless vertical expansion or control joints are shown at juncture, bond walls together as follows:

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

1. Provide continuity with masonry joint reinforcement by using prefabricated T-shaped units.

3.7 CAVITY WALLS

- A. Bond wythes of cavity walls together using one of the following methods:
 1. Individual Metal Ties: Provide ties as shown installed in horizontal joints, but not less than one metal tie for 2.67 sq. ft. of wall area spaced not to exceed 24 inches o.c. horizontally and 16 inches o.c. vertically. Stagger ties in alternate courses. Provide additional ties within 12 inches of openings and space not more than 36 inches apart around perimeter of openings. At intersecting and abutting walls, provide ties at no more than 24 inches o.c. vertically.
 - a. Where bed joints of wythes do not align, use adjustable (two-piece) type ties.
 - b. Where one wythe is of clay masonry and the other of concrete masonry, use adjustable (two-piece) type ties to allow for differential movement regardless of whether bed joints align.
 2. Masonry Joint Reinforcement: Installed in horizontal mortar joints.
 - a. Where bed joints of both wythes align, use ladder-type reinforcement extending across both wythes.
 - b. Where bed joints of wythes do not align, use adjustable (two-piece) type reinforcement with continuous horizontal wire in facing wythe attached to ties.
 - c. Where one wythe is of clay masonry or calcium silicate and the other of concrete masonry, use adjustable (two-piece) type reinforcement with continuous horizontal wire in facing wythe attached to ties to allow for differential movement regardless of whether bed joints align.
 3. Header Bonding: Provide masonry unit headers extending not less than 3 inches into each wythe. Space headers not over 12 inches clear horizontally and 16 inches clear vertically.
 4. Masonry Veneer Anchors: Comply with requirements for anchoring masonry veneers.
- B. Bond wythes of cavity walls together using bonding system indicated on Drawings.
- C. Keep cavities clean of mortar droppings and other materials during construction. Bevel beds away from cavity, to minimize mortar protrusions into cavity. Do not attempt to trowel or remove mortar fins protruding into cavity. Point the cavity face of block walls and remove any excess mortar from veneer ties where noted to receive damp-proofing weather barrier.
- D. Apply weather barrier to face of backup wythe or wall substrate to comply with Division Seven "Thermal and Moisture Protection."
- E. Installing Cavity-Wall Insulation: Place small dabs of adhesive, spaced approximately 12 inches o.c. both ways, on inside face of insulation boards, or attach with plastic fasteners designed for this purpose. Fit courses of insulation between wall ties and other confining obstructions in cavity, with edges butted tightly both ways. Press units firmly against inside wythe of masonry or other construction as shown.
 1. Fill cracks and open gaps in insulation with crack sealer compatible with insulation and masonry.

3.8 ANCHORED MASONRY VENEERS

- A. Anchor masonry veneers to wall framing and concrete and masonry backup with masonry-veneer anchors to comply with the following requirements:
 1. Fasten screw-attached anchors through sheathing to wall framing and to concrete and masonry backup with metal fasteners of type indicated. Use two fasteners unless anchor design only uses one fastener.
 2. Embed tie sections or connector sections and continuous wire in in masonry joints.
 3. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
 4. Space anchors as indicated, but not more than 16 inches o.c. vertically and 24 inches o.c. horizontally, with not less than one anchor for each 2.67 sq. ft. of wall area. Install additional anchors within 12 inches of openings and at intervals, not exceeding 36 inches around perimeter.
- B. Provide not less than 2 inches of airspace between back of masonry veneer and face of sheathing and not less than 1 inch of airspace between back of masonry veneer and face of insulation.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

1. Keep airspace clean of mortar droppings and other materials during construction. Bevel beds away from airspace, to minimize mortar protrusions into airspace. Do not attempt to trowel or remove mortar fins protruding into airspace.

3.9 MASONRY JOINT REINFORCEMENT

- A. General: 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. Lap reinforcement a minimum of 6 inches .
 1. Space reinforcement not more than 16 inches o.c.
 2. Space reinforcement not more than 8 inches o.c. in foundation walls and parapet walls.
 3. Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings in addition to continuous reinforcement.
- B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.
- C. Provide continuity at wall intersections by using prefabricated T-shaped units.
- D. Provide continuity at corners by using prefabricated L-shaped units.
- E. Cut and bend reinforcing units as directed by manufacturer for continuity at corners, returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.10 ANCHORING MASONRY TO STRUCTURAL STEEL AND CONCRETE

- A. Anchor masonry to structural steel and concrete where masonry abuts or faces structural steel or concrete to comply with the following:
 1. Provide an open space not less than 1 inch wide between masonry and structural steel or concrete unless otherwise indicated. Keep open space free of mortar and other rigid materials.
 2. Anchor masonry with anchors embedded in masonry joints and attached to structure.
 3. Space anchors as indicated, but not more than 24 inches o.c. vertically and 36 inches o.c. horizontally.

3.11 ANCHORING MASONRY VENEERS

- A. Anchor masonry veneers to wall framing and concrete and masonry backup with masonry-veneer anchors to comply with the following requirements:
 1. Fasten screw-attached anchors through sheathing to wall framing and to concrete and masonry backup with metal fasteners of type indicated. Use two fasteners unless anchor design only uses one fastener.
 2. Insert slip-in anchors in metal studs as sheathing is installed. Provide one anchor at each stud in each horizontal joint between sheathing boards.
 3. Embed tie sections in masonry joints. Provide not less than 2 inches of air space between back of masonry veneer and face of sheathing.
 4. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
 5. Space anchors as indicated, but not more than 16 inches o.c. vertically and 24 inches o.c. horizontally with not less than 1 anchor for each 2.67 sq. ft. of wall area. Install additional anchors within 12 inches of openings and at intervals, not exceeding 36 inches , around perimeter.

3.12 CONTROL AND EXPANSION JOINTS

- A. General: Install control and expansion joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.
- B. Form control joints in concrete masonry using one of the following methods:
 1. Install preformed control-joint gaskets designed to fit standard sash block.
- C. Form expansion joints in brick and calcium silicate manufactured stone as follows:
 1. Form open joint full depth of brick wythe and of width indicated, but not less than 3/8 inch for installation of sealant and backer rod specified in Division 07 Section "Joint Sealants."
- D. Provide horizontal, pressure-relieving joints by either leaving an air space or inserting a compressible filler of width required for installing sealant and backer rod specified in Division 07 Section "Joint Sealants," but not less than 3/8 inch .
 1. Locate horizontal, pressure-relieving joints beneath shelf angles supporting masonry.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

3.13 LINTELS

- A. Install steel lintels where indicated.
- B. Provide masonry lintels where shown and where openings of more than 12 inches 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.

3.14 FLASHING, WEEP HOLES, CAVITY DRAINAGE, AND VENTS

- A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated. [Install vents at shelf angles, ledges, and other obstructions to upward flow of air in cavities, and where indicated.]
 - 1. At base of walls, capping fully grouted air cavity just above grade.
 - 2. Wall openings.
 - 3. Interruptions in the air space of a continuous cavity wall.
 - 4. At top of walls below copings and caps.
- B. Install flashing as follows unless otherwise indicated:
 - 1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.
 - 2. At multiwythe masonry walls, including cavity walls, extend flashing through outer wythe, turned up a minimum of 8 inches , and through inner wythe to within 1/2 inch of the interior face of wall in exposed masonry. Where interior face of wall is to receive furring or framing, carry flashing completely through inner wythe and turn flashing up approximately 2 inches on interior face.
 - 3. At masonry-veneer walls, extend flashing through veneer, across air space behind veneer, and up face of sheathing at least 8 inches ; with upper edge tucked under building paper or building wrap, lapping at least 4 inches .
 - 4. At lintels and shelf angles, extend flashing a minimum of 6 inches into masonry at each end. At heads and sills, extend flashing 6 inches at ends and turn up not less than 2 inches to form end dams.
 - 5. Install flexible flashing at exterior face of wall at head conditions. Cut flush with outside face of wall.
 - 6. Install metal flashing termination beneath flexible flashing at exterior face of wall at metal roof connections. Stop flexible flashing 1/2 inch back from outside face of wall, and adhere flexible flashing to top of metal flashing termination.
 - 7. Cut flexible flashing off flush with face of wall after masonry wall construction is completed. No exposed drip edges or metal flashings shall extend through the face of masonry unless shown otherwise in the drawings.
- C. Install single-wythe CMU flashing system in bed joints of CMU walls where indicated to comply with manufacturer's written instructions. Install CMU cell pans with upturned edges located below face shells and webs of CMUs above and with weep spouts aligned with face of wall. Install CMU web covers so that they cover upturned edges of CMU cell pans at CMU webs and extend from face shell to face shell.
- D. Install reglets and nailers for flashing and other related construction where they are shown to be built into masonry.
- E. Install weep holes in head joints in exterior wythes of first course of masonry immediately above embedded flashing and as follows:
 - 1. Use specified weep/vent products to form weep holes.
 - 2. Space vents 24 inches o.c. unless otherwise indicated.
 - 3. Trim vents flush with outside face of wall after mortar has set.
- F. Place cavity drainage material in cavities to comply with configuration requirements for cavity drainage material in "Miscellaneous Masonry Accessories" Article.
- G. Install vents in head joints in exterior wythes at spacing indicated. Use specified weep/vent products to form vents.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

1. Close cavities off vertically and horizontally with blocking in manner indicated. Install through-wall flashing and weep holes above horizontal blocking.

3.15 FLEXIBLE FLASHING INSTALLATION

- A. Apply flexible flashing where indicated to comply with manufacturer's written instructions.
 1. Prime substrates as recommended by flashing manufacturer.
 2. Lap seams and junctures with other materials at least 4 inches except that at flashing flanges of other construction, laps need not exceed flange width.
 3. Lap flashing over water-resistive barrier at bottom and sides of openings.
 4. Lap water-resistive barrier over flashing at heads of openings.
 5. After flashing has been applied, roll surfaces with a hard rubber or metal roller to ensure that flashing is completely adhered to substrates.

3.16 REINFORCED UNIT MASONRY INSTALLATION

- A. 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 other loads that may be placed on them during construction.
- B. Placing Reinforcement: Comply with requirements in ACI 530.1/ASCE 6/TMS 602.
- C. 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 ACI 530.1/ASCE 6/TMS 602 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 .

3.17 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.

3.18 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.
- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels without damaging surface.
 2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
 3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
 4. Wet wall surfaces (saturate) with water and flush off loose mortar and dirt before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
 5. Clean brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

6. Clean calcium silicate manufactured stone masonry as follows:
 - a. Dilute proprietary cleaner with clean water in controlled proportions applied according to manufacturer's written instructions.
 - b. Apply solution to pre-soaked wall surface using soft bristled brush or low pressure acid-resistant sprayer.
 - c. Thoroughly rinse cleaning solution and residue from wall surface.
7. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2A applicable to type of stain on exposed surfaces.
8. Clean stone trim to comply with stone supplier's written instructions.
9. Clean limestone units and calcium silicate manufactured stone to comply with recommendations in ILI's "Indiana Limestone Handbook."
10. Use alternative cleaning solutions and methods for difficult to clean masonry only after consultation with masonry unit manufacturer.

3.19 MASONRY WASTE DISPOSAL

- A. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.
 1. Crush masonry waste to less than 4 inches in each dimension.
 2. Mix masonry waste with at least two parts of specified fill material for each part of masonry waste. Fill material is specified in Section 312000 "Earth Moving."
 3. Do not dispose of masonry waste as fill within 18 inches of finished grade.
- B. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION 04 2000

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 04 2613 - MASONRY VENEER

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Concrete block.
- B. Clay facing brick.
- C. Reinforcement and anchorage.
- D. Flashings.
- E. Installation of lintels.
- F. Accessories.

1.2 RELATED REQUIREMENTS

- A. Section 04 0511 - Masonry Mortaring and Grouting.
- B. Section 07 9200 - Joint Sealants: Sealing control and expansion joints.

1.3 REFERENCE STANDARDS

- A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- B. ASTM B370 - Standard Specification for Copper Sheet and Strip for Building Construction.
- C. ASTM C67/C67M - Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile.
- D. ASTM C129 - Standard Specification for Nonloadbearing Concrete Masonry Units.
- E. ASTM C216 - Standard Specification for Facing Brick (Solid Masonry Units Made From Clay or Shale).
- F. BIA Technical Notes No. 7 - Water Penetration Resistance – Design and Detailing.
- G. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data for masonry units, fabricated wire reinforcement, and mortar.
- C. Samples: Submit four samples of decorative block and facing brick units to illustrate color, texture, and extremes of color range.

PART 2 PRODUCTS

2.1 CONCRETE MASONRY UNITS

- A. Concrete Block: Comply with referenced standards and as follows:
 - 1. Manufacturers:
 - a. Eschelon, An Oldcastle Company.
 - b. Substitutions: See Section 01 6000 - Product Requirements.
 - 2. Size: Standard units with nominal face dimensions of 16 by 8 inches and nominal depth of 4 inches and 8 inches.
 - 3. Color: Parchment
 - 4. Texture: MV-2: Split Face. MV-3: Ground Face.
 - 5. Special Shapes: Provide non-standard blocks configured for corners.
 - 6. Non-Loadbearing Units: ASTM C129.
 - a. Hollow block.

2.2 BRICK UNITS

- A. Manufacturers:
 - 1. Glen-Gery.
 - 2. Substitutions: See Section 01 6000 - Product Requirements.
- B. Type MV-1: Facing Brick: ASTM C216, Type FBX, Grade SW.
 - 1. Color and Texture: French Gray Smooth.
 - 2. Nominal Size: As indicated on drawings.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

3. Special Shapes: Molded units as required by conditions indicated, unless standard units can be sawn to produce equivalent effect.
4. Compressive Strength: 10,000 PSI, measured in accordance with ASTM C67/C67M.

2.3 REINFORCEMENT AND ANCHORAGE

- A. Reinforcing Steel: ASTM A615/A615M, Grade 40 (40,000 psi) yield strength, deformed billet bars; galvanized.
- B. Joint Reinforcement Type: Use ladder type joint reinforcement where vertical reinforcement is involved and truss type elsewhere, unless otherwise indicated.
- C. 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 design with legs that penetrate sheathing and insulation to provide positive anchorage.
 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.

2.4 FLASHINGS

- A. Metal Flashing Materials:
 1. Copper Flashing: ASTM B370, 060 soft annealed; 20 oz/sq ft thick; natural finish.
- B. Copper/Polymer Fabric Drainage Plane Flashing System: 3 oz/sq ft copper sheet bonded with rubber-based adhesive between one sheet of polymer fabric and one sheet of non-woven drainage material.
- C. Flashing Sealant/Adhesives: Silicone, polyurethane, or silyl-terminated polyether/polyurethane, or other type required or recommended by flashing manufacturer; type capable of adhering to type of flashing used.
- D. Termination Bars: Stainless steel; compatible with membrane and adhesives.
- E. Drip Edge: Stainless steel; compatible with membrane and adhesives.

2.5 ACCESSORIES

- A. Preformed Control Joints: Rubber material. Provide with corner and tee accessories, fused joints.
- B. Weeps:
 1. Type: Extruded propylene with honeycomb design.
 2. Color(s): To match grout color.
- 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.
- D. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.

PART 3 EXECUTION

3.1 EXAMINATION

3.2 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.
 2. Coursing: One unit and one mortar joint to equal 8 inches.
 3. Mortar Joints: Concave.
- D. Brick Units:

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

1. Bond: Running and Soldier - See Exterior Elevations.
2. Coursing: Three units and three mortar joints to equal 8 inches.
3. Mortar Joints: Concave.

3.3 PLACING AND BONDING

- A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.
- B. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
- C. Remove excess mortar as work progresses.
- D. Interlock intersections and external corners.

3.4 WEEPS/CAVITY VENTS

- A. Install weeps in veneer walls at 24 inches on center horizontally on top of through-wall flashing above shelf angles and lintels and at bottom of walls.

3.5 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.

3.6 REINFORCEMENT AND ANCHORAGE - MASONRY VENEER

- A. 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.
- B. 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.
- C. Seismic Reinforcement: Connect veneer anchors with continuous horizontal wire reinforcement before embedding anchors in mortar.

3.7 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, minimum, into adjacent masonry or turn up at least 1 inch, minimum, 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.

3.8 LINTELS

- A. Install loose steel lintels over openings.

3.9 CONTROL AND EXPANSION JOINTS

- A. Do not continue horizontal joint reinforcement through control or expansion joints.
- B. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.

3.10 TOLERANCES

- A. Install masonry within the site tolerances found in TMS 402/602.
- 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.

3.11 CUTTING AND FITTING

- A. Cut and fit for pipes and conduit. 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.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

3.12 CLEANING

- A. Remove excess mortar and mortar smears as work progresses.
- B. Replace defective mortar. Match adjacent work.
- C. Clean soiled surfaces with cleaning solution.

3.13 PROTECTION

- A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

END OF SECTION

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 04 7200 - CAST STONE MASONRY

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Architectural cast stone.
- B. Units required are:
 - 1. Exterior wall units, including wall caps.

1.2 RELATED REQUIREMENTS

- A. Section 04 0511 - Masonry Mortaring and Grouting: Mortar for setting cast stone.
- B. Section 04 2000 - Unit Masonry: Installation of cast stone in conjunction with masonry.
- C. Section 07 9200 - Joint Sealants: Sealing joints indicated to be left open for sealant.

1.3 REFERENCE STANDARDS

- A. ACI CODE-318 - Building Code Requirements for Structural Concrete and Commentary.
- B. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
- C. ASTM A767/A767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.
- D. ASTM A884/A884M - Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement.
- E. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
- F. ASTM C33/C33M - Standard Specification for Concrete Aggregates.
- G. ASTM C150/C150M - Standard Specification for Portland Cement.
- H. ASTM C270 - Standard Specification for Mortar for Unit Masonry.
- I. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete.
- J. ASTM C1364 - Standard Specification for Architectural Cast Stone.

1.4 SUBMITTALS

- A. See Section 01 3000 - 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. 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.
 - 1. Verification samples must be submitted and approved prior to ordering materials.

PART 2 PRODUCTS

2.1 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: Match MV-2.
 - 5. Remove cement film from exposed surfaces before packaging for shipment.
- B. Shapes: Provide shapes indicated on drawings.

CAST STONE MASONRY		04 7200 - 1
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

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.

2.2 MATERIALS

- A. Portland Cement: ASTM C150/C150M.
- 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. Mortar: Portland cement-lime, as specified in Section 04 0511 ; do not use masonry cement.
- J. 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.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install cast stone components in conjunction with masonry, complying with requirements of Section 04 2000.
- 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.

3.2 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".

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

3.3 REPAIR

- A. Repair chips and other surface damage noticeable when viewed in direct daylight at 10 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.

3.4 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

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 05 2100 - STEEL JOIST FRAMING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. K-series steel joists.
 - 2. K-series steel joist substitutes.
 - 3. Joist girders.
 - 4. Joist accessories.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of joist, accessory, and product.
- B. Shop Drawings:
 - 1. Include layout, designation, number, type, location, and spacing of joists.
 - 2. Include joining and anchorage details; bracing, bridging, and joist accessories; splice and connection locations and details; and attachments to other construction.

1.3 INFORMATIONAL SUBMITTALS

- A. Welding certificates.
- B. Manufacturer certificates.
- C. Mill Certificates: For each type of bolt.
- D. Field quality-control reports.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A manufacturer certified by SJI to manufacture joists complying with applicable standard specifications and load tables in SJI's "Specifications."
 - 1. Manufacturer's responsibilities include providing professional engineering services for designing special joists to comply with performance requirements.
- B. Welding Qualifications: Qualify field-welding procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Canam Steel Corporation; Canam Group, Inc.
- B. Valley Joist.
- C. Vulcraft; Nucor Vulcraft Group.

2.2 K-SERIES STEEL JOISTS

- A. Manufacture steel joists of type indicated according to "Standard Specification for Open Web Steel Joists, K-Series" in SJI's "Specifications," with steel-angle top- and bottom-chord members, underslung ends, and parallel top chord.
- B. Steel Joist Substitutes: Manufacture according to "Standard Specifications for Open Web Steel Joists, K-Series" in SJI's "Specifications," with steel-angle or -channel members.

2.3 JOIST GIRDERS

- A. Manufacture joist girders according to "Standard Specification for Joist Girders" in SJI's "Specifications," with steel-angle top- and bottom-chord members; with end and top-chord arrangements as indicated.

2.4 PRIMERS

- A. Primer: SSPC-Paint 15, or manufacturer's standard shop primer complying with performance requirements in SSPC-Paint 15 and primed for Dryfall Paint.
- B. Primer: Provide shop primer that complies with Section 099113 "Exterior Painting" and/or Section 099123 "Interior Painting." and/or Section 099600 "High-Performance Coatings."

2.5 JOIST ACCESSORIES

- A. Bridging: Provide bridging anchors and number of rows of horizontal or diagonal bridging of material, size, and type required by SJI's "Specifications" for type of joist, chord size, spacing, and span. Furnish additional erection bridging if required for stability.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- B. Furnish ceiling extensions, either extended bottom-chord elements or a separate extension unit of enough strength to support ceiling construction. Extend ends to within 1/2 inch of finished wall surface unless otherwise indicated.
- C. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy hex steel structural bolts; ASTM A 563 heavy hex carbon-steel nuts; and ASTM F 436 hardened carbon-steel washers.
 - 1. Finish: Plain, Hot-dip zinc coating, ASTM A 153/A 153M, Class C, or Mechanically deposited zinc coating, ASTM B 695, Class 50 as required.
- D. Furnish miscellaneous accessories including splice plates and bolts required by joist manufacturer to complete joist assembly.

2.6 CLEANING AND SHOP PAINTING

- A. Clean and remove loose scale, heavy rust, and other foreign materials from fabricated joists and accessories.
- B. Apply one coat of shop primer to joists and joist accessories.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Do not install joists until supporting construction is in place and secured.
- B. Install joists and accessories plumb, square, and true to line; securely fasten to supporting construction according to SJI's "Specifications," joist manufacturer's written instructions, and requirements in this Section.
 - 1. Before installation, splice joists delivered to Project site in more than one piece.
 - 2. Space, adjust, and align joists accurately in location before permanently fastening.
 - 3. Install temporary bracing and erection bridging, connections, and anchors to ensure that joists are stabilized during construction.
- C. Field weld joists to supporting steel bearing plates and framework. Coordinate welding sequence and procedure with placement of joists. Comply with AWS requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
- D. Bolt joists to supporting steel framework using carbon-steel bolts.
- E. Bolt joists to supporting steel framework using high-strength structural bolts. Comply with RCSC's "Specification for Structural Joints Using ASTM A 325 or ASTM A 490 Bolts" for high-strength structural bolt installation and tightening requirements.
- F. Install and connect bridging concurrently with joist erection, before construction loads are applied. Anchor ends of bridging lines at top and bottom chords if terminating at walls or beams.

3.2 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Visually inspect field welds according to AWS D1.1/D1.1M.
- C. Visually inspect bolted connections.
- D. Prepare test and inspection reports.

END OF SECTION 052100

Insight Design Architects & Chi- odini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 05 3100 - STEEL DECK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Roof deck.
 - 2. Composite floor deck.
- B. Related Sections include the following:
 - 1. Division 3 Section "Cast-in-Place Concrete" for normal-weight and lightweight structural concrete fill over steel deck.
 - 2. Division 3 "Lightweight Insulating Concrete" for lightweight insulating concrete fill over steel deck.
 - 3. Division 5 Section "Structural Steel" for shop- and field-welded shear connectors.
 - 4. Division 5 Section "Metal Fabrications" for framing deck openings with miscellaneous steel shapes.

1.3 SUBMITTALS

- A. Product Data: For each type of deck, accessory, and product indicated.
- B. Shop Drawings: Show layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.
- C. Product Certificates: For each type of steel deck, signed by product manufacturer.
- D. Welding certificates.
- E. Product Test Reports: Based on evaluation of comprehensive 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.
- F. Research/Evaluation Reports: For steel deck.

1.4 QUALITY ASSURANCE

- A. Welding: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code - Sheet Steel."
- B. Fire-Test-Response Characteristics: Where indicated, provide steel deck units identical to those tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.
 - 1. Fire-Resistance Ratings: Indicated by design designations of applicable testing and inspecting agency.
 - 2. Steel deck units shall be identified with appropriate markings of applicable testing and inspecting agency.
- C. 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."
- D. FMG Listing: Provide steel roof deck evaluated by FMG and listed in its "Approval Guide, Building Materials" for Class 1 fire rating and Class 1-90 windstorm ratings.

1.5 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.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Steel Deck:
 - a. ASC Profiles, Inc.
 - b. Canam Steel Corp.; The Canam Manac Group.

STEEL DECK		05 3100 - 1
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- c. Consolidated Systems, Inc.
- d. D-Mac Industries Inc.
- e. Epic Metals Corporation.
- f. Marlyn Steel Decks, Inc.
- g. Metal Dek Group, a Unit of CSi.
- h. New Millennium Building Systems, LLC.
- i. Nucor Corp.; Vulcraft Division.
- j. Roof Deck, Inc.
- k. United Steel Deck, Inc.
- l. Valley Joist; Division of EBSCO Industries, Inc.
- m. Verco Manufacturing Co.
- n. Wheeling Corrugating Company; Div. of Wheeling-Pittsburgh Steel Corporation.

2.2 ROOF DECK

- A. Steel Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 30, and with the following:
 - 1. Galvanized Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33, G60 zinc coating.
 - 2. Deck Profile: Type WR, wide rib.
 - 3. Profile Depth: 1-1/2 inches.
 - 4. Design Uncoated-Steel Thickness: As indicated.
 - 5. Span Condition: Triple span or more.
 - 6. Side Laps: Overlapped.
 - 7. Exposed deck to be primed for Dryfall paint.

2.3 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. Prime-Painted Steel Sheet: ASTM A 1008/A 1008M, Structural Steel (SS), **Grade 40** minimum, with top surface phosphatized and unpainted and underside surface shop primed with manufacturers' standard **gray or white** baked-on, rust-inhibitive primer for Dryfall Paint.
 - 2. Galvanized-Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33, **G60** zinc coating.
 - 3. Galvanized and Shop-Primed Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), **G60** zinc coating; with unpainted top surface and cleaned and pretreated bottom surface primed with manufacturer's standard **gray or white** baked-on, rust-inhibitive primer for Dryfall Paint.
 - 4. Profile Depth: **2 inches**.
 - 5. Design Uncoated-Steel Thickness: **0.0358 inch**.
 - 6. Span Condition: **Triple span or more**.

2.4 ACCESSORIES

- A. General: 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. 30 for overhang and slab depth.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- 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. Weld Washers: Uncoated steel sheet, shaped to fit deck rib, 0.0598 inch thick, with factory-punched hole of 3/8-inch minimum diameter.
- J. Recessed Sump Pans: Single-piece steel sheet, 0.0747 inch thick, of same material and finish as deck, with 3-inch- wide flanges and sloped recessed pans of 1-1/2-inch minimum depth. For drains, cut holes in the field.
- K. Flat Sump Plate: Single-piece steel sheet, 0.0747 inch thick, of same material and finish as deck. For drains, cut holes in the field.
- L. Galvanizing Repair Paint: ASTM A 780 SSPC-Paint 20 or DOD-P-21035, with dry film containing a minimum of 94 percent zinc dust by weight.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance.

3.2 INSTALLATION, GENERAL

- A. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 30, 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.

3.3 ROOF-DECK INSTALLATION

- A. Fasten roof-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated.
- B. Side-Lap and Perimeter Edge Fastening:
 - 1. As indicated.
- 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 2 inches minimum.
- D. Roof Sump Pans and Sump Plates: Install over openings provided in roof deck and weld flanges to top of deck. Space welds or mechanical fasteners not more than 12 inches apart with at least one weld at each corner.
 - 1. Install reinforcing channels or zees in ribs to span between supports and weld or mechanically fasten.
- E. Miscellaneous Roof-Deck Accessories: Install ridge and valley plates, finish strips, end closures, and reinforcing channels according to deck manufacturer's written instructions. Weld or mechanically fasten to substrate to provide a complete deck installation.
 - 1. Weld cover plates at changes in direction of roof-deck panels, unless otherwise indicated.

Insight Design Architects & Chi- odini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

3.4 FLOOR-DECK INSTALLATION

- 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 as indicated, at intervals not exceeding the lesser of 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.
- 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.

3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Field welds will be subject to inspection.
- C. Testing agency will report inspection results promptly and in writing to Contractor and Architect.
- D. Remove and replace work that does not comply with specified requirements.
- E. Additional inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.

3.6 REPAIRS AND PROTECTION

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- B. Provide final protection and maintain conditions to ensure that steel deck is without damage or deterioration at time of Substantial Completion.

END OF SECTION 05 3100

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 05 4000 - COLD-FORMED METAL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Exterior non-load-bearing wall framing.
 - 2. Ceiling joist framing.
 - 3. Floor joist framing
- B. Related Sections include the following:
 - 1. Division 5 Section "Metal Fabrications" for masonry shelf angles and connections.
 - 2. Division 9 Section "Non-Load-Bearing Steel Framing" for interior non-load-bearing, metal-stud framing and ceiling-suspension assemblies.
 - 3. Division 9 Section "Gypsum Board Shaft-Wall Assemblies" for interior non-load-bearing, metal-stud-framed, shaft-wall assemblies.

1.3 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide cold-formed metal framing capable of withstanding design loads within limits and under conditions indicated.
 - 1. Design Loads: As indicated.
 - 2. Deflection Limits: Design framing systems to withstand design loads without deflections greater than the following:
 - a. Exterior Non-Load-Bearing Framing: Horizontal deflection of 1/240 of the wall height.
 - b. Ceiling Joist Framing: Vertical deflection of 1/360 of the span.
 - c. Floor Joist Framing: Vertical deflection of 1/360 of the span.
 - 3. Design framing systems to provide for movement of framing members without damage or overstressing, sheathing failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change of 120 deg F.
 - 4. Design framing system to maintain clearances at openings, to allow for construction tolerances, and to accommodate live load deflection of primary building structure as follows:
 - a. Upward and downward movement of 1 inch.
- B. Cold-Formed Steel Framing, General: Design according to AISI's "Standard for Cold-Formed Steel Framing - General Provisions."
 - 1. Headers: Design according to AISI's "Standard for Cold-Formed Steel Framing - Header Design."
 - 2. Design exterior non-load-bearing wall framing to accommodate horizontal deflection without regard for contribution of sheathing materials.

1.4 SUBMITTALS

- A. Product Data: For each type of cold-formed metal framing product and accessory indicated.
- B. Shop Drawings: Show layout, spacings, sizes, thicknesses, and types of cold-formed metal framing; fabrication; and fastening and anchorage details, including mechanical fasteners. Show reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.
 - 1. For cold-formed metal framing indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- C. Welding certificates.
- D. Qualification Data: For professional engineer.
- E. Product Test Reports: From a qualified testing agency, unless otherwise stated, indicating that each of the following complies with requirements, based on evaluation of comprehensive tests for current products:
 - 1. Steel sheet.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

2. Expansion anchors.
3. Power-actuated anchors.
4. Mechanical fasteners.
5. Vertical deflection clips.
6. Horizontal drift deflection clips
7. Miscellaneous structural clips and accessories.

F. Research/Evaluation Reports: For cold-formed metal framing.

1.5 QUALITY ASSURANCE

- A. Engineering Responsibility: Preparation of Shop Drawings, design calculations, and other structural data by a qualified professional engineer.
- B. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of cold-formed metal framing that are similar to those indicated for this Project in material, design, and extent.
- C. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM E 329 to conduct the testing indicated.
- D. Product Tests: Mill certificates or data from a qualified independent testing agency indicating steel sheet complies with requirements, including base-metal thickness, yield strength, tensile strength, total elongation, chemical requirements, ductility, and metallic-coating thickness.
- E. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code--Steel," and AWS D1.3, "Structural Welding Code--Sheet Steel."
- F. Fire-Test-Response Characteristics: Where indicated, provide cold-formed metal framing identical to that of assemblies tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.
- G. AISI Specifications and Standards: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" and its "Standard for Cold-Formed Steel Framing - General Provisions."
 1. Comply with AISI's "Standard for Cold-Formed Steel Framing - Truss Design."
 2. Comply with AISI's "Standard for Cold-Formed Steel Framing - Header Design."
- H. Comply with AISI's "Standard for Cold-Formed Steel Framing - Prescriptive Method for One and Two Family Dwellings."
- I. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect cold-formed metal framing from corrosion, deformation, and other damage during delivery, storage, and handling.
- B. Store cold-formed metal framing, protect with a waterproof covering, and ventilate to avoid condensation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide cold-formed metal framing by one of the following:
 1. Allied Studco.
 2. AllSteel Products, Inc.
 3. California Expanded Metal Products Company.
 4. Clark Steel Framing.
 5. Consolidated Fabricators Corp.; Building Products Division.
 6. Craco Metals Manufacturing, LLC.
 7. Custom Stud, Inc.
 8. Dale/Incor.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

9. Design Shapes in Steel.
10. Dietrich Metal Framing; a Worthington Industries Company.
11. Formetal Co. Inc. (The).
12. Innovative Steel Systems.
13. MarinoWare; a division of Ware Industries.
14. Quail Run Building Materials, Inc.
15. SCAFCO Corporation.
16. Southeastern Stud & Components, Inc.
17. Steel Construction Systems.
18. Steeler, Inc.
19. Steel Network, Inc. (The)
20. Super Stud Building Products, Inc.
21. United Metal Products, Inc.

2.2 MATERIALS

- A. Steel Sheet: ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of grade and coating weight as follows:
 1. Grade: As indicated in the drawings or as required by structural performance.
 2. Coating: G60, A60, AZ50, or GF30.
- B. Steel Sheet for Vertical Deflection Clips: ASTM A 653/A 653M, structural steel, zinc coated, of grade and coating as follows:
 1. Grade: 50, Class 1 or 2.
 2. Coating: G90.

2.3 EXTERIOR NON-LOAD-BEARING WALL FRAMING

- A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:
 1. Minimum Base-Metal Thickness: 0.0329 inch.
 2. Flange Width: 1-5/8 inches.
 3. Section Properties: As required.
- B. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with unstiffened flanges, and as follows:
 1. Minimum Base-Metal Thickness: 0.0329 inch.
 2. Flange Width: 1-1/4 inches.
- C. Vertical Deflection Clips: Manufacturer's standard bypass clips, capable of accommodating upward and downward vertical displacement of primary structure through positive mechanical attachment to stud web.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Dietrich Metal Framing; a Worthington Industries Company.
 - b. MarinoWare, a division of Ware Industries.
 - c. SCAFCO Corporation
 - d. The Steel Network, Inc.
- D. Single Deflection Track: Manufacturer's single, deep-leg, U-shaped steel track; unpunched, with unstiffened flanges, of web depth to contain studs while allowing free vertical movement, with flanges designed to support horizontal and lateral loads and transfer them to the primary structure, and as follows:
 1. Minimum Base-Metal Thickness: 0.0538 inch.
 2. Flange Width: 1 inch plus the design gap for 1-story structures.
- E. Drift Clips: Manufacturer's standard bypass or head clips, capable of isolating wall stud from upward and downward vertical displacement and lateral drift of primary structure.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

2.4 CEILING JOIST FRAMING

- A. Steel Ceiling Joists: Manufacturer's standard C-shaped steel sections, of web depths indicated, with stiffened flanges, and as follows:
 1. Minimum Base-Metal Thickness: 0.0329 inch
 2. Flange Width: 1-5/8 inches, minimum.
 3. Section Properties: As required.

2.5 FLOOR JOIST FRAMING

- A. Steel Floor Joists: Manufacturer's standard C-shaped steel sections, of web depths indicated, with stiffened flanges, and as follows:
 1. Minimum Base-Metal Thickness: 0.0329 inch
 2. Flange Width: 1-5/8 inches, minimum.
 3. Section Properties: As required.

2.6 FRAMING ACCESSORIES

- A. Fabricate steel-framing accessories from steel sheet, ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of same grade and coating weight used for framing members.
- B. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated, as follows:
 1. Supplementary framing.
 2. Bracing, bridging, and solid blocking.
 3. Web stiffeners.
 4. Anchor clips.
 5. End clips.
 6. Foundation clips.
 7. Gusset plates.
 8. Stud kickers, knee braces, and girts.
 9. Joist hangers and end closures.
 10. Hole reinforcing plates.
 11. Backer plates.

2.7 ANCHORS, CLIPS, AND FASTENERS

- A. Steel Shapes and Clips: ASTM A 36/A 36M, zinc coated by hot-dip process according to ASTM A 123/A 123M.
- B. Anchor Bolts: ASTM F 1554, Grade 36, threaded carbon-steel hex-headed bolts and carbon-steel nuts; and flat, hardened-steel washers; zinc coated by hot-dip process according to ASTM A 153/A 153M, Class C.
- C. Expansion Anchors: Fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 5 times design load, as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.
- D. Power-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 10 times design load, as determined by testing per ASTM E 1190 conducted by a qualified independent testing agency.
- E. Mechanical Fasteners: ASTM C 1513, corrosion-resistant-coated, self-drilling, self-tapping steel drill screws.
 1. Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.
- F. Welding Electrodes: Comply with AWS standards.

2.8 MISCELLANEOUS MATERIALS

- A. Galvanizing Repair Paint: SSPC-Paint 20 or DOD-P-21035.
- B. Cement Grout: Portland cement, ASTM C 150, Type I; and clean, natural sand, ASTM C 404. Mix at ratio of 1 part cement to 2-1/2 parts sand, by volume, with minimum water required for placement and hydration.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- C. Nonmetallic, Nonshrink Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, portland cement, shrinkage-compensating agents, and plasticizing and water-reducing agents, complying with ASTM C 1107, with fluid consistency and 30-minute working time.
- D. Shims: Load bearing, high-density multimonomer plastic, nonleaching.
- E. Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to match width of bottom track or rim track members.

2.9 FABRICATION

- A. Fabricate cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened, according to referenced AISI's specifications and standards, manufacturer's written instructions, and requirements in this Section.
 - 1. Fabricate framing assemblies using jigs or templates.
 - 2. Cut framing members by sawing or shearing; do not torch cut.
 - 3. Fasten cold-formed metal framing members by welding, screw fastening, clinch fastening, or riveting as standard with fabricator. Wire tying of framing members is not permitted.
 - a. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
 - b. Locate mechanical fasteners and install according to Shop Drawings, with screw penetrating joined members by not less than three exposed screw threads.
 - 4. Fasten other materials to cold-formed metal framing by welding, bolting, or screw fastening, according to Shop Drawings.
- B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies to prevent damage or permanent distortion.
- C. Fabrication Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:
 - 1. Spacing: Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
 - 2. Squareness: Fabricate each cold-formed metal framing assembly to a maximum out-of-square tolerance of 1/8 inch.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine supporting substrates and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Before sprayed fire-resistive materials are applied, attach continuous angles, supplementary framing, or tracks to structural members indicated to receive sprayed fire-resistive materials.
- B. After applying sprayed fire-resistive materials, remove only as much of these materials as needed to complete installation of cold-formed framing without reducing thickness of fire-resistive materials below that are required to obtain fire-resistance rating indicated. Protect remaining fire-resistive materials from damage.
- C. Install load bearing shims or grout between the underside of wall bottom track or rim track and the top of foundation wall or slab at stud or joist locations to ensure a uniform bearing surface on supporting concrete or masonry construction.
- D. Install sealer gaskets to isolate the underside of wall bottom track or rim track and the top of foundation wall or slab at stud or joist locations.

3.3 INSTALLATION, GENERAL

- A. Cold-formed metal framing may be shop or field fabricated for installation, or it may be field assembled.
- B. Install cold-formed metal framing according to AISI's "Standard for Cold-Formed Steel Framing - General Provisions" and to manufacturer's written instructions unless more stringent requirements are indicated.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- C. Install shop- or field-fabricated, cold-formed framing and securely anchor to supporting structure.
 - 1. Screw, bolt, or weld wall panels at horizontal and vertical junctures to produce flush, even, true-to-line joints with maximum variation in plane and true position between fabricated panels not exceeding 1/16 inch.
- D. Install cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened.
 - 1. Cut framing members by sawing or shearing; do not torch cut.
 - 2. Fasten cold-formed metal framing members by welding, screw fastening, clinch fastening, or riveting. Wire tying of framing members is not permitted.
 - a. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
 - b. Locate mechanical fasteners and install according to Shop Drawings, and complying with requirements for spacing, edge distances, and screw penetration.
- E. Install framing members in one-piece lengths unless splice connections are indicated for track or tension members.
- F. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.
- G. Do not bridge building expansion and control joints with cold-formed metal framing. Independently frame both sides of joints.
- H. Install insulation, specified in Division 7 Section "Building Insulation," in built-up exterior framing members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.
- I. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's standard punched openings.
- J. Erection Tolerances: Install cold-formed metal framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:
 - 1. Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.4 EXTERIOR NON-LOAD-BEARING WALL INSTALLATION

- A. Install continuous tracks sized to match studs. Align tracks accurately and securely anchor to supporting structure as indicated.
- B. Fasten both flanges of studs to top and bottom track, unless otherwise indicated. Space studs as follows:
 - 1. Stud Spacing: 16 inches minimum.
- C. Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar requirements.
- D. Isolate non-load-bearing steel framing from building structure to prevent transfer of vertical loads while providing lateral support.
 - 1. Install single-leg deflection tracks and anchor to building structure.
 - 2. Install double deep-leg deflection tracks and anchor outer track to building structure.
 - 3. Connect vertical deflection clips to bypassing studs and anchor to building structure.
 - 4. Connect drift clips to cold formed metal framing and anchor to building structure.
- E. Install horizontal bridging in wall studs, spaced in rows indicated on Shop Drawings but not more than 48 inches apart. Fasten at each stud intersection.
 - 1. Top Bridging for Single Deflection Track: Install row of horizontal bridging within 18 inches of single deflection track. Install a combination of flat, taut, steel sheet straps of width and thickness indicated and stud or stud-track solid blocking of width and thickness matching studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.
 - a. Install solid blocking at as required.
 - 2. Bridging: Cold-rolled steel channel, welded or mechanically fastened to webs of punched studs.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

3. Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated and stud-track solid blocking of width and thickness to match studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.
4. Bridging: Proprietary bridging bars installed according to manufacturer's written instructions.
- F. Install miscellaneous framing and connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, fasteners, and stud girts, to provide a complete and stable wall-framing system.

3.5 JOIST INSTALLATION

- A. Install perimeter joist track sized to match joists. Align and securely anchor or fasten track to supporting structure at corners, ends, and spacings indicated on Shop Drawings.
- B. Install joists bearing on supporting frame, level, straight, and plumb; adjust to final position, brace, and reinforce. Fasten joists to both flanges of joist track.
 1. Install joists over supporting frame with a minimum end bearing of 1-1/2 inches.
 2. Reinforce ends and bearing points of joists with web stiffeners, end clips, joist hangers, steel clip angles, or steel-stud sections as indicated on Shop Drawings.
- C. Space joists not more than 2 inches from abutting walls, and as follows:
 1. Joist Spacing: As indicated.
- D. Frame openings with built-up joist headers consisting of joist and joist track, nesting joists, or another combination of connected joists if indicated.
- E. Install joist reinforcement at interior supports with single, short length of joist section located directly over interior support, with lapped joists of equal length to joist reinforcement, or as indicated on Shop Drawings.
 1. Install web stiffeners to transfer axial loads of walls above.
- F. Install bridging at intervals indicated on Shop Drawings. Fasten bridging at each joist intersection as follows:
 1. Bridging: Joist-track solid blocking of width and thickness indicated, secured to joist webs.
 2. Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated and joist-track solid blocking of width and thickness indicated. Fasten flat straps to bottom flange of joists and secure solid blocking to joist webs.
- G. Secure joists to load-bearing interior walls to prevent lateral movement of bottom flange.
- H. Install miscellaneous joist framing and connections, including web stiffeners, closure pieces, clip angles, continuous angles, hold-down angles, anchors, and fasteners, to provide a complete and stable joist-framing assembly.

3.6 FIELD QUALITY CONTROL

- A. Testing: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Field and shop welds will be subject to testing and inspecting.
- C. Testing agency will report test results promptly and in writing to Contractor and Architect.
- D. Remove and replace work where test results indicate that it does not comply with specified requirements.
- E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.7 REPAIRS AND PROTECTION

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed metal framing with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that cold-formed metal framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION 05 4000

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 05 5133 - METAL LADDERS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Prefabricated ladders.

1.2 REFERENCE STANDARDS

- A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum.
- B. ANSI A14.3 - American National Standard for Ladders -- Fixed -- Safety Requirements.
- C. ASTM B210/B210M - Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes.
- D. ASTM B211/B211M - Standard Specification for Aluminum and Aluminum-Alloy Rolled or Cold Finished Bar, Rod, and Wire.
- E. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination.
- F. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification.

1.3 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings:
 - 1. Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
 - 2. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
- C. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1/B2.1M and dated no more than 12 months before start of scheduled welding work.
- D. Specimen warranty.
- E. Executed warranty.

1.4 WARRANTY

- A. See Section 01 7800 - 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.

PART 2 PRODUCTS

2.1 MATERIALS - ALUMINUM

- A. Extruded Aluminum: ASTM B211/B211M, 6063 alloy, T6 temper.
- B. Aluminum-Alloy Drawn Seamless Tubes: ASTM B210/B210M, 6061 alloy, T6 temper.
- C. Aluminum-Alloy Bars: ASTM B211/B211M, 6061 alloy, T6 temper.
- D. Bolts, Nuts, and Washers: Stainless steel.

2.2 PREFABRICATED LADDERS

- A. Prefabricated Ladder: Welded metal unit complying with ANSI A14.3; factory fabricated to greatest degree practical and in the largest components possible.
 - 1. Components: Manufacturer's standard rails, rungs, treads, handrails. returns, platforms and safety devices complying with the requirements of the MATERIALS article of this section.
 - 2. Finish: Mill finish aluminum.
 - 3. Manufacturers:
 - a. O'Keeffe's Inc; Model 501: www.okeeffes.com/#sle.
 - b. Substitutions: See Section 01 6000 - Product Requirements.

2.3 FINISHES - ALUMINUM

- A. Interior Aluminum Surfaces: Class I natural anodized.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- B. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.

2.4 FABRICATION TOLERANCES

- A. Squareness: 1/8 inch maximum difference in diagonal measurements.
- B. Maximum Offset Between Faces: 1/16 inch.
- C. Maximum Misalignment of Adjacent Members: 1/16 inch.
- D. Maximum Bow: 1/8 inch in 48 inches.
- E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.

3.2 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.

END OF SECTION

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 06 1000 - ROUGH CARPENTRY

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Roof-mounted curbs.
- B. Roofing cant strips.
- C. Concealed wood blocking, nailers, and supports.

1.2 REFERENCE STANDARDS

- A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- B. PS 20 - American Softwood Lumber Standard.

1.3 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Research/Evaluation Reports: For the following, showing compliance with building code in effect for Project:
 - 1. Preservative-treated wood.
 - 2. Fire-retardant-treated wood.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.
- B. Protect from weather and contact with damp or wet surfaces. Stack lumber, plywood, and other panels. Provide for air circulation within and around stacks and under temporary coverings.
 - 1. For lumber and plywood pressure treated with waterborne chemicals, place spacers between each bundle to provide air circulation.
- C. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, and installation.

PART 2 PRODUCTS

2.1 GENERAL REQUIREMENTS

- A. Dimension Lumber: Comply with PS 20 American Softwood Lumber Standard", and requirements of specified grading agencies.
 - 1. Species: Douglas Fir, unless otherwise indicated.
 - 2. If no species is specified, provide species graded by the agency specified; if no grading agency is specified, provide lumber graded by grading agency meeting the specified requirements.
 - 3. Grading Agency: Grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee at www.alsc.org, and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

- A. General: Where lumber or plywood is indicated as preservative treated or is specified to be treated, comply with applicable requirements of AWPA C2 (lumber) and AWPA C9 (plywood). Mark each treated item with the Quality Mark Requirements of an inspection agency approved by ALSC's Board of Review.
 - 1. Do not use chemicals containing chromium or arsenic.
- B. Pressure treat aboveground items with waterborne preservatives to a minimum retention of 0.25 lb/cu. ft.. After treatment, kiln-dry lumber and plywood to a maximum moisture content of 19 and 15 percent, respectively. Treat indicated items and the following:
 - 1. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

2. Wood floor plates installed over concrete slabs directly in contact with earth.

2.3 FIRE-RETARDANT-TREATED MATERIALS

- A. General: Where fire-retardant-treated wood is indicated or required by local jurisdictional authorities, comply with applicable requirements of AWPAC20 (lumber) and AWPAC27 (plywood). Identify fire-retardant-treated wood with appropriate classification marking of UL; U.S. Testing; Timber Products Inspection, Inc.; or another testing and inspecting agency acceptable to authorities having jurisdiction.
 1. Research or Evaluation Reports: Provide fire-retardant-treated wood acceptable to authorities having jurisdiction and for which a current model code research or evaluation report exists that evidences compliance of fire-retardant-treated wood for application indicated.
 2. Use Exterior type for exterior locations and where indicated.
- B. Interior Type A: For interior locations, use chemical formulation that produces treated lumber and plywood with the following properties under conditions present after installation:
 1. Bending strength, stiffness, and fastener-holding capacities are not reduced below values published by manufacturer of chemical formulation under elevated temperature and humidity conditions simulating installed conditions when tested by a qualified independent testing agency.
 2. No form of degradation occurs due to acid hydrolysis or other causes related to treatment.
 3. Contact with treated wood does not promote corrosion of metal fasteners.
- C. Inspect each piece of treated lumber or plywood after drying and discard damaged or defective pieces.

2.4 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

- A. Sizes: Nominal sizes as indicated on drawings, S4S.
- B. Moisture Content: S-dry or MC19.

2.5 ACCESSORIES

- A. Fasteners and Anchors:
 1. Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
 2. Metal and Finish: Hot-dipped galvanized steel complying with ASTM A153/A153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
 3. Drywall Screws: Bugle head, hardened steel, power driven type, length three times thickness of sheathing.
 4. Anchors: Toggle bolt type for anchorage to hollow masonry.
 5. Nails, Wire, Brads, and Staples: FS FF-N-105.
 6. Power-Driven Fasteners: CABO NER-272.
 7. Wood Screws: ASME B18.6.1.
 8. Lag Bolts: ASME B18.2.1. (ASME B18.2.3.8M)
 9. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.
- B. Sill Gasket on Top of Foundation Wall: 1/4 inch thick, plate width, closed cell plastic foam from continuous rolls.

PART 3 EXECUTION

3.1 INSTALLATION - GENERAL

- A. Select material sizes to minimize waste.
- B. Discard units of material with defects that impair quality of rough carpentry and that are too small to use with minimum number of joints or optimum joint arrangement.
- C. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted.
- D. Fit rough carpentry to other construction; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other construction.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- E. Apply field treatment complying with AWP4 M4 to cut surfaces of preservative-treated lumber and plywood.
- F. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the current building codes.
- G. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

3.2 BLOCKING, NAILERS, AND SUPPORTS

- A. Install wood grounds, nailers, blocking, and sleepers where shown and where required for screeding or attaching other work. Form to shapes shown and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- B. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.
- C. In metal stud walls, provide continuous blocking around door and window openings for anchorage of frames, securely attached to stud framing.
- D. Provide the following specific nonstructural framing and blocking:
 - 1. Cabinets and shelf supports.
 - 2. Wall brackets.
 - 3. Handrails.
 - 4. Grab bars.
 - 5. Towel and bath accessories.
 - 6. Wall-mounted door stops.
 - 7. Chalkboards and marker boards.
 - 8. Wall paneling and trim.
 - 9. Joints of rigid wall coverings that occur between studs.

3.3 TOLERANCES

- A. Framing Members: 1/4 inch from true position, maximum.
- B. Variation from Plane, Other than Floors: 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

END OF SECTION

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 06 4100 - ARCHITECTURAL WOOD CASEWORK

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Specially fabricated cabinet units.
- B. Hardware.
- C. Factory finishing.

1.2 RELATED REQUIREMENTS

- A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 06 1000 - Rough Carpentry: Support framing, grounds, and concealed blocking.
- C. Section 12 3600 - Countertops.

1.3 REFERENCE STANDARDS

- A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition.
- B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.1.
- C. BHMA A156.9 - American National Standard for Cabinet Hardware.
- D. NEMA LD 3 - High-Pressure Decorative Laminates.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
 - 1. Scale of Drawings: 1-1/2 inch to 1 foot, minimum.
 - 2. Provide information as required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).
 - 3. Include layout of countertop seams.
 - 4. Include arrows indicating directionality of all directional materials.
- C. Product Data: Provide data for hardware accessories as well as product data for each type of product and process specified in this section and incorporated into items of architectural woodwork during fabrication, finishing, and installation.

1.5 QUALITY ASSURANCE

- A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.
 - 1. Company with at least one project in the past 5 years with value of woodwork within 20 percent of cost of woodwork for this Project.
 - 2. Single Source Responsibility: Provide and install this work from single fabricator.

1.6 FIELD CONDITIONS

- A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.

PART 2 PRODUCTS

2.1 CABINETS

- A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
- B. Plastic Laminate Faced Cabinets: Custom grade.

2.2 WOOD-BASED COMPONENTS

- A. Wood fabricated from old growth timber is not permitted.

2.3 LAMINATE MATERIALS

- A. Manufacturers:

ARCHITECTURAL WOOD CASEWORK		06 4100 - 1
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

1. Formica Corporation.
 2. Wilsonart LLC.
 3. Laminart PLAM-3 - NO SUBSTITUTIONS.
 4. Substitutions: See Section 01 6000 - Product Requirements.
- B. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications.

2.4 COUNTERTOPS

- A. Countertops: See Section 12 3600.

2.5 FIRE-RETARDANT-TREATED MATERIALS

- A. Fire Retardant Treated Materials, General: Where fire retardant treated materials are indicated, use materials complying with requirements in this article that are acceptable to authorities having jurisdiction and with fire test response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.
1. Identify fire retardant treated materials with appropriate classification marking of qualified testing agency in the form of removable paper label or imprint on surfaces that will be concealed from view after installation.
- B. Fire Retardant Treated Lumber and Plywood: Products with a flame spread index of 25 or less when tested in accordance with ASTM E84, with no evidence of significant progressive combustion when the test is extended an additional twenty minutes, and with the flame front not extending more than 1.5 feet beyond the centerline of the burners at any time during the test.
1. Kiln dry lumber and plywood after treatment to a maximum moisture content of 19 and 15 percent, respectively.

2.6 ACCESSORIES

- A. Plastic Edge Banding: Extruded PVC, flat shaped; smooth finish; self locking serrated tongue; of width to match component thickness.
1. Color: To Match Adjacent Laminate.
 2. Use at all exposed plywood edges.
 3. Use at all exposed shelf edges.
- B. Fasteners: Size and type to suit application.
- C. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; galvanized or chrome-plated finish in concealed locations and stainless steel or chrome-plated finish in exposed locations.
- D. Grommets: Standard plastic grommets for cut-outs, in color to match adjacent surface.

2.7 HARDWARE

- A. Hardware: BHMA A156.9, types as recommended by fabricator for quality grade specified.
- B. Metal Z-Shaped Wall Cabinet Support Clips: Paired, cleated, structural anchorage components applied to back of cabinets and walls for wall cabinet mounting.
- C. Adjustable Shelf Supports: Standard side-mounted system using recessed metal shelf standards or multiple holes for pin supports and coordinated self rests, polished chrome finish, for nominal 1 inch spacing adjustments.
- D. Fixed Specialty Workstation and Countertop Brackets:
1. Material: Steel.
 2. Color: Black.
 3. Manufacturers:
 - a. A&M Hardware, Inc; Concealed Brackets: www.aandmhardware.com/#sle.
 - b. Substitutions: See Section 01 6000 - Product Requirements.
- E. Drawer and Door Pulls: "U" shaped wire pull, steel with chrome finish, 4 inch centers.
1. Pull 1: Manufacturer's Standard "U" shaped wire pull, black finish, 4 inch centers.

ARCHITECTURAL WOOD CASEWORK		06 4100 - 2
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- a. Locations: 105 Public Meeting, 108 Finger Print, 109 Corridor, 111 Work Room, 122 Classroom, 128 Mail, 143 Vestibule, 146 Break Room, 153 Roll Call.
- 2. Pull 2: Origin 21 Axel, matte black finish, 5-1/16 inch centers.
 - a. Locations: 162 Property Processing and 164 Secure Processing.
 - b. Substitutions: See Section 01 6000 - Product Requirements.
- F. Cabinet Catches and Latches:
 - 1. Type: Magnetic catch.
- G. Drawer Slides:
 - 1. Type: Full extension.
 - 2. Static Load Capacity: Commercial grade.
 - 3. Mounting: Side mounted.
 - 4. Stops: Integral type.
 - 5. Features: Provide self closing/stay closed type.
- H. Hinges: European style concealed self-closing type, steel with nickel-plated finish.

2.8 FABRICATION

- A. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.
- B. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.
- C. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site 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 2 feet from sink cut-outs.
 - 1. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces.
 - 2. Cap exposed plastic laminate finish edges with material of same finish and pattern.
- E. Mechanically fasten back splash to countertops as recommended by laminate manufacturer at 16 inches on center.
- F. Provide cutouts for plumbing fixtures. Verify locations of cutouts from on-site dimensions. Seal cut edges.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify adequacy of backing and support framing.
- B. Verify location and sizes of utility rough-in associated with work of this section.

3.2 INSTALLATION

- A. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.
- B. Use fixture attachments in concealed locations for wall mounted components.
- C. Use concealed joint fasteners to align and secure adjoining cabinet units.
- D. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.
- E. Secure cabinets to floor using appropriate angles and anchorages.

3.3 CLEANING

- A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

END OF SECTION

ARCHITECTURAL WOOD CASEWORK		06 4100 - 3
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 06 6400 - PLASTIC PANELING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Plastic panel walls assemblies.

1.2 RELATED REQUIREMENTS

- A. Section 07 9200 - Joint Sealants.

1.3 REFERENCE STANDARDS

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- B. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: For each panel and trim type.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Plastic Paneling:
 - 1. Crane Composites.
 - 2. Substitutions: See Section 01 6000 - Product Requirements.

2.2 PLASTIC PANELING

- A. Glass Fiber Reinforced Plastic Paneling: Gelcoat-finished, glass fiber reinforced plastic panels complying with ASTM D5319
- B. Surface Burning Requirements, Interior Use: Flame spread index of 25 or less and smoke-development index of 450 or less; Class A classification when tested in accordance with ASTM E84.
- C. Fungi Resistance: No visible growth, when tested in accordance with ASTM G21.

2.3 ACCESSORIES

- A. Adhesives: Type recommended by panel manufacturer for application; not containing formaldehyde or volatile organic compounds.
- B. Joint Sealants: See Section 07 9200.
- C. Trim Accessories: Manufacturer's standard one-piece vinyl extrusions designed to retain and cover edges of panels. Provide division bars, inside corners, outside corners, and caps as needed to conceal and seal edges.
 - 1. Color: To match adjacent material.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify substrates are prepared to receive plastic paneling.

3.2 PREPARATION

- A. Surface Preparation: Clean substrate surfaces prior to installing paneling.

3.3 INSTALLATION - PLASTIC PANEL WALLS

- A. Install panels and trim in accordance with manufacturer's written instructions.
- B. Install wall panels plumb within specified tolerances.
- C. Install sealant to prevent water intrusion in accordance manufacturer's written instructions.

3.4 TOLERANCES

- A. Maximum Variation from True Position: 1/4 inch.
- B. Maximum Variation from Plumb: 1/4 inch in 10 feet.
- C. Maximum Variation from Level: 1/4 inch in 10 feet.

PLASTIC PANELING		06 6400 - 1
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

3.5 CLEANING

- A. Clean exposed surfaces of panels and trim in accordance with manufacturer's instructions.

3.6 PROTECTION

- A. Protect installed plastic paneling from subsequent construction operations.

END OF SECTION

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 07 2100 - THERMAL INSULATION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Board insulation and integral vapor retarder at cavity wall construction, perimeter foundation wall, underside of floor slabs, over roof deck, over roof sheathing, and exterior wall behind all wall finishes.
- B. Batt insulation in interior and exterior wall construction.
- C. Batt insulation for filling perimeter window and door shim spaces and crevices in exterior wall and roof.

1.2 REFERENCE STANDARDS

- A. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
- B. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
- C. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- E. ASTM E136 - Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750°C.
- F. ASTM E2357 - Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.

1.3 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.

PART 2 PRODUCTS

2.1 APPLICATIONS

- A. Insulation Under Concrete Slabs: Extruded polystyrene (XPS) board.
- B. Insulation at Perimeter of Foundation: Extruded polystyrene (XPS) board.
- C. Insulation Over Metal Stud Framed Walls, Continuous: Polyisocyanurate board.
- D. Insulation over Concrete and Masonry Exterior Walls: Polyisocyanurate board.
- E. Insulation in Metal Framed Walls: Batt insulation with no vapor retarder.
- F. Insulation Above Lay-In Acoustical Ceilings: Batt insulation with no vapor retarder.
- G. Insulation over Roof Deck: Polyisocyanurate board.

2.2 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. Board Edges: Square.
 - 6. Type and Water Absorption: Type XII, 0.3 percent by volume, maximum, by total immersion.
- B. Polyisocyanurate (ISO) Board Insulation: Rigid cellular foam, comply with ASTM C1289.
 - 1. Classifications:
 - a. Type II: Faced with either cellulosic facers or glass fiber mat facers on both major surfaces of the core foam.
 - 1) Class 1 - Faced with glass fiber reinforced cellulosic facers on both major surfaces of core foam.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- 2) Compressive Strength: Classes 1-2-3, Grade 1 - 16 psi (110 kPa), minimum.
- 3) Thermal Resistance, R-value: At 1-1/2 inch thick; Class 1, Grades 1-2-3 - 8.4 (1.48), minimum, at 75 degrees F.
2. Board Size: 48 inch by 96 inch.
3. Board Thickness: 2.0 inch.
4. Products:
 - a. DuPont de Nemours, Inc; Thermax Sheathing: building.dupont.com/#sle.
 - b. Substitutions: See Section 01 6000 - Product Requirements.

2.3 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: R-value of 13.

2.4 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: Are required for application.
- B. Support for Cladding and Continuous Insulation: See respective cladding section.

PART 3 EXECUTION

3.1 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.

3.2 BOARD INSTALLATION AT FOUNDATION PERIMETER

- A. Adhere a 6 inches wide strip of polyethylene sheet over construction, control, and expansion joints with double beads of adhesive each side of joint.
 1. Tape seal joints.
- 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.

3.3 BOARD INSTALLATION AT EXTERIOR WALLS

- A. Adhere 6 inches wide strip of polyethylene sheet over expansion joints with double beads of adhesive each side of joint.
 1. Tape seal joints between sheets.
 2. Extend sheet full height of joint.
- B. Install rigid insulation directly to steel studs or exterior grade sheathing at 16 inches on center with manufacturer recommended mechanical fasteners, and tape joints with manufacturer's minimum 4 inches wide sealant tape; comply with ASTM E2357.
- C. Install boards horizontally on walls.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

1. Place boards to maximize adhesive contact.
2. Install in running bond pattern.
3. Butt edges and ends tightly to adjacent boards and protrusions.
- D. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

3.4 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.

3.5 BOARD INSTALLATION OVER LOW SLOPE ROOF DECK

- A. Board Installation Over Roof Deck, General:
 1. See applicable roofing specification section for specific board installation requirements.
 2. Ensure vapor retarder is clean and dry, continuous, and ready for application of roofing system.
 3. Fasten insulation to deck in accordance with roofing manufacturer's written instructions and applicable Factory Mutual requirements.
 4. Do not apply more insulation than can be covered with roofing on the same day.

3.6 BATT INSTALLATION

- A. Install insulation 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.

3.7 PROTECTION

- A. Do not permit installed insulation to be damaged prior to its concealment.

END OF SECTION

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 07 2400 - EXTERIOR INSULATION AND FINISH SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Composite wall cladding of rigid insulation and reinforced finish coating (Class PB).
- B. Drainage and water-resistive barriers behind insulation board.

1.2 REFERENCE STANDARDS

- A. ASTM B117 - Standard Practice for Operating Salt Spray (Fog) Apparatus.
- B. ASTM C297/C297M - Standard Test Method for Flatwise Tensile Strength of Sandwich Constructions.
- C. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
- D. ASTM C1397 - Standard Practice for Application of Class PB Exterior Insulation and Finish Systems (EIFS) and EIFS with Drainage.
- E. ASTM D968 - Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive.
- F. ASTM D2247 - Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.
- G. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
- H. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- I. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
- J. ASTM E2273 - Standard Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad Wall Assemblies.
- K. ASTM E2486/E2486M - Standard Test Method for Impact Resistance of Class PB and PI Exterior Insulation and Finish Systems (EIFS).
- L. ASTM G153 - Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials.
- M. ASTM G155 - Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Nonmetallic Materials.
- N. ICC-ES AC219 - Acceptance Criteria for Exterior Insulation and Finish Systems.
- O. ICC-ES AC235 - Acceptance Criteria for EIFS Clad Drainage Wall Assemblies.
- P. NFPA 259 - Standard Test Method for Potential Heat of Building Materials.
- Q. NFPA 268 - Standard Test Method for Determining Ignitibility of Exterior Wall Assemblies Using a Radiant Heat Energy Source.
- R. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components.

1.3 DEFINITIONS

- A. Exterior insulation and finish system refers to an exterior assembly composed of an inner layer of thermal insulation board and an outer layer forming the protective finish coating. The assembly is applied to a supporting substrate of construction indicated. Designations below for the class and type of exterior insulation and finish system specified in this section are based on those developed by the Exterior Insulation Manufacturers Association (EIMA).
 - 1. Class PB Type A designates a polymer-based protective finish coating (Class PB), externally reinforced (Type A).
- B. System manufacturer refers to the manufacturer of the exterior insulation and finish system.

1.4 SYSTEM DESCRIPTION

- A. Provide system complying with the following performance requirements:

EXTERIOR INSULATION AND FINISH SYSTEMS		07 2400 - 1
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

1. Bond Integrity: Free from bond failure within system components or between system and supporting wall construction, resulting from exposure to fire, wind loads, weather, or other in-service conditions.
2. Weathertightness: Resistant to water penetration from exterior into system and assemblies behind it or through them into interior of building which results in deterioration of thermal-insulating effectiveness or other degradation of system and assemblies behind system including substrates, supporting wall construction, and interior finish.
3. Fire Performance Characteristics: Provide materials and construction which are identical to those tested for the following fire performance characteristics, per test method indicated, by UL or other testing and inspecting agencies acceptable to authorities having jurisdiction.
 - a. Surface Burning Characteristics: Flame spread rating of 25 or less per ASTM E 84 for insulation board and protective finish coats, when each is tested individually.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on system materials, product characteristics, performance criteria, and system limitations.
- C. Selection Samples: Submit manufacturer's standard range of samples illustrating available coating colors and textures.
 1. Sealant: Submit manufacturer's standard bead samples consisting of strips of actual products showing full range of colors available.
- D. Verification Samples: Submit actual samples of selected coating on specified substrate, minimum 12 inches square, illustrating project colors and textures. Prepare samples using same tools and techniques intended for actual work.

1.6 QUALITY ASSURANCE

- A. Maintain copy of specified installation standard and manufacturer's installation instructions at project site during installation.
- B. Regulatory Requirements: Conform to applicable code requirements for finish system. Provide special inspections as required by local jurisdictional authorities.
- C. Fire-Test-Response Characteristics: Provide EIFS and system components with the following fire-test-response characteristics as determined by testing identical EIFS and system components per test method indicated by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify products with appropriate markings of applicable testing agency.

1.7 FIELD CONDITIONS

- A. Do not prepare materials or apply EIFS under conditions other than those described in the manufacturer's written instructions.
- B. Do not prepare materials or apply EIFS during inclement weather unless areas of installation are protected. Protect installed EIFS areas from inclement weather until dry.
- C. Do not install coatings or sealants when ambient temperature is below 40 degrees F.
- D. Do not install system when ambient outdoor temperatures are 40 deg F (4 deg C) and falling unless temporary protection and heat is provided to maintain ambient temperatures above 40 deg F (4 deg C) during installation of wet materials and for 24 hours after installation or longer to allow them to become thoroughly dry and weather resistant.
- E. Do not leave installed insulation board exposed to sunlight for extended periods of time.
- F. Sequencing and Scheduling: Sequence installation of system with related work specified in other sections to ensure that wall assemblies, including flashing, trim, and joint sealers, are protected against damage from weather, aging, corrosion, or other causes.

EXTERIOR INSULATION AND FINISH SYSTEMS		07 2400 - 2
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

1.8 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Provide manufacturer's standard material warranty, covering a period of not less than 5 years.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design:
 - 1. Sto Corp; StoTherm ci XPS: www.stocorp.com/#sle.
 - 2. Substitutions: See Section 01 6000 - Product Requirements.

2.2 EXTERIOR INSULATION AND FINISH SYSTEM

- A. Exterior Insulation and Finish System: DRAINAGE type; reinforced finish coating on flat-backed insulation board adhesive-applied directly to water-resistive coating over substrate; provide a complete system that has been tested to show compliance with the following characteristics; include all components of specified system and substrate(s) in tested samples.
- B. Fire Characteristics:
 - 1. Flammability: Pass, when tested in accordance with NFPA 285.
 - 2. Ignitibility: No sustained flaming when tested in accordance with NFPA 268.
 - 3. Potential Heat of Foam Plastic Insulation Tested Independently of Assembly: No portion of the assembly having potential heat that exceeds that of the insulation sample tested for flammability (above), when tested in accordance with NFPA 259 with results expressed in Btu per square foot.
- C. Adhesion of Water-Resistive Coating to Substrate: For each combination of coating and substrate, minimum flatwise tensile bond strength of 15 psi, when tested in accordance with ASTM C297/C297M.
- D. Adhesion to Water-Resistive Coating: For each combination of insulation board and substrate, when tested in accordance with ASTM C297/C297M, maximum adhesive failure of 25 percent unless flatwise tensile bond strength exceeds 15 psi in all samples.
- E. Water Penetration Resistance: No water penetration beyond the plane of the base coat/insulation board interface after 15 minutes, when tested in accordance with ASTM E331 at 6.24 psf differential pressure with tracer dye in the water spray; include in tested sample at least two vertical joints and one horizontal joint of same type to be used in construction; disassemble sample if necessary to determine extent of water penetration.
- F. Drainage Efficiency: Average minimum efficiency of 90 percent, when tested in accordance with ASTM E2273 for 75 minutes.
- G. Salt Spray Resistance: No cracking, checking, crazing, erosion, blistering, peeling, delamination, or corrosion of finish coating after 300 hours exposure in accordance with ASTM B117, using at least three samples matching intended assembly, at least 4 by 6 inches in size.
- H. Freeze-Thaw Resistance: No cracking, checking, crazing, erosion, blistering, peeling, delamination, or corrosion of finish coating when viewed under 5x magnification after 10 cycles, when tested in accordance with ICC-ES AC219 or ICC-ES AC235.
- I. Weathering Resistance: No cracking, checking, crazing, erosion, blistering, peeling, delamination, or corrosion of finish coating when viewed under 5x magnification after 2000 hours of accelerated weathering conducted in accordance with ASTM G153 Cycle 1 or ASTM G155 Cycles 1, 5, or 9.
- J. Water Degradation Resistance: No cracking, checking, crazing, erosion, blistering, peeling, delamination, or corrosion of finish coating after 14 days exposure, when tested in accordance with ASTM D2247.
- K. Mildew Resistance: No growth supported on finish coating during 28 day exposure period, when tested in accordance with ASTM D3273.

EXTERIOR INSULATION AND FINISH SYSTEMS		07 2400 - 3
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- L. Abrasion Resistance Of Finish: No cracking, checking or loss of film integrity when tested in accordance with ASTM D968 with 113.5 gallons of sand.
- M. Impact Resistance: Construct system to provide the following impact resistance without exposure of broken reinforcing mesh, when tested in accordance with ASTM E2486/E2486M:
 - 1. High: 90 to 150 in-lb, for areas with general access to public.

2.3 MATERIALS

- A. Compatibility: Provide substrates, adhesive, fasteners, board insulation, reinforcing meshes, base and finish-coat systems, sealants, and accessories that are compatible with one another and approved for use by EIFS manufacturer for Project.
- B. Finish Coating Top Coat: Water-based, air curing, acrylic or polymer-based finish with integral color and texture. System manufacturer's standard mixture complying with the following requirements:
 - 1. Texture: Fine.
 - 2. Color: Sto Corp Color 16072.
- C. Base Coat: Fiber-reinforced, acrylic or polymer-based product compatible with insulation board and reinforcing mesh, Class PB.
- D. Reinforcing Mesh: Balanced, alkali-resistant, open weave glass fiber fabric, treated for compatibility and improved bond with coating, weight, strength, and number of layers as required to meet required system impact rating.
- E. Extruded Polystyrene (XPS) Board Insulation: Complies with ASTM C578, with natural skin surfaces.
 - 1. Board Size: 48 by 96 inch.
 - 2. Board Size Tolerance: 1/16 inch from square and dimension.
 - 3. Board Thickness: As indicated on drawings.
 - 4. Board Edges: Square.
 - 5. Type and Thermal Resistance, R-value (RSI-value): Type X, 5.0 (0.88) per 1 inch thickness at 75 degrees F mean temperature.
 - 6. Type and Compressive Resistance: Type X, 15 psi (104 kPa), minimum.
 - 7. Type and Board Density: Type X, 1.30 pcf (21 kg/cu m), minimum.
 - 8. Type and Water Absorption: Type X, 0.3 percent by volume, maximum, by total immersion.
 - 9. Surface Burning Characteristics: Flame spread/Smoke developed index of 25/450, when tested in accordance with ASTM E84.
- F. Water-Resistive Barrier Coating: Fluid-applied air and water barrier membrane; applied to sheathing; furnished or approved by EIFS manufacturer.

2.4 ACCESSORY MATERIALS

- A. Insulation Adhesive: Type required by EIFS manufacturer for project substrate.
- B. Trim: EIFS manufacturer's standard PVC or galvanized steel trim accessories, as required for a complete project and including starter track and drainage accessories.
- C. Sealant Materials: Compatible with EIFS materials and as recommended by EIFS manufacturer.
- D. Trim Accessories: Type as designated or required to suit conditions indicated and to comply with EIFS manufacturer's written requirements; manufactured from UV-stabilized PVC; and complying with ASTM D 1784, manufacturer's standard Cell Class for use intended, and ASTM C 1063.
 - 1. Casing Bead: Prefabricated one-piece type for attachment behind insulation, of depth required to suit thickness of coating and insulation, with face leg perforated for bonding to coating and back leg.
 - 2. Expansion Joint: Prefabricated one-piece V profile; designed to relieve stress of movement.
 - 3. Window Sill Flashing: Prefabricated type for both flashing and sloping sill over framing beneath windows; with end and back dams; designed to direct water to exterior.

EXTERIOR INSULATION AND FINISH SYSTEMS		07 2400 - 4
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of EIFS.
- B. Verify that substrate is sound and free of oil, dirt, other surface contaminants, efflorescence, loose materials, or protrusions that could interfere with EIFS installation and is of a type and construction that is acceptable to EIFS manufacturer. Do not begin work until substrate and adjacent materials are complete and thoroughly dry.
- C. If paper-faced gypsum sheathing has been exposed to weather for more than 30 days, check for integrity of surface using method specified in ASTM C1397 Annex A2, at minimum of two locations or once every 5000 sq ft, whichever is greater; if any test fails, notify Architect and do not begin installation.
- D. Verify that substrate surface is flat, with no deviation greater than 1/4 in when tested with a 10 ft straightedge.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION - GENERAL

- A. Install in accordance with EIFS manufacturer's instructions and ASTM C1397.
 1. Where different requirements appear in either document, comply with the most stringent.
 2. Neither of these documents supercedes provisions of Contract Documents that defines contractual relationships between parties or scope of this work.

3.3 INSTALLATION - WATER-RESISTIVE BARRIER

- A. Apply barrier coating as recommended by coating manufacturer; prime substrate as required before application.
- B. Seal substrate transitions and intersections with other materials to form continuous water-resistive barrier on exterior of sheathing, using method recommended by manufacturer.
- C. At door and window rough openings and other wall penetrations, seal water-resistive barrier and flexible flashings to rough opening before installation of metal flashings, sills, or frames, using method recommended by manufacturer.
- D. Lap flexible flashing or flashing tape at least 2 inches on each side of joint or transition.

3.4 INSTALLATION - INSULATION

- A. Install in accordance with manufacturer's instructions.
- B. Install back wrap reinforcing mesh at all openings and terminations that are not to be protected with trim.
- C. On wall surfaces, install boards horizontally.
- D. Place boards in a method to maximize tight joints. Stagger vertical joints and interlock at corners. Butt edges and ends tight to adjacent board and to protrusions. Achieve a continuous flush insulation surface, with no gaps in excess of 1/16 inch.
- E. Fill gaps greater than 1/16 inch with strips or shims cut from the same insulation material.
- F. Rasp irregularities off surface of installed insulation board. Rasp or sand flush entire surface of insulation to remove irregularities projecting more than 1/16 inch from surface of insulation and to remove yellowed areas due to sun exposure; smooth surface film created by extrusion process; do not create depressions deeper than 1/16 inch.

3.5 CLEANING

- A. Clean EIFS surfaces and work areas of foreign materials resulting from EIFS operations.
- B. Remove temporary covering and protection of other work. Promptly remove coating materials from window and doorframes and other surfaces outside areas indicated to receive EIFS coatings.

EXTERIOR INSULATION AND FINISH SYSTEMS		07 2400 - 5
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

3.6 PROTECTION

- A. Protect completed work from damage and soiling by subsequent work.

END OF SECTION

EXTERIOR INSULATION AND FINISH SYSTEMS		07 2400 - 6
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 07 2500 - WEATHER BARRIERS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Water-Resistive Barrier: Under exterior wall cladding, over sheathing or other substrate; not air tight or vapor retardant.

1.2 DEFINITIONS

- A. Weather Barrier: Assemblies that form either water-resistive barriers, air barriers, or vapor retarders.
- B. Air Barrier: Air tight barrier made of material that is relatively air impermeable but water vapor permeable, both to the degree specified, with sealed seams and with sealed joints to adjacent surfaces. Note: For the purposes of this specification, vapor impermeable air barriers are classified as vapor retarders.
- C. Vapor Retarder: Air tight barrier made of material that is relatively water vapor impermeable, to the degree specified, with sealed seams and with sealed joints to adjacent surfaces.
 - 1. Water Vapor Permeance: For purposes of conversion, $57.2 \text{ ng}/(\text{Pa s sq m}) = 1 \text{ perm}$.

1.3 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on material characteristics.
- C. Warranty Documentation for Installation of Building Rainscreen Assembly: Submit installer warranty and ensure that forms have been completed in Owner's name and registered with installer.

1.4 FIELD CONDITIONS

- A. Maintain temperature and humidity recommended by the materials manufacturers before, during and after installation.

PART 2 PRODUCTS

2.1 WEATHER BARRIER ASSEMBLIES

- A. Water-Resistive Barrier: Provide on exterior walls under exterior cladding.
 - 1. Use plastic sheet unless otherwise indicated.
- B. Air Barrier:
 - 1. On outside surface of sheathing of exterior walls use air barrier sheet, mechanically fastened type.

2.2 WATER-RESISTIVE BARRIER MATERIALS (NEITHER AIR BARRIER OR VAPOR RETARDER)

- A. Weather-Resistive Barrier, Composite: Tear-resistant polyester sheet with UV-resistant acrylic coating.
 - 1. Air Permeance: 0.004 cfm/sq ft , maximum, when tested in accordance with ASTM E2178.
 - 2. Water Vapor Permeance: 200 perms, minimum, when tested in accordance with ASTM E96/E96M Procedure A (Desiccant Method) at 73.4 degrees F.
 - 3. Surface Burning Characteristics: Flame spread index of 25 or less, smoke developed index of 450 or less (Class A), when tested in accordance with ASTM E84.
 - 4. Water Resistance: Comply with applicable water-resistive requirements of ICC-ES AC38.
 - 5. Seam and Perimeter Tape: As recommended by sheet manufacturer.

2.3 AIR BARRIER MATERIALS (WATER VAPOR PERMEABLE AND WATER-RESISTIVE)

- A. Air Barrier Sheet, Mechanically Fastened:
 - 1. Air Permeance: 0.004 cfm/sq ft , maximum, when tested in accordance with ASTM E2178.
 - 2. Water Vapor Permeance: 50 perms, minimum, when tested in accordance with ASTM E96/E96M Procedure A (Desiccant Method) at 73.4 degrees F.
 - 3. Water Penetration Resistance: Withstand a water head of 21 inches, minimum, for minimum of 5 hours, when tested in accordance with AATCC Test Method 127.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

2.4 ACCESSORIES

- A. Sealants, Tapes, and Accessories for Sealing Weather Barrier and Sealing Weather Barrier to Adjacent Substrates: As specified or as recommended by weather barrier manufacturer.
- B. Sealant for Cracks and Joints In Substrates: Resilient elastomeric joint sealant compatible with substrates and waterproofing materials.
 - 1. Application: Apply at 30 to 40 mil, 0.030 to 0.40 inch nominal thickness.
 - 2. Color: Green.
- C. Primer: Liquid applied polymer.
 - 1. Color: Green.
- D. Flexible Flashing: Self-adhesive sheet flashing complying with ASTM D1970/D1970M, except slip resistance requirement is waived if not installed on a roof.
 - 1. Composition: Modified bituminous sheet laminated to polyethylene sheet.
- E. 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.

PART 3 EXECUTION

3.1 EXAMINATION

3.2 PREPARATION

- A. Remove projections, protruding fasteners, and loose or foreign matter that might interfere with proper installation.
- B. Clean and prime substrate surfaces to receive adhesives in accordance with manufacturer's instructions.

3.3 INSTALLATION

- A. Install materials in accordance with manufacturer's instructions.
- B. Water-Resistive Barriers: Install continuous barrier over surfaces indicated, with sheets lapped to shed water but with seams not sealed.
- C. Air Barriers: Install continuous air tight barrier over surfaces indicated, with sealed seams and with sealed joints to adjacent surfaces.
- D. Mechanically Fastened Sheets - On Exterior:
 - 1. Install sheets shingle-fashion to shed water, with seams generally horizontal.
 - 2. Overlap seams as recommended by manufacturer but at least 6 inches.
 - 3. Overlap at outside and inside corners as recommended by manufacturer but at least 12 inches.
 - 4. Attach to framed construction with fasteners extending through sheathing into framing. Space fasteners at 12 to 18 inches on center along each framing member supporting sheathing.
 - 5. Attach to masonry construction using mechanical fasteners spaced at 12 to 18 inches on center vertically and maximum 24 inches on center horizontally.
 - 6. Where stud framing rests on concrete or masonry, extend lower edge of sheet at least 4 inches below bottom of framing and seal to foundation with sealant.
 - 7. Install water-resistive barrier over jamb flashings.
 - 8. Install head flashings under weather barrier.

3.4 PROTECTION

- A. Do not leave materials exposed to weather longer than recommended by manufacturer.

END OF SECTION

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 07 4213 - METAL WALL PANELS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Manufactured metal panels for exterior wall panels, with related flashings and accessory components.

1.2 RELATED REQUIREMENTS

- A. Section 07 9200 - Joint Sealants: Sealing joints between metal wall panel system and adjacent construction.

1.3 REFERENCE STANDARDS

- A. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data - Wall System: Manufacturer's data sheets on each product to be used, including:
 1. Physical characteristics of components shown on shop drawings.
 2. Storage and handling requirements and recommendations.
 3. Installation instructions and recommendations.
- C. Shop Drawings: Indicate dimensions, layout, joints, construction details, support clips, and methods of anchorage.
- D. Manufacturer's qualification statement.
- E. Warranty Documentation for Installation of Building Rainscreen Assembly: Submit installer warranty and ensure that forms have been completed in Owner's name and registered with installer.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.
- B. Store prefinished material off the ground and protected from weather; prevent twisting, bending, or abrasion; provide ventilation; slope metal sheets to ensure proper drainage.
- C. Prevent contact with materials that may cause discoloration or staining of products.

1.7 FIELD CONDITIONS

- A. Do not install wall panels when air temperature or relative humidity are outside manufacturer's limits.

1.8 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Finish Warranty: Provide 50-year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking. Complete forms in Owner's name and register with warrantor.

PART 2 PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide panel systems capable of withstanding the effects of the following loads, based on testing in accordance with ASTM E330:
 1. Wind Loads: As indicated on drawings.
 2. Panel Deflection Limit: For wind loads, no greater than 1/60 of the span.
 3. Framing Member Deflection Limits: For wind loads, no greater than 1/175 of the span.
- B. Air Infiltration: Air leakage of not more than 0.06 cfm / square foot of wall area when tested in accordance with ASTM E283 at a test-pressure difference of 6.24 lbf / square foot.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- C. Water Penetration under Static Pressure: No water penetration to room side of assembly when tested for 15 minutes in accordance with ASTM E331 a test-pressure difference of 6.24 lbf / square foot.
- D. Thermal Movements: Locate expansion and contraction points to allow for free and noiseless thermal movements from surface temperature changes at a range of 20 deg F to 180 deg F material surfaces.
- E. Fire Propagation Characteristics: Panel wall assembly passes NFPA 285 testing.

2.2 MANUFACTURERS

- A. Metal Wall Panels - Concealed Fasteners:
 - 1. 3A Composites USA; Alucobond Plus Dry Reveal System.
 - 2. Substitutions: See Section 01 6000 - Product Requirements.

2.3 METAL WALL PANEL SYSTEM

- A. Wall Panel System: Factory fabricated prefinished metal panel system, site assembled.
 - 1. Provide exterior wall panels.
 - 2. Design and size components to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of wall.
 - 3. Movement: Accommodate movement within system without damage to components or deterioration of seals, movement between system and perimeter components when subject to seasonal temperature cycling; dynamic loading and release of loads; and deflection of structural support framing.
 - 4. Drainage: Provide positive drainage to exterior for moisture entering or condensation occurring within panel system.
 - 5. Fabrication: Formed true to shape, accurate in size, square, and free from distortion or defects; pieces of longest practical lengths.
 - 6. Corners: Factory-fabricated in one continuous piece with minimum 2-inch returns.
- B. Exterior Wall Panels:
 - 1. Profile: Horizontal; style as indicated.
 - 2. Side Seams: Double-interlocked, tight-fitting, sealed with continuous gaskets.
 - 3. Material: Precoated aluminum sheet, 20 gauge, 0.032 inch minimum thickness.
 - 4. Panel Width: As Indicated on Drawings.
 - 5. Color: Statuary Bronze.
- C. Internal and External Corners: Same material, thickness, and finish as exterior sheets; profile to suit system; shop cut and factory mitered to required angles.
- D. Expansion Joints: Same material, thickness and finish as exterior sheets; manufacturer's standard brake formed type, of profile to suit system.
- E. Trim: Same material, thickness and finish as exterior sheets; brake formed to required profiles.
- F. Anchors: Galvanized steel.

2.4 MATERIALS

- A. Precoated Aluminum Sheet: ASTM B209/B209M, 3105 alloy, O temper, with smooth surface texture; continuous-coil-coated on exposed surfaces with specified finish coating and on panel back with specified panel back coating.

2.5 FINISHES

- A. Exposed Surface Finish: Panel manufacturer's standard polyvinylidene fluoride (PVDF) coating, top coat over epoxy primer.
- B. Panel Backside Finish: Panel manufacturer's standard siliconized polyester wash coat.

2.6 ACCESSORIES

- A. Support for Cladding and Continuous Insulation: Thermal clips.
 - 1. Thermally-broken clips that provide attachment support for girts, angles, channels, and other cladding support framing.
 - 2. Clip Depth: As required for thickness of insulation.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- 3. Spacing of Clips: 16 inches on center, vertically.
- 4. Fasteners: As recommended by clip manufacturer.
- B. Gaskets: Manufacturer's standard type suitable for use with system, permanently resilient; ultraviolet and ozone resistant.
- C. Concealed Sealants: Non-curing butyl sealant or tape sealant, see Section 07 9200

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install panels on walls in accordance with manufacturer's instructions.
- B. Fasten panels to structural supports; aligned, level, and plumb.
- C. Use concealed fasteners unless otherwise indicated by Architect.
- D. Seal and place gaskets to prevent weather penetration. Maintain neat appearance.

3.2 TOLERANCES

- A. Offset From True Alignment Between Adjacent Members Abutting or In Line: 1/16 inch, maximum.
- B. Variation from Plane or Location As Indicated on Drawings: 1/4 inch, maximum.

3.3 CLEANING

- A. Remove site cuttings from finish surfaces.
- B. Remove protective material from wall panel surfaces.
- C. Clean and wash prefinished surfaces with mild soap and water; rinse with clean water.

3.4 PROTECTION

- A. Protect metal wall panels until completion of project.
- B. Touch-up, repair, or replace damaged wall panels or accessories before Date of Substantial Completion.

END OF SECTION

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 07 4616 - ALUMINUM SIDING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Aluminum siding.

1.2 REFERENCE STANDARDS

- A. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum (Combined Document).
- B. ASTM D2244 - Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates.
- C. ASTM D4214 - Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films.

1.3 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Manufacturer's data sheets for each product, including:
 - 1. Preparation instructions and recommendations.
 - 2. Siding materials, underlayment, flashings, fasteners and accessories.
 - 3. Dimensions, physical properties, and typical details.
 - 4. Storage and handling requirements and recommendations.
 - 5. Installation instructions and recommendations.
- C. Shop Drawings: Indicate layout, methods of attachment and support clips, provisions for movement, flashing, trim, edge and field conditions, interface with adjacent materials, locations of cutouts or special shapes, existing construction, and details.
- D. Executed warranty.

1.4 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Manufacturer's Warranty: Provide manufacturer's standard lifetime, non-prorated, transferable warranty, including 15 year hail protection warranty.
- C. Manufacturer's warranty on siding and trim accessories finishes to cover the following:
 - 1. Color fading of five Hunter color-difference units, maximum, when tested in accordance with ASTM D2244.
 - 2. Chalk rating of eight, maximum, when tested in accordance with ASTM D4214.
 - 3. Cracking, checking, peeling, or failure of paint to adhere to metal substrate.
 - 4. Warranty Period: 15 years.
 - a. PVDF (Polyvinylidene Fluoride): 15 years.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Aluminum Siding Manufacturers:
 - 1. Longboard Architectural Products.
 - 2. Alucobond.
 - 3. Substitutions: See Section 01 6000 - Product Requirements.

2.2 ALUMINUM SIDING

- A. Type MP-2 , Horizontal Siding: 6 inch Channel Planks extruded aluminum 6063 T5.
 - 1. Profile: 6-inch Channel X
 - 2. Length: 24 ft, minimum, seamless.
 - 3. Finish: Powder Coated Finish
 - 4. Color: Light Cherry.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

5. Texture: Smooth.

2.3 ACCESSORIES

- A. Support for Cladding and Continuous Insulation: Thermal clips.
 1. Thermally-broken clips that provide attachment support for girts, angles, channels, and other cladding support framing.
 2. Clip Depth: As required for thickness of insulation.
 3. Spacing of Clips: 16 inches on center, vertically.
 4. Fasteners: As recommended by clip manufacturer.
- B. Fasteners: Aluminum; nonstaining, .
- C. Flashing: Siding manufacturer's standard, factory-finished flashing accessories.
- D. Provide the following accessories as required for complete installation:
 1. Starter strip.
 2. Corner post.
 3. J-Channels.
 4. Window and door trim.
 5. Drip cap.

2.4 FINISHES

- A. Precoated in shop with manufacturer's standard PVDF coating system.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine substrate conditions before beginning installation.
- B. Verify dimensions and acceptable substrate condition.
- C. If substrate preparation is responsibility of another installer, notify Architect of unsatisfactory conditions before proceeding.
- D. Do not proceed with installation until unacceptable conditions have been corrected.

3.2 INSTALLATION

- A. Install aluminum siding, soffit, trim, and accessories in accordance with manufacturer's written instructions.
- B. Attach siding using manufacturers recommended fasteners, sealants, and adhesives, allowing for thermal expansion.
- C. Do not use exposed fasteners.
- D. Horizontal Clapboard: Work from base of installation to top; stagger lap joints in horizontal siding in uniform pattern while installing successive courses of siding.

3.3 CLEANING

- A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.
- B. Remove grease and oil films, excess joint sealer, handling marks, and other installation debris from aluminum siding, leaving siding clean and unmarked, free from dents, creases, waves, scratch marks, or other damage to material finishes.
- C. Upon completion of installation, thoroughly clean prefinished aluminum surfaces in accordance with AAMA 609 & 610.
- D. Remove excess materials and debris from project site.

3.4 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

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 07 5400 - THERMOPLASTIC MEMBRANE ROOFING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Adhered system with thermoplastic roofing membrane.
- B. Deck sheathing.
- C. Cover boards.
- D. Flashings.
- E. Roofing cant strips, stack boots, and roofing expansion joints.

1.2 REFERENCE STANDARDS

- A. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
- B. ASTM D4263 - Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.
- C. ASTM D6878/D6878M - Standard Specification for Thermoplastic Polyolefin-Based Sheet Roofing.
- D. ASTM E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.
- E. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.
- F. FM (AG) - FM Approval Guide.
- G. FM DS 1-28 - Wind Design.
- H. NRCA (RM) - The NRCA Roofing Manual.
- I. NRCA (WM) - The NRCA Waterproofing Manual.

1.3 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data indicating membrane materials, flashing materials, surfacing, and adhesives.
- C. Shop Drawings: Submit drawings that indicate joint or termination detail conditions and conditions of interface with other materials.
- D. Manufacturer's qualification statement.
- E. Warranty Documentation:
 - 1. Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
 - 2. Submit installer's written verification that installation complies with warranty conditions for waterproof membrane.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.

1.5 FIELD CONDITIONS

- A. Do not apply roofing membrane during unsuitable weather.
- B. Do not apply roofing membrane when ambient temperature is below 40 degrees F or above ____ degrees F.
- C. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.
- D. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.
- E. Schedule applications so that no partially completed sections of roof are left exposed at end of workday.

THERMOPLASTIC MEMBRANE ROOFING		07 5400 - 1
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

1.6 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Material Warranty: Provide membrane manufacturer's warranty agreeing to replace material that shows manufacturing defects within five years after installation.
- C. System Warranty: Provide manufacturer's system warranty agreeing to repair or replace roofing that leaks or is damaged due to wind or other natural causes.
 - 1. Warranty Term: 20 years.
 - 2. For repair and replacement include costs of both material and labor in warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Thermoplastic Polyolefin (TPO) Membrane Roofing Materials:
 - 1. GAF; EverGuard SA TPO Self-Adhered Roof Membrane 60 mil: www.gaf.com/#sle.
 - 2. Johns Manville; JM TPO - 60 mil: www.jm.com/#sle.
 - 3. Substitutions: See Section 01 6000 - Product Requirements.

2.2 ROOFING

- A. Thermoplastic Membrane Roofing: One ply membrane, fully adhered, over insulation.
- B. Roofing Assembly Requirements:
 - 1. Solar Reflectance Index (SRI): Minimum of 64 based on three-year aged value; if three-year aged data is not available, minimum of 82 initial value.
 - a. Calculate SRI in accordance with ASTM E1980.
 - b. Field applied coating may not be used to achieve specified SRI.
- C. Acceptable Insulation Types - Constant Thickness Application: Any of types specified.
 - 1. Minimum 2 layers of extruded polystyrene board.
 - 2. Bottom layer of extruded polystyrene board covered with single layer of extruded polystyrene board.

2.3 MEMBRANE ROOFING AND ASSOCIATED MATERIALS

- A. Membrane Roofing Materials:
 - 1. TPO: Thermoplastic polyolefin (TPO) complying with ASTM D6878/D6878M, sheet contains reinforcing fabrics or scrims.
 - a. Thickness: 60 mil, 0.060 inch, minimum.
 - 2. Sheet Width: Factory fabricated into widest possible sheets.
 - a. Adhered Application: Limit width to 120 inches, maximum, when ambient temperatures are less than 40 degrees F for extended period of time during installation.
 - 3. Color: White.
- B. Seaming Materials: As recommended by membrane manufacturer.
- C. Flexible Flashing Material: Same material as membrane.

2.4 DECK SHEATHING

- A. Deck Sheathing: Glass-mat faced gypsum panels complying with ASTM C1177/C1177M.
 - 1. Thickness: 1/2 inch, Type X, fire-resistant.
 - 2. Products:
 - a. Georgia-Pacific; DensDeck: www.densdeck.com/#sle.
 - b. Substitutions: See Section 01 6000 - Product Requirements.

2.5 COVER BOARDS

- A. Cover Boards: Glass-mat faced gypsum panels complying with ASTM C1177/C1177M.
 - 1. Thickness: 1/2 inch, Type X, fire-resistant.
 - 2. Products:

THERMOPLASTIC MEMBRANE ROOFING		07 5400 - 2
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- a. Georgia-Pacific; DensDeck: www.densdeck.com/#sle.

2.6 ACCESSORIES

- A. Prefabricated Roofing Expansion Joint Flashing: Sheet butyl over closed-cell foam backing seamed to galvanized steel flanges.
- B. Stack Boots: Prefabricated flexible boot and collar for pipe stacks through membrane; same material as membrane.
- C. Cant and Edge Strips: Fire Retardant Treated Wood fiberboard, compatible with roofing materials; cants formed to 45 degree angle.
- D. Sheathing Adhesive: Noncombustible type, for adhering gypsum sheathing to metal deck.
- E. Sheathing Joint Tape: Paper type, width based on manufacturer's requirements, self adhering.
- F. Insulation Joint Tape: Glass fiber reinforced type as recommended by insulation manufacturer, compatible with roofing materials; 6 inches wide; self adhering.
- G. Insulation Fasteners: Appropriate for purpose intended and approved by roofing manufacturer.
- H. Membrane Adhesive: As recommended by membrane manufacturer.
- I. Thinners and Cleaners: As recommended by adhesive manufacturer, compatible with membrane.
- J. Insulation Adhesive: As recommended by insulation manufacturer.
- K. Sealants: As recommended by membrane manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces and site conditions are ready to receive work.
- B. Verify deck is supported and secure.
- C. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.
- D. Verify deck surfaces are dry and free of snow or ice.
- E. Verify that roof openings, curbs, and penetrations through roof are solidly set, and cant strips are in place.

3.2 PREPARATION - CONCRETE DECK

- A. Fill surface honeycomb and variations with latex filler.
- B. Do not begin work until elevated concrete substrate has cured at least 28 days and moisture content is five percent or less.
 - 1. Test as Follows:
 - a. Concrete Moisture Content: No beading water under plastic after 16 hours when tested in accordance with ASTM D4263.
 - b. Relative Humidity in Concrete: Not greater than 75 percent when tested in accordance with ASTM F2170.

3.3 PREPARATION - METAL DECK

- A. Install deck sheathing on metal deck:
 - 1. Lay with long side at right angle to flutes; stagger end joints; provide support at ends.
 - 2. Cut sheathing cleanly and accurately at roof breaks and protrusions to provide smooth surface.
 - 3. Tape joints.
 - 4. Mechanically fasten sheathing to roof deck, in accordance with Factory Mutual recommendations and roofing manufacturer's instructions.
 - a. Over entire roof area, fasten sheathing using six fasteners with washers per sheathing board.

3.4 INSTALLATION, GENERAL

- A. Perform work in accordance with manufacturer's instructions, NRCA (RM), and NRCA (WM) applicable requirements.

THERMOPLASTIC MEMBRANE ROOFING		07 5400 - 3
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- B. Do not apply roofing membrane during cold or wet weather conditions.
- C. Do not apply roofing membrane when ambient temperature is outside the temperature range recommended by manufacturer.
- D. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.
- E. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.

3.5 INSTALLATION - INSULATION, UNDER MEMBRANE

- A. Attachment of Insulation:
 - 1. Mechanically fasten first layer of insulation to deck in accordance with roofing manufacturer's instructions and FM DS 1-28 Factory Mutual requirements.
 - 2. Embed second layer of insulation into full bed of adhesive in accordance with roofing and insulation manufacturers' instructions.
- B. Cover Boards: Mechanically fasten cover boards in accordance with roofing manufacturer's instructions and FM (AG) Factory Mutual requirements.
- C. Lay subsequent layers of insulation with joints staggered minimum 6 inches from joints of preceding layer.
- D. On metal deck, place boards parallel to flutes with insulation board edges bearing on deck flutes.
- E. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.
- F. Tape joints of insulation in accordance with roofing and insulation manufacturers' instructions.
- G. At roof drains, use factory-tapered boards to slope down to roof drains over a distance of 18 inches.
- H. Do not install more insulation than can be covered with membrane in same day.

3.6 INSTALLATION - MEMBRANE

- A. Roll out membrane, free from wrinkles or tears. Place sheet into place without stretching.
- B. Shingle joints on sloped substrate in direction of drainage.
- C. Fully Adhered Application: Apply adhesive to substrate. Fully embed membrane in adhesive except in areas directly over or within 3 inches of expansion joints. Fully adhere one roll before proceeding to adjacent rolls.
- D. Overlap edges and ends and seal seams by contact adhesive, minimum 3 inches. Seal permanently waterproof. Apply uniform bead of sealant to joint edge.
- E. At intersections with vertical surfaces:
 - 1. Extend membrane over cant strips and up a minimum of 4 inches onto vertical surfaces.
 - 2. Fully adhere flexible flashing over membrane and up to nailing strips.
- F. Around roof penetrations, seal flanges and flashings with flexible flashing.
- G. Install roofing expansion joints where indicated. Make joints watertight.
 - 1. Install prefabricated joint components in accordance with manufacturer's instructions.
- H. Coordinate installation of roof drains and sumps and related flashings.

3.7 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements for additional requirements.
- B. Owner will provide testing services, and Contractor to provide temporary construction and materials for testing in accordance with requirements.
- C. Provide daily on-site attendance of roofing and insulation manufacturer's representative during installation of this work.

3.8 CLEANING

- A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.
- B. Remove bituminous markings from finished surfaces.

THERMOPLASTIC MEMBRANE ROOFING		07 5400 - 4
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- C. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and comply with their documented instructions.
- D. Repair or replace defaced or damaged finishes caused by work of this section.

3.9 PROTECTION

- A. Protect installed roofing and flashings from construction operations.
- B. Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

END OF SECTION

THERMOPLASTIC MEMBRANE ROOFING		07 5400 - 5
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 07 6200 - SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Fabricated sheet metal items, including flashings and counterflashings.
- B. Sealants for joints within sheet metal fabrications.

1.2 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).
- B. ASTM B32 - Standard Specification for Solder Metal.
- C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
- D. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free.
- E. CDA A4050 - Copper in Architecture - Handbook.
- F. SMACNA (ASMM) - Architectural Sheet Metal Manual.

1.3 PERFORMANCE REQUIREMENTS

- A. General: Install sheet metal flashing and trim to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failing, rattling, leaking, and fastener disengagement.
- B. Coordinate the work with other work for the correct sequencing of items which make up the entire membrane or system of weatherproofing or waterproofing and rain drainage. It is required that the flashing and sheet metal work be permanently watertight, and not deteriorate in excess of manufacturer's published limitations.
- C. Thermal Movements: Provide sheet metal flashing and trim that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of sheet metal and trim thermal movements. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
- D. Differential values below (for aluminum in particular) are suitable for most of the U.S. Revise to suit local conditions.
- E. Water Infiltration: Provide sheet metal flashing and trim that do not allow water infiltration to building interior.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details. Distinguish between shop- and field-assembled work. Include the following:
- C. Samples: Submit two samples 8 by 8 inch in size illustrating metal finish color.

1.5 QUALITY ASSURANCE

- A. Perform work in accordance with SMACNA (ASMM) and CDA A4050 requirements and standard details, except as otherwise indicated.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver sheet metal flashing materials and fabrications undamaged. Protect sheet metal flashing and trim materials and fabrications during transportation and handling.
- B. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

SHEET METAL FLASHING AND TRIM		07 6200 - 1
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- C. Prevent contact with materials that could cause discoloration or staining.

PART 2 PRODUCTS

2.1 SHEET MATERIALS

- A. Pre-Finished Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 24 gage, (0.0239) inch thick base metal, shop pre-coated with PVDF coating.
1. PVDF (Polyvinylidene Fluoride) Coating: Superior Performance Organic Finish, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system.
 2. Color: To match approved metal panel sample (MP-1).

2.2 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.3 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.

2.4 SHEET METAL FABRICATIONS

- A. General: Fabricate sheet metal items in thickness or weight needed to comply with performance requirements but not less than that listed below for each application and metal.

2.5 GUTTER AND DOWNSPOUT FABRICATION

- A. Gutters: SMACNA (ASMM) Rectangular profile.
1. Hanging Gutters: Fabricate to cross section indicated, complete with end pieces, outlet tubes, and other accessories as required. Fabricate in minimum 96-inch- long sections. Furnish flat-stock gutter spacers and gutter brackets fabricated from same metal as gutters, of size recommended by SMACNA but not less than twice the gutter thickness. Fabricate expansion joints, expansion-joint covers, and gutter accessories from same metal as gutters.
- B. Downspouts: Rectangular profile.
1. Fabricate rectangular downspouts complete with mitered elbows. Furnish with metal hangers, from same material as downspouts, and anchors.
- C. Gutters and Downspouts: Size for rainfall intensity determined by a storm occurrence of 1 in 10 years in accordance with SMACNA (ASMM).
- D. Scupper configurations vary considerably. Parapet scuppers, installed in parapet wall, discharge into conductor heads or, as overflow scuppers, merely project through the parapet. Scuppers combined with roof edge flashing (gravel stop) or fascia caps, discharging into hanging gutters or conductor heads, are specified in Part 2 "Low-Slope Roof Sheet Metal Fabrications" Article.
- E. Accessories: Profiled to suit gutters and downspouts.
1. Anchorage Devices: In accordance with SMACNA (ASMM) requirements.
 2. Gutter Supports: Brackets.

SHEET METAL FLASHING AND TRIM		07 6200 - 2
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- 3. Downspout Supports: Brackets.
- F. Downspout Boots: Steel.
- G. Seal metal joints.

2.6 EXTERIOR PENETRATION FLASHING PANELS

- 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.

2.7 ACCESSORIES

- A. General: Provide materials and types of fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation.
- B. Primer: Zinc chromate type.
- 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. Plastic Cement: ASTM D4586/D4586M, Type I.
- F. Solder: ASTM B32; Sn50 (50/50) type.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions and other conditions affecting performance of work.
 - 1. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
 - 2. Proceed with installation only after unsatisfactory conditions have been corrected.
- B. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.
- C. Verify roofing termination and base flashings are in place, sealed, and secure.

3.2 INSTALLATION, GENERAL

- A. Secure flashings in place using concealed fasteners, and use exposed fasteners only where permitted..
- B. Apply plastic cement compound between metal flashings and felt flashings.
- C. Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- D. Solder metal joints for full metal surface contact, and after soldering wash metal clean with neutralizing solution and rinse with water.
- E. Secure gutters and downspouts in place with concealed fasteners.
- F. Slope gutters 1/4 inch per 10 feet, minimum.
- G. Connect downspouts to downspout boots, and grout connection watertight.

3.3 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder and sealants.
- C. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed. On completion of installation, clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain in a clean condition during construction.
- D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION

SHEET METAL FLASHING AND TRIM		07 6200 - 3
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 07 7100 - ROOF SPECIALTIES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Manufactured roof specialties, including copings, fascias, and gravel stops.

1.2 RELATED REQUIREMENTS

- A. Section 07 7200 - Roof Accessories: Manufactured curbs, roof hatches, and snow guards.

1.3 REFERENCE STANDARDS

- A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum.
- B. ANSI/SPRI/FM 4435/ES-1 - Test Standard for Edge Systems Used with Low Slope Roofing Systems.
- C. NRCA (RM) - The NRCA Roofing Manual.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on shape of components, materials and finishes, anchor types and locations.
- C. Shop Drawings: Indicate configuration and dimension of components, adjacent construction, required clearances and tolerances, and other affected work.

PART 2 PRODUCTS

2.1 COMPONENTS

- A. Copings: Factory fabricated to sizes required; corners mitered; concealed fasteners.
 - 1. Configuration: Concealed continuous hold down cleat at both legs; internal splice piece at joints of same material, thickness, and finish as cap; concealed stainless steel fasteners.
 - 2. Pull-Off Resistance: Tested in accordance with ANSI/SPRI/FM 4435/ES-1 using test method RE-3 to positive and negative design wind pressure as defined by applicable local building code.
 - 3. Wall Width: As indicated on drawings.
 - 4. Material: Formed aluminum sheet, 0.040 inch thick, minimum.
 - 5. Color: To match adjacent metal panel color sample (MP-1).
- B. Pipe and Penetration Flashing: Base of rounded aluminum, compatible with sheet metal roof systems, and capable of accomodating pipes sized between 3/8 inch and 12 inches.
 - 1. Caps: Clear anodized.
 - 2. Color: As indicated on drawings.
- C. Counterflashings: Factory fabricated and finished sheet metal that overlaps top edges of base flashing by at least 4 inches, and designed to snap into through-wall flashing or reglets with lapped joints.
 - 1. Material: Formed aluminum sheet, 0.025 inch thick, minimum.

2.2 FINISHES

- A. Color Anodized Finish: AAMA 611 AA-M12C22A42/44 Class I integrally or electrolytically colored anodic coating not less than 0.7 mil, 0.0007 inch thick.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install components in accordance with manufacturer's instructions and NRCA (RM) applicable requirements.
- B. Seal joints within components when required by component manufacturer.

END OF SECTION

ROOF SPECIALTIES		07 7100 - 1
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 07 7123 - MANUFACTURED GUTTERS AND DOWNSPOUTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Pre-finished aluminum gutters and downspouts.

1.2 REFERENCE STANDARDS

- A. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- B. SMACNA (ASMM) - Architectural Sheet Metal Manual.

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Comply with SMACNA (ASMM) for sizing components for rainfall intensity determined by a storm occurrence of 1 in 10 years.

1.4 SUBMITTALS

- A. See Section 01 3000 - 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.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Pre-Finished Aluminum Sheet: ASTM B209/B209M; 0.032 inch thick.
 - 1. Finish: Plain, shop pre-coated with modified silicone coating.
 - 2. Color: Black.

2.2 COMPONENTS

- A. Gutters: CDA rectangular style profile.

2.3 FABRICATION

- A. Form gutters and downspouts of profiles and size indicated.
- 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.
- D. Hem exposed edges of metal.
- E. Fabricate gutter and downspout accessories; seal watertight.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install gutters, downspouts, and accessories in accordance with manufacturer's instructions.
- B. Join lengths with formed seams sealed watertight. Flash and seal gutters to downspouts and accessories.

END OF SECTION

MANUFACTURED GUTTERS AND DOWNSPOUTS		07 7123 - 1
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Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 07 7200 - ROOF ACCESSORIES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Roof curbs.
- B. Equipment rails.
- C. Roof penetrations mounting curbs.
- D. Roof hatches.

1.2 RELATED REQUIREMENTS

- A. Section 07 7100 - Roof Specialties: Other manufactured roof specialty items.

1.3 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used.
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
 - 4. Maintenance requirements.
- C. Shop Drawings: Submit detailed layout developed for this project and provide dimensioned location and number for each type of roof accessory.

PART 2 PRODUCTS

2.1 ROOF CURBS

- A. Roof Curbs Mounting Assemblies: Factory fabricated hollow sheet metal construction, internally reinforced, and capable of supporting superimposed live and dead loads and designated equipment load with fully mitered and sealed corner joints welded or mechanically fastened, and integral counterflashing with top and edges formed to shed water.
 - 1. Roof Curb Mounting Substrate: Curb substrate consists of standing seam metal roof panel system.
 - 2. Sheet Metal Material:
 - a. Aluminum: 0.080 inch minimum thickness, with 3003 alloy, and H14 temper.
 - 1) Color: As selected by Architect from manufacturer's standard line of colors.
 - 3. Roofing Cants: Provide integral sheet metal roofing cants dimensioned to begin slope at top of roofing system at 1:1 slope; minimum cant height 4 inches.
 - 4. Fabricate curb bottom and mounting flanges for installation directly on metal roof panel system to match slope and configuration of system.
 - a. Extend side flange to next adjacent roof panel seam and comply with seam configurations and seal connection, providing at least 6 inch clearance between curb and metal roof panel flange allowing water to properly flow past curb.
 - b. Where side of curb aligns with metal roof panel flange, attach fasteners on upper slope of flange to curb connection allowing water to flow past below fasteners, and seal connection.
 - c. Maintain at least 12 inch clearance from curb, and lap upper curb flange on underside of down sloping metal roof panel, and seal connection.
 - d. Lap lower curb flange overtop of down sloping metal roof panel and seal connection.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

- B. Curbs Adjacent to Roof Openings: Provide curb on each side of opening, with top of curb horizontal for equipment mounting.
 - 1. Provide preservative treated wood nailers along top of curb.
 - 2. Insulate inside curbs with 1-1/2 inch thick fiberglass insulation.
 - 3. Height Above Finished Roof Surface: 8 inches, minimum.
- C. Equipment Rail Curbs: Straight curbs on each side of equipment, with top of curbs horizontal and level with each other for equipment mounting.
 - 1. Height Above Finished Roof Surface: 8 inches, minimum.
- D. Pipe, Duct, or Conduit Mounting Curbs: Vertical posts, minimum 8 inches square unless otherwise indicated.
 - 1. Height Above Finished Roof Surface: 8 inches, minimum.

2.2 ROOF HATCHES AND VENTS

- A. Roof Hatch Manufacturers:
 - 1. Bilco Company; Type E (ladder access, 3 ft square, solid cover): www.bilco.com/#sle.
 - 2. Substitutions: See Section 01 6000 - Product Requirements.
- B. Roof Hatches and Smoke Vents: Factory-assembled aluminum frame and cover, complete with operating and release hardware.
- C. Frames and Curbs: One-piece curb and frame with integral cap flashing to receive roof flashings; extended bottom flange to suit mounting.
 - 1. Material: Mill finished aluminum, 11 gauge, 0.0907 inch thick.
 - 2. Insulation: Manufacturer's standard; 1 inch rigid glass fiber, located on outside face of curb.
 - 3. Curb Height: 12 inches from finished surface of roof, minimum.
- D. Metal Covers: Flush, insulated, hollow metal construction.
 - 1. Capable of supporting 40 psf live load.
 - 2. Material: Mill finished aluminum; outer cover 11 gauge, 0.0907 inch thick, liner 0.04 inch thick.
 - 3. Insulation: Manufacturer's standard 1 inch rigid glass fiber.
 - 4. Gasket: Neoprene, continuous around cover perimeter.
- E. Safety Railing System: Roof hatch safety rail system mounted directly to curb without penetration of roofing system.
 - 1. Products: Bilco RL2-E - Safety railing system.
- F. Hardware: Steel, zinc coated and chromate sealed, unless otherwise indicated or required by manufacturer.
 - 1. Lifting Mechanisms: Compression or torsion spring operator with shock absorbers that automatically opens upon release of latch; capable of lifting covers despite 10 psf load.
 - 2. Hinges: Heavy duty pintle type.
 - 3. Hold open arm with vinyl-coated handle for manual release.
 - 4. Latch: Upon closing, engage latch automatically and reset manual release.
 - 5. Manual Release: Pull handle on interior.
 - 6. Locking: Padlock hasp on interior.

2.3 NON-PENETRATING ROOFTOP SUPPORTS/ASSEMBLIES

- A. Non-Penetrating Rooftop Support/Assemblies: Manufacturer-engineered and factory-fabricated, with pedestal bases that rest on top of roofing membrane, and not requiring any attachment to roof structure and not penetrating roofing assembly.
 - 1. Design Loadings and Configurations: As required by applicable codes.
 - 2. Height: Provide minimum clearance of 6 inches under supported items to top of roofing.
 - 3. Support Spacing and Base Sizes: As required to distribute load sufficiently to prevent indentation of roofing assembly.
 - 4. Steel Components: Stainless steel, or carbon steel hot-dip galvanized after fabrication in accordance with ASTM A123/A123M.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

5. Hardware, Bolts, Nuts, and Washers: Stainless steel, or carbon steel hot-dip galvanized after fabrication in accordance with ASTM A153/A153M.

PART 3 EXECUTION

3.1 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.

3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions, in manner that maintains roofing system weather-tight integrity.

END OF SECTION

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

SECTION 07 8400 - FIRESTOPPING

PART 1 GENERAL

1.1 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.

1.2 REFERENCE STANDARDS

- A. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
- B. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems.
- C. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems.
- D. 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.
- E. ITS (DIR) - Directory of Listed Products.
- F. FM (AG) - FM Approval Guide.
- G. SCAQMD 1168 - Adhesive and Sealant Applications.
- H. UL 1479 - Standard for Fire Tests of Penetration Firestops.
- I. UL 2079 - Standard for Tests for Fire Resistance of Building Joint Systems.
- J. UL (FRD) - Fire Resistance Directory.

1.3 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on product characteristics, performance ratings, and limitations.
- C. Sustainable Design Submittal: Submit VOC content documentation for non-preformed materials.
- D. Manufacturer's qualification statement.

1.4 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.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Firestopping Manufacturers:
 - 1. 3M Fire Protection Products: www.3m.com/firestop/#sle.
 - 2. CEMCO: www.cemcosteel.com/#sle.
 - 3. Hilti, Inc: www.hilti.com/#sle.
 - 4. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com/#sle.
 - 5. Substitutions: See Section 01 6000 - Product Requirements.

2.2 MATERIALS

- A. Firestopping Materials: Any materials meeting requirements.
- B. Volatile Organic Compound (VOC) Content: Provide products having VOC content lower than that required by SCAQMD 1168.
- C. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Provide type of materials as required for tested firestopping assembly.

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

2.3 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.
- B. Floor-to-Floor (FF), Floor-to-Wall (FW), Head-of-Wall (HW), and Wall-to-Wall (WW) Joints, Except Perimeter, Where Both Are Fire-Rated: Use system that has been tested according to ASTM E1966 or UL 2079 to have fire resistance F Rating equal to required fire rating of the assembly in which the joint occurs.
- C. 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.

2.4 FIRESTOPPING FOR FLOOR-TO-FLOOR, FLOOR-TO-WALL, HEAD-OF-WALL, AND WALL-TO-WALL JOINTS

- A. Concrete and Concrete Masonry Walls and Floors:
 - 1. Head-of-Wall Joints at Concrete/Concrete Masonry Wall to Concrete Over Metal Deck Floor:
 - a. 2 Hour Construction: UL System HW-D-0181; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
 - 2. Concrete/Concrete Masonry Wall-to-Wall Joint Systems That Have Movement Capabilities (Dynamic-D):
 - a. 2 Hour Construction: UL System WW-D-1077; Tremco, TREMstop Acrylic Firestop Sealant.
 - b. 2 Hour Construction: UL System WW-D-0017; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
 - c. 2 Hour Construction: UL System WW-D-0032; Hilti CP 606 Flexible Firestop Sealant.
- B. Gypsum Board Walls:
 - 1. Wall-to-Wall Joints That Have Movement Capabilities (Dynamic-D):
 - a. 1 Hour Construction: UL System WW-D-0067; Hilti CP 606 Flexible Firestop Sealant.
 - 2. Head-of-Wall Joints at Concrete Over Metal Deck:
 - a. 1 Hour Construction: UL System HW-D-0256; Tremco, TREMstop Acrylic Firestop Sealant.
 - 3. Head-of-Wall Joints at Concrete Over Metal Deck, Wall Parallel to Ribs:
 - a. 1 Hour Construction: UL System HW-D-0049; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
 - b. 1 Hour Construction: UL System HW-D-0184; Hilti CP 606 Flexible Firestop Sealant.
 - 4. Head-of-Wall Joints at Concrete Over Metal Deck, Wall Perpendicular to Ribs, Cut to Fit Ribs:
 - a. 1 Hour Construction: UL System HW-D-0045; Hilti CP 606 Flexible Firestop Sealant.

2.5 FIRESTOPPING PENETRATIONS THROUGH CONCRETE AND CONCRETE MASONRY CONSTRUCTION

- A. Penetrations Through Floors or Walls By:
 - 1. Uninsulated Metallic Pipe, Conduit, and Tubing:
 - a. 2 Hour Construction: UL System C-AJ-1226; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - 2. Uninsulated Non-Metallic Pipe, Conduit, and Tubing:
 - a. 2 Hour Construction: UL System C-AJ-2167; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - b. 2 Hour Construction: UL System C-AJ-2109; Hilti CP 643N/644 Firestop Collar.
 - 3. Electrical Cables Not In Conduit:
 - a. 2 Hour Construction: UL System W-J-3199; Hilti CFS-SL SK Firestop Sleeve Kit.
 - 4. Cable Trays with Electrical Cables:
 - a. 2 Hour Construction: UL System C-AJ-4094; Hilti CFS-BL Firestop Block.
 - 5. HVAC Ducts, Uninsulated:
 - a. 2 Hour Construction: UL System C-AJ-7111; Hilti FS-ONE MAX Intumescent Firestop Sealant.

2.6 FIRESTOPPING PENETRATIONS THROUGH GYPSUM BOARD WALLS

- A. Penetrations By:

Insight Design Architects & Chiodini Architects		Nixa Police Department
Project Number: 2024.009		Nixa , Missouri

1. Uninsulated Metallic Pipe, Conduit, and Tubing:
 - a. 1 Hour Construction: UL System W-L-1054; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - b. 1 Hour Construction: UL System W-L-1164; Hilti FS-ONE MAX Intumescent Firestop Sealant.
2. Uninsulated Non-Metallic Pipe, Conduit, and Tubing:
 - a. 1 Hour Construction: UL System W-L-2128; Hilti FS-ONE MAX Intumescent Firestop Sealant.
3. Insulated Pipes:
 - a. 1 Hour Construction: UL System W-L-5028; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - b. 1 Hour Construction: UL System W-L-5029; Hilti FS-ONE Intumescent Firestop Sealant.
4. HVAC Ducts, Insulated:
 - a. 1 Hour Construction: UL System W-L-7156; Hilti FS-ONE MAX Intumescent Firestop Sealant.

2.7 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

3.1 EXAMINATION

- A. Verify openings are ready to receive the work of this section.

3.2 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.

3.3 INSTALLATION

- A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.

3.4 CLEANING

- A. Clean adjacent surfaces of firestopping materials.

END OF SECTION