

Pike Lincoln County Port Authority
316 West Main Street
Bowling Green, MO 63334

REQUEST FOR BID

for

DOCK WALL STRUCTURE

at

**14561 Hwy 79
Clarksville, MO 63336**

INVITATION TO BID: NOTICE TO CONTRACTORS

Sealed bids for a general contractor to perform demolition and construction services at 14561 Hwy. 79, Clarksville, MO 63336 will be received by the Pike Lincoln County Port Authority, 316 West Main Street, Bowling Green, MO 63334, until 3:00pm Central on October 23, 2025, at which time the bids will be publicly opened and read aloud.

The scope of work (the "Work") includes furnishing all labor, tools, equipment, and materials necessary to complete the base bid work specified in the Contract Drawings and Specifications as well as included in the Job Special Provisions (JSP) herein. An alternative bid, Bid Option 1, is requested for construction of a cast-in-place concrete slab in lieu of an aggregate drive behind the dock wall. Refer to Contract Drawings and Specifications for additional information regarding Bid Option 1. Owner reserves the right to expand the scope of work to include additional demolition and construction activities not identified herein upon mutual agreement of scope and fee.

Bid packages will be available beginning October 2, 2025, from Pike Lincoln County Port Authority, 316 West Main Street, Bowling Green, MO 63334, (573) 324-4297 and at the website address provided herein. Questions should be directed to Pike Lincoln County Port Authority, Carolyn Wisecarver, at (573) 324-4297. All requests for clarifications to these bidding documents must be received in writing at least one week prior to the bid opening on October 23, 2025. The bid package and any amendments will be available at: <https://pikelincolnport.org/rfps%2Frfgs>. A mandatory pre-bid meeting will be held at the project site (14561 Hwy. 79, Clarksville, MO 63336) on October 14, 2025, at 9:00am.

For bids that exceed \$75,000.00, pursuant to RSMo 290.210-290.340, prevailing wage rates are required to be paid to all workers performing under this contract in the area according to the rates determined by the Missouri Department of Labor and Industrial Relations for Pike County, Missouri. Also, pursuant to RSMo 290.210-290.340, if a project cost is increased after acceptance of a bid and the project cost exceeds \$75,000.00, prevailing wage rates are required for the portion of the project that is in excess of \$75,000.00.

A bid security in the amount of five percent (5%) of the base bid amount must accompany each bid in accordance with the Instructions to Bidders.

Pike Lincoln County Port Authority hereby notifies all bidders that it will affirmatively ensure that in any contract entered into pursuant to this advertisement, businesses owned and controlled by socially and economically disadvantaged individuals will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, religion, creed, sex, age, ancestry, or national origin in consideration for an award.

The successful bidder shall comply with the requirements of RSMo § 292.675. The requirements include on-site employees to complete the ten (10) hour Occupational Safety and Health Administration (OSHA) Construction Safety Program, which includes a course in construction safety and health approved by OSHA or a similar program approved by the Department of Labor and Industrial Relations.

Submit completed Contractor Questionnaire with any necessary attachments no later than seven (7) days prior to the date and hour of the bid opening. A copy of the Contractor Questionnaire can be found at the end of this bid package. If Owner determines that the prospective bidder is not qualified, said prospective bidder will be notified a minimum of three (3) days prior to bid opening.

Second-tier subcontracting will not be permitted on this project. The successful bidder will ensure that subcontractors do not subcontract any portion of the Work.

For any contract greater than \$5,000, the successful bidder shall comply with RSMo § 285.530, as amended and by sworn affidavit affirming that it does not knowingly employ any person who is an unauthorized alien and participation in a federal work authorization program with respect to the employees working in connection with this contract. The required documentation must be from the federal work authorization program provider. A letter from Contractors reciting compliance is not sufficient.

This project will be awarded to the lowest, responsive, responsible, and fully qualified bidder. The Pike Lincoln County Port Authority reserves the right to accept or reject any bid and to waive any irregularities in the best interest of the Port Authority. A Bid may not be modified, withdrawn, or cancelled by the bidder within sixty (60) days following the time and date designated for the receipt of bids, and each bidder so agrees in submitting his bid. The successful bidder will enter into Pike Lincoln County Port Authority's Contract for the Work.

As requests for clarifications to the bidding documents are allowed, Pike Lincoln County Port Authority reserves the right to amend the provisions of the bid package or its requirements prior to opening of the bids and may extend the date on which bids may be publicly opened. Bidders are solely responsible to check the Pike Lincoln County Port Authority website address provided above prior to bid submission for any amendments to the bid package or its requirements. If there is an extension of the bid

opening date, notice will be provided to any bidder who has submitted a bid in conformance with the invitation to bid. Bidders shall check with Pike Lincoln County Port Authority prior to bid submission to ensure they have updated information.

BIDDER CHECKLIST

FINAL CHECKLIST BEFORE SUBMITTING BID

- ☐ 1. Submit completed Contractor Questionnaire with any necessary attachments no later than seven (7) days prior to the date and hour of the bid opening. A copy of the Contractor Questionnaire can be found at the end of this bid package.
- ☐ 2. Bidder should check with Pike Lincoln Port Authority at the website address provided in the Invitation to Bid (<https://pikelincolnport.org/rfps%2Frfqs>) prior to submission of the bid for any changes in requirements to the bid package.
- ☐ 3. Complete and return all forms included at the end of this bid package, including Bid Form, Bid Bond Form, Buy America Certification, Anti-Collusion Statement, and Certification Regarding Debarment, Suspension, Ineligibility, and Voluntary Exclusion. Also submit required E-Verify documentation.
- ☐ 4. The Job Special Provisions are for the bidder's information only and are not to be returned with the bid.
- ☐ 5. Bid is to be completed, executed, and submitted in a sealed envelope addressed to Pike Lincoln County Port Authority. **Provide the vendor name, vendor address, vendor contact information and "Dock Wall Structure" on the outside of the envelope.**
- ☐ 6. Please read all items in the bidding document carefully. Complete all items in ink or by typing in the information.
- ☐ 7. Sign this bidding document properly. If submitted in the name of a firm or corporation, the legal name of the firm or corporation should appear in the space designated and be signed for by one or more persons legally qualified to execute papers in the name of said firm or corporation. Affix Corporate Seal if the Bidder is a Corporation.
- ☐ 8. Submit a bid bond executed by bidder and surety or attach cashier's check to the bid bond form.
- ☐ 9. For paper bids, staple addenda to the bid in the appropriate part of the bid to acknowledge receipt. The bidder should retain a duplicate copy.

Below is a list of common mistakes made by bidders leading to non-responsive bids. Please refer to the Standard Specifications for the appropriate procedures for completing and submitting a bid.

- a) Not signing the bid
- b) Not incorporating the addenda into the bidding documents
- c) Not providing a bid bond
- d) Using pencil to fill out the bid
- e) Using white-out to make corrections to the itemized bid sheets
- f) Not initialing changes made

All questions concerning the Dock Wall Structure project can be directed to the Pike Lincoln County Port Authority, Carolyn Wisecarver, at (573) 324-4297 or via email at pikelincolncountyport@yahoo.com.

Special Needs: If you have special needs addressed by the Americans with Disabilities Act, please notify the Pike Lincoln County Port Authority, Carolyn Wisecarver, at (573) 324-4297, via email at pikelincolncountyport@yahoo.com, or through Missouri Relay System, TDD 1-800-735-2966, at least five (5) working days prior to the bid opening.

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Missouri Environmental Covenant (MOECA)

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Bid Form

Bid Bond Form

Contractor Questionnaire

Buy America Certification

Anti-Collusion Statement

Certification Regarding Debarment, Suspension, Ineligibility, and Voluntary Exclusion

NOTICE TO CONTRACTORS

Sealed bids, addressed to the Pike Lincoln County Port Authority, 316 West Main Street, Bowling Green, MO 63334, for the proposed work will be received by the Pike Lincoln County Port Authority until 3:00pm central on October 23, 2025, at the office of the Pike Lincoln County Port Authority, 316 West Main Street, Bowling Green, MO 63334, and at that time will be publicly opened.

(1) **PROPOSED WORK:** The proposed Base Bid Work includes partial demolition of the existing tied-back sheet pile dock wall along the south side of the barge harbor, demolition of the existing reinforced concrete cap and slab along the length of the existing dock wall, construction of a new tied-back sheet pile dock wall to replace the existing dock wall, construction of a new sheet pile anchor wall, construction of a new reinforced concrete pile cap, construction of an aggregate drive behind the new dock wall, and all incidental related work, as identified and specified in the Contract Drawings and Specifications. An additional bid option, Bid Option 1, is requested for a reinforced concrete slab-on-grade in lieu of an aggregate drive and construction of an aggregate base for the slab-on-grade. The Base Bid and Bid Option 1 work are hereinafter referred to as "Work". Owner reserves the right to expand the scope of work to include additional demolition/construction activities not identified herein upon mutual agreement of scope and fee. Refer to Contract Specification Section 01 11 00 "Summary of Work" for additional information.

(2) **COMPLIANCE WITH CONTRACT PROVISIONS:** The bidder, having examined and being familiar with the local conditions affecting the Work, and with the contract, contract documents, including the current version of the Missouri Highways and Transportation Commission's "Missouri Standard Specifications for Highway Construction," and "Missouri Standard Plans for Highway Construction" (if applicable), their revisions, and the request for bid, including appendices, the special provisions and plans, hereby proposes to furnish all labor, materials, equipment, services, etc., required for the performance and completion of the Work. All references are to the Missouri Standard Specifications for Highway Construction, as revised, unless otherwise noted.

The following documents are available on the Missouri Department of Transportation web page at www.modot.mo.gov under "Business with MoDOT" "Standards and Specifications". The effective version shall be determined by the letting date of the project.

General Provisions & Supplemental Specifications

Supplemental Revisions to Missouri Standard Plans
For Highway Construction (if applicable)

These supplemental bidding documents contain all current revisions to the bound printed versions and have important legal consequences. It shall be conclusively presumed that they are in the bidder's possession, and they have been reviewed and used by the bidder in the preparation of any bid submitted on this project.

Please note that within the above-listed documents, the term "Commission" shall be replaced with the term, "Pike Lincoln County Port Authority", and the term "Engineer" is a reference to the Pike Lincoln County Port Authority. The contracting authority for this contract is the Pike Lincoln County Port Authority.

(3) **PERIOD OF PERFORMANCE:** If the bid is accepted, the bidder agrees that work related to the Base Bid shall be diligently prosecuted at such rate and in such manner as, in the judgment of the Owner, is necessary for the completion of the Work within the time specified as follows in accordance with Sec 108:

Calendar Days: 180

Anticipated Completion Date: April 30, 2026

Period of Performance begins upon issuance of Notice to Proceed (NTP) by Owner.

(4) **LIQUIDATED DAMAGES:** The bidder agrees that, should the bidder fail to complete the Work in the time specified or such additional time as may be allowed by the engineer under the contract, the amount of liquidated damages to be recovered in accordance with Sec 108 shall be as follows:

Liquidated damages per day \$500.00

(5) **BID GUARANTY:** The bidder shall submit a Bid Guaranty. A sample project bid bond form is included in the bid book. The bidder shall mark the box below to identify the type of Bid Guaranty.

- ☐ Paper Bid Bond
- ☐ Cashier's Check

(6) **ANTIDISCRIMINATION:** The Contracting Authority hereby notifies all bidders that it will affirmatively ensure that in any contract entered into pursuant to this advertisement, businesses owned and controlled by socially and economically disadvantaged individuals will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, religion, creed, sex, age, ancestry, or national origin in consideration for an award.

(7) **PREVAILING WAGE (STATE):** For bids that exceed \$75,000.00, pursuant to RSMo 290.210-290.340, prevailing wage rates are required to be paid to all workers performing under this contract in the area according to the rates determined by the Missouri Department of Labor and Industrial Relations for Pike County, Missouri. Also, pursuant to RSMo 290.210-290.340 if a project cost is increased after acceptance of a bid, and the project cost exceeds \$75,000.00, prevailing wage rates are required for the portion of the project that was in excess of \$75,000.00. The applicable state wage rates for this contract are detailed in "Annual Wage Order No. 30" that is attached to this bidding document.

These supplemental bidding documents have important legal consequences. It shall be conclusively presumed that they are in the bidder's possession, and they have been reviewed and used by the bidder in the preparation of any bid submitted on this project.

(8) **WORKER ELIGIBILITY REQUIREMENTS:** Execution of the construction contract for this project is dependent upon the awarded bidder providing an Affidavit of Compliance AND E-Verify Memorandum-of-Understanding (MOU) between the bidder and Department of Homeland Security to the Contracting Authority as required by section 285.530 RSMo. The cover page and signature page of the E-Verify MOU and the Affidavit must be submitted prior to award of this contract. A sample Affidavit of Compliance can be found at the following MoDOT website link:

https://www.modot.org/sites/default/files/documents/AnnualAffidavit-WorkerEligibilityVerification_1.pdf

All bidders must also be enrolled in the E-Verify Program and include their MOU prior to contract execution. Bidders who are not enrolled will need to go to the following website link and select "Enroll in the Program" to get started. After completing the program, they will receive their E-Verify MOU with Department of Homeland Security. This document will need to be printed out and kept on file so that a copy can be attached to the Affidavit of Compliance.

http://www.dhs.gov/files/programs/gc_1185221678150.shtm

This requirement also applies to subcontractors and contract labor, but this contract only requires submittal of the verification documents for the prime Contractor. It is the prime Contractor's responsibility to verify the worker eligibility of their subcontractors in order to protect their own company from liability as required by section 285.530 RSMo.

(9) **OSHA TRAINING REQUIREMENTS:** Missouri Law, 292.675 RSMO, requires any awarded Contractor and its subcontractor(s) to provide a ten-hour Occupational Safety and Health Administration (OSHA) Construction Safety Program (or a similar program approved by the Missouri Department of Labor and Industrial Relations as a qualified substitute) for their on-site employees (laborers, workmen, drivers, equipment operators, and craftsmen) who have not previously completed such a program and are directly engaged in actual construction of the improvement (or working at a nearby or adjacent facility used for construction of the improvement). The awarded Contractor and its subcontractor(s) shall require all such employees to complete this ten-hour program, pursuant to 292.675 RSMO, unless they hold documentation on their prior completion of said program. Penalties for Non-Compliance include Contractor forfeiture to the Contracting Authority in the amount of \$2,500, plus \$100 per Contractor and subcontractor employee for each calendar day such employee is employed beyond the elapsed time period for required program completion under 292.675 RSMO.

(10) **BUY AMERICA CERTIFICATION:** The materials to be acquired as described herein are subject to compliance with 49 U.S.C. 5323(j)(1) and applicable regulations in 49 CFR Part 661.5. All bidders must execute and submit attached "Buy America Certification."

(11) **ADDENDUM ACKNOWLEDGEMENT:** The undersigned states that all addenda (if applicable) have been received, acknowledged, and incorporated into their bid, prior to submittal. For paper bids, attach signed addenda to the bid.

(12) **SUBCONTRACTOR DISCLOSURE:** Failure to disclose this information may result in a bid being declared non-responsive. It is understood that second-tier subcontracting will not be permitted on the project. The undersigned will ensure that subcontractors will not subcontract any portion of the work on the project. The undersigned will be responsible for any subcontractor utilized on the project and such subcontractors' compliance with all requirements of the project, the Notice to Contractors, and the other contract documents. Contractor shall provide a complete list of proposed subcontractors and attach to the Bid Form.

(13) **PROJECT AWARD:** This project will be awarded to the lowest, responsive, responsible bidder. The low bid shall be determined by summation of each line item on the Bid Form. If there is a discrepancy between the summation of each line item and the total bid amount entered, the summation of each line item will prevail. If there is a discrepancy between a line item's unit cost and calculated total cost, the corrected total cost calculation shall prevail. After award, the undersigned will enter into the Owner's Contract regarding the Work, which shall incorporate the terms of this bid package and the bid submitted by the undersigned.

(14) **PRIME CONTRACTOR REQUIREMENTS:** The limitation in Sec 108.1.1 of the Missouri Standard Specifications for Highway Construction that "the Contractor's organization shall perform work amounting to not less than 40 percent of the total contract cost" is waived for this contract. Instead, the less restrictive terms of the Federal Highway Administration's rule at Title 23 Code of Federal Regulations (CFR) § 635.116(a) shall apply, so that the Contractor must perform the Work with its own organization equal to and not less than 30 percent of the total original contract price. Second-tier subcontracting will not be permitted under this contract. All other provisions in Sec 108.1.1 et seq. of the Missouri Standard Specifications for Highway Construction shall remain in full force and effect and shall continue to govern the Contractor and its subcontractors, in accordance with the provisions of Title 23 CFR § 635.116.

(15) **SALES AND USE TAX EXEMPTION:** The Pike Lincoln County Port Authority, a tax-exempt entity, will furnish a Missouri Project Exemption Certificate as described in Section 144.062 RSMo to the awarded Contractor who in turn may use the certificate to purchase materials for a specific project performed for the tax-exempt entity. Only the materials and supplies incorporated or consumed during the construction of the project are exempt. The certificate will be issued to the Contractor for a specific project for a defined period of time.

(16) **SITE ACCESS FOR INSPECTIONS:** The Contractor shall grant access to all areas of the project site for inspections of the work by the Owner, the Owner's designees, and representatives of the Missouri Department of Transportation.

(17) **SIGNATURE AND IDENTITY OF BIDDER:** The undersigned states that the following provided information is correct and that (if not signing with the intention to bind themselves to become the responsible and sole bidder) they are the agent of, and they are signing and executing this, as the bid of

_____, which is the correct LEGAL NAME as stated on the Contractor Questionnaire.

a) The organization submitting this bid is a(n) (1) individual bidder, (2) partnership, (3) joint venturer (whether individuals or corporations, and whether doing business under a fictitious name), or (4) corporation. Indicate by marking the appropriate box below.

☐ Sole Individual

☐ Partnership

☐ Joint Venture

☐ Corporation, incorporated under laws of state of _____.

☐ Limited Liability Company, established under laws of state of _____.

Note: Provide a copy of the undersigned's Certificate of Incorporation, Certificate of Organization if undersigned is a Corporation or Limited Liability Company.

b) If the bidder is doing business under a fictitious name, indicate below by filling in the fictitious name

Note: Provide a copy of the undersigned's registration of fictitious name if undersigned is using a dba/fictitious name.

Executed by bidder this _____ day of _____ 20____.

THE BIDDER CERTIFIES THAT THE BIDDER AND ITS OFFICIALS, AGENTS, AND EMPLOYEES HAVE NEITHER DIRECTLY NOR INDIRECTLY ENTERED INTO ANY AGREEMENT, PARTICIPATED IN ANY COLLUSION, OR OTHERWISE TAKEN ANY

ACTION IN RESTRAINT OF FREE COMPETITIVE BIDDING IN CONNECTION WITH THIS BID, AND THAT THE BIDDER INTENDS TO PERFORM THE WORK WITH ITS OWN BONAFIDE EMPLOYEES AND SUBCONTRACTORS, AND DID NOT BID FOR THE BENEFIT OF ANOTHER CONTRACTOR.

THE BIDDER ACKNOWLEDGES THAT THIS IS AN UNSWORN DECLARATION, EXECUTED UNDER PENALTY OF PERJURY UNDER THE LAWS OF THE UNITED STATES AND/OR FALSE DECLARATION UNDER THE LAWS OF MISSOURI, AND ANY OTHER APPLICABLE STATE OR FEDERAL LAWS. THE FAILURE TO PROVIDE THIS CERTIFICATION IN THIS BID MAY MAKE THIS BID NON-RESPONSIVE, AND CAUSE IT TO BE REJECTED.

THE BIDDER CERTIFIES THAT THE BIDDER'S COMPANY KNOWINGLY EMPLOYS ONLY INDIVIDUALS WHO ARE AUTHORIZED TO WORK IN THE UNITED STATES IN ACCORDANCE WITH APPLICABLE FEDERAL AND STATE LAWS AND ALL PROVISIONS OF MISSOURI EXECUTIVE ORDER NO. 07-13 FOR CONTRACTS WITH THE CONTRACTING AUTHORITY.

☐ Check this box ONLY if the bidder REFUSES to make any or all of these certifications. The bidder may provide an explanation for the refusal(s) with this submittal.

Signature of Bidder's Owner, Officer, Partner or Authorized Agent

Please print or type name and title of person signing here

Attest:

Secretary of Corporation if Bidder is a Corporation

Affix Corporate Seal (If Bidder is a Corporation)

NOTE: If bidder is doing business under a fictitious name, the bid shall be executed in the legal name of the individual, partners, joint ventures, or corporation, and registration of fictitious name filed with the secretary of state, as required by sections 417.200 to 417.230 RSMo. If the bidder is a corporation not organized under the laws of Missouri, it shall procure a certificate of authority to do business in Missouri, as required by section 351.572 et seq RSMo. A certified copy of such registration of fictitious name or certificate of authority to do business in Missouri shall be filed with the Missouri Highways and Transportation Commission, as required by the standard specifications.

JOB SPECIAL PROVISIONS (JSP)

When Job Special Provisions are in conflict with Specifications or General Provisions of the Contract Documents, the most stringent requirements of the conflicting information shall prevail. Job Special Provisions are applicable to all Base Bid and Bid Option 1 work.

A. UTILITIES: Utilities may be located within the project limits. It shall be the responsibility of Contractor to verify the presence/absence of utilities within the project limits. Location of utilities, if present, may be obtained through the Missouri One-Call System by calling 811 or visiting www.missouri-811.org. Contractor shall coordinate with various utility companies if any relocation of existing utilities is required. Coordinate all utility location work required with the Owner. All costs associated with Contractor coordination with various utility companies shall be considered incidental the work and will not be paid for by Owner.

Contractor agrees that any effects of the presence of utilities, their relocation, Contractor's coordination of work with the utility companies, and any delay in utility relocation shall not be compensable as a suspension of work, extra work, a change in the work, as a differing site condition, or otherwise including but, without limitation, delay, impact, incidental, or consequential damages. Contractor's sole remedy for the effects of the presence of utilities, delay in their relocation, or any other effects shall be an excusable delay as provided in Section 105.7.3. Contractor waives, for itself, its subcontractors, and suppliers, the compensability of the presence of utilities, delay in their relocation, and any cost to Contractor, its subcontractors, and suppliers, in any claim or action arising out of or in relation to the work.

Contractor shall be solely responsible and liable for incidental and consequential damage to any utility facilities or interruption of the service caused by it or its subcontractors' operation. Contractor shall hold and save harmless the Owner and all Owner representatives from damages to any utility facilities interruption of service by it or its subcontractors' operation.

Abandoned private utilities are likely present at the project site; however, to the best of the Owner's knowledge, none of said private utilities are still live and none are located within the immediate vicinity of any structures to be removed as part of this project.

B. MOBILIZATION/DEMOBILIZATION: This item shall consist of the preparatory work and operations, including, but not limited to, those necessary for the movement of personnel, equipment, tools, supplies and incidentals to the project site, for the establishment of all offices, buildings and other facilities necessary for work on the project, except as provided in the contract as separate pay items, payment for the Contractor's actual cost of the contract bond and for all other work and operations that must be performed or costs incurred prior to beginning work on the various items on the project site. This item shall also consist of work and operations necessary to restore the site to a condition as similar to its original condition prior to work as reasonably feasible upon completion of work.

Basis of Payment: Cost of mobilization/demobilization shall be paid at the contract lump sum unit price for Bid Item 0001, with 75% of the contract lump sum unit price paid for mobilization by invoice after the NTP is provided by Owner and 25% of the contract lump sum unit price paid for demobilization at upon completion and closeout of the Work. Refer to Bid Schedule and Contract Specification Section 01 20 00 Price and Payment Procedures for additional information.

C. MISCELLANEOUS DEMOLITION: This item shall consist of demolishing miscellaneous structures and features identified in the plans as "to be removed", identified/described/scoped below, and required to complete the work. Miscellaneous structures and features include, but are not limited to, the following:

1. Existing Temporary Concrete Traffic Barriers – fully remove structures and appurtenances
2. Existing Abandoned Crane Foundations – partially remove structures and appurtenances as required to complete the work
3. Existing Concrete Wall – partially remove structures and appurtenances as required to complete the work
4. Existing Concrete Pavement and Gravel Drive – fully remove features and appurtenances
5. Existing Abandoned Shed - fully remove structures and appurtenances
6. Existing Debris on Site: fully remove existing debris and trash within the project limits identified in Job Special Provision G.

Refer to the Contract Drawings for a plan view showing the approximate location of the miscellaneous structures and features to be removed.

Previously unidentified buried structures and features are likely to be discovered by the contractor during construction. The contractor shall be responsible for removing any existing features or structures that are in conflict with the work as required to complete the work. It is expected that the contractor will make necessary efforts to locate and identify existing buried structures

and features which may be in conflict with or may impact the work. Location and identification of existing buried structures and features which may be in conflict with or may impact the work shall be considered incidental to the work and will not allow for additional compensation. Contractor agrees that any effects of the presence of previously unidentified or undiscovered structures or features shall not be compensable as a suspension of work, extra work, a change in the work, as a differing site condition, or otherwise including but, without limitation, delay, impact, incidental, or consequential damages.

Determination of appropriate demolition means and methods shall be the full responsibility of Contractor and must conform to accepted industry standards. All demolition and any related work shall be carried out in accordance with Project Specification Section 02 41 00 and with all applicable local, state and federal laws.

All materials from demolished structures and features shall be properly and legally disposed of off-site by Contractor at Contractor's expense. Contractor may, subject to approval by the Owner, temporarily stockpile materials from demolished structures at an on-site location to be identified or approved by Owner (or Owner's representative) in writing after the NTP. Contractor shall implement all necessary precautions, at Contractor's expense, to prevent debris from entering the harbor, and is responsible for immediate removal of any debris that enters the harbor at Contractor's sole responsibility and expense.

Basis of Payment: The cost of Accepted Miscellaneous Demolition shall be included in the cost of Bid Item 0002 Demolition. Refer to Bid Schedule and Contract Specification Section 01 20 00 Price and Payment Procedures for additional information.

D. MISCELLANEOUS SITE RESTORATION: The following specifications shall apply to areas designated in the plans and project specifications to be filled, leveled, and/or restored to their original condition or better.

1. Fill material shall be placed as per Section 203.4.16 of the Missouri Standard Specifications for Highway Construction and compacted as per Section 203.6 of the Missouri Standard Specifications for Highway Construction.
2. Topsoil shall be selected and placed as per Section 804 of the Missouri Standard Specifications for Highway Construction.
3. Seed/Fertilizer/Maintenance
 1. Grass Seed – Apply grass seed with the mixture specified below, or similar, to prepared topsoil.
 1. Tall Fescue = 56 pounds of live seed per acre
 2. Perennial Rye = 39 pounds of live seed per acre
 3. Red Fescue = 22 pounds of live seed per acre
 4. Kentucky Bluegrass = 5 pounds of live seed per acre
 5. White Clover = 5 pounds of live seed per acre
 2. Fertilizer – Apply fertilizer specified below, or similar, to seeded areas.
 1. 90 lb of actual nitrogen per acre
 2. 4% phosphorus by weight
 3. 2% potassium by weight
 3. Maintenance
 1. Mulch – Cover seeded area with straw mulch.
 2. All seeded/mulched areas shall be provided with a minimum of three (3) waterings. Waterings shall be performed at intervals of a minimum of seven (7) days, but not exceeding ten (10) days in length. If sufficient rainfall has occurred at the project site to negate the need for a specific watering on any given week, that watering shall be postponed until the next scheduled interval. The Owner shall have sole discretion in determining if a watering shall be postponed.

Basis of Payment: The cost of Accepted Miscellaneous Site Restoration shall be included in the cost of Bid Item 0001 Mobilization and Demobilization. Refer to Bid Schedule and Contract Specification Section 01 20 00 Price and Payment Procedures for additional information.

E. SPECIAL NOTICE REGARDING LAND DISTURBANCE: Owner provides notice to Contractor, and Contractor by responding to the Request for Bid for the Work acknowledges, that Contractor has been provided notice of the following:

In the event that there is construction or excavation work around (within 10 feet) SWMU 26 and AOC 7 (as shown below), workers may be exposed to contaminated soil which may be around or in the Project Limits. Appropriate protective measures should be taken to protect Contractor's workers health and safety in accordance with applicable health and safety laws and regulations. In accordance with the Missouri Environmental Covenant (MOECA) entered into by PLCPA, notice is provided to the Contractor and a copy of the MOECA shall be provided electronically (see attached) to the Contractor for its reference to allow for compliance with any disturbance activities.

Contractor shall be responsible to not disturb the areas of SWMU 26 and AOC 7 beyond the extent required when performing the Work. Contractor shall further have the responsibility to provide appropriate protective measures to protect unnecessary disturbance of SWMU 26 and AOC 7 and to protect Contractor's workers health and safety in accordance with applicable health and safety laws and regulations. Contractor, by responding to this RFB, acknowledges that it has been provided with a copy of the Environmental Covenant recorded at Book 333, Page 9676 of the Pike County, Missouri Recorder of Deeds Office by the Owner.

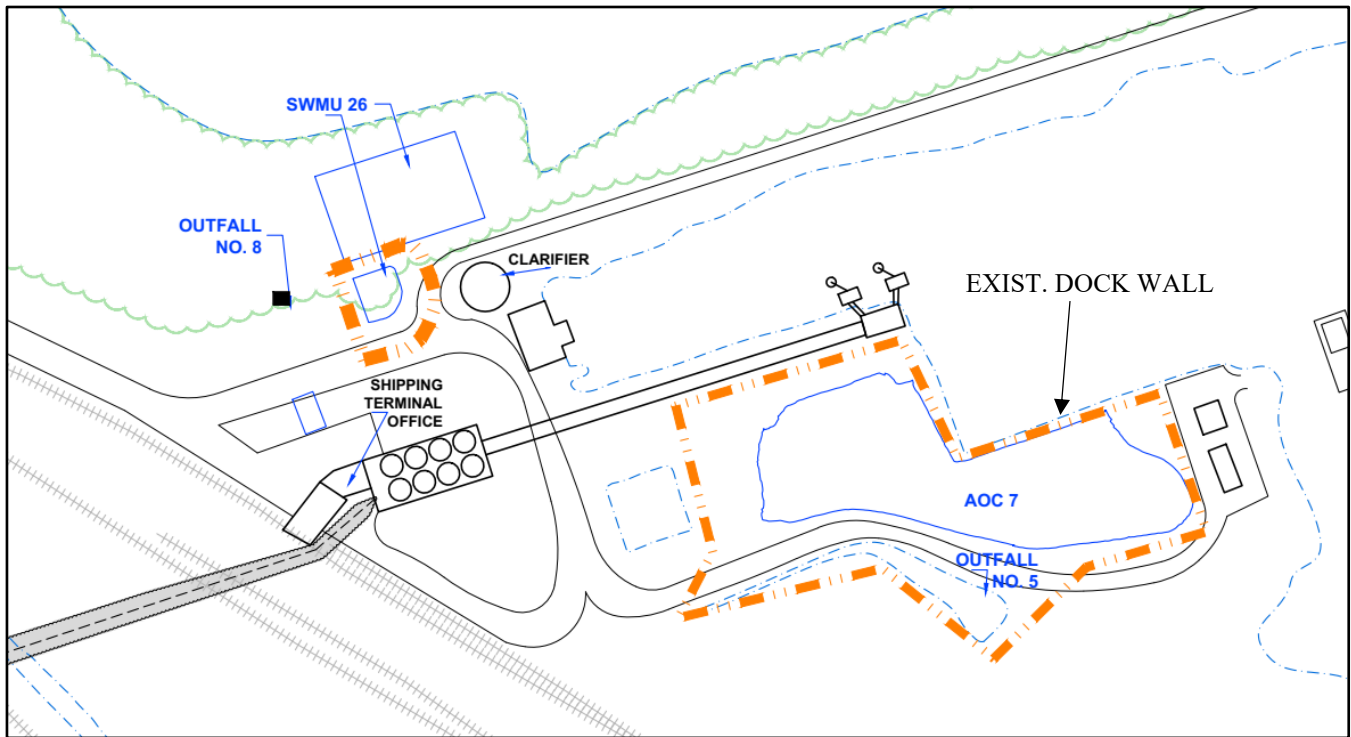


Figure 1: Identified Areas of Concern

F. **PROJECT LIMITS:** The approximate Project Limits, as used in this document, are indicated the aerial image below:



Figure 2: Approximate Project Limits

STATE OF MISSOURI

COUNTY OF PIKE

I hereby certify that this instrument was filed for record on the
25 day of May 20 23
at 10 o'clock 25 minutes A. M., and is Recorded in
Book 333, Page 9676.



Kim S. Luebrecht, Recorder of Deeds

By Kim S. Luebrecht
\$123.00 - ck Deputy

R. Jared A. Beewers

(ABOVE SPACE RESERVED FOR RECORDER'S USE)

Document Title: Environmental Covenant

Document Date: March 15, 2023

Grantors (Owners): Holcim (US) Inc.
8700 West Bryn Mawr Avenue, Suite 300
Chicago, IL 60631

Pike Lincoln County Port Authority
316 West Main Street
Bowling Green, MO 63334

Grantee (Holder): Holcim (US) Inc.
8700 West Bryn Mawr Avenue, Suite 300
Chicago, IL 60631

Department: Missouri Department of Natural Resources
P.O. Box 176
1101 Riverside Drive
Jefferson City, MO 65102

Attachments: Exhibit A – Owner's Property Map
Exhibit B – The Property - Pike Lincoln County Port Authority Property
Exhibit B.1 – Plat of Survey for SWMU 26, AOC 7 & Legal Descriptions
Exhibit C – The Landfill Property & AOC 5 - Holcim US Property
Exhibit C.1 – Plat of Survey for SWMUs 10.1, 10.2, 11.1, 11.2, & AOC 5
Exhibit C.2 – Plat of Survey for AOC 5 & Legal Description
Exhibit C.3 – Plat of Survey for SWMUs 10.2 & 11.1
Exhibit C.4 – Plat of Survey Legal Descriptions for SWMUs 10.2 & 11.1
Exhibit C.5 – Plat of Survey for SWMUs 10.1 & 11.2
Exhibit C.6 – Plat of Survey Legal Descriptions for SWMUs 10.1 & 11.2

ENVIRONMENTAL COVENANT

This Environmental Covenant (Covenant) is entered into by and between the Grantors, Holcim (US) Inc. and Pike Lincoln County Port Authority (collectively, Owner), the Grantee, Holcim (US) Inc. (Holder), and the Missouri Department of Natural Resources (Department) pursuant to the Missouri Environmental Covenants Act, Sections 260.1000 through 260.1039, Revised Statutes of Missouri (RSMo). Owner, Holder, and the Department may collectively be referred to as the “Parties” herein.

RECITALS

WHEREAS, Owner is the owner in fee simple of certain real property commonly known as Holcim (US) Inc. (numbered as 14738 Highway 79, Clarksville, Missouri), and Pike Lincoln County Port Authority (numbered as 14561 Highway 79, Clarksville, Missouri), shown on the overall site map attached hereto as Exhibit A, and specific parcels of land subject to this Covenant legally described as:

See attached Exhibit B (*The Property - Pike Lincoln County Port Authority Property*, inclusive of Exhibits B and B.1) for parcels currently owned by Pike Lincoln County Port Authority, detailing Solid Waste Management Unit (SWMU) 26 (Former Clarifier Blowdown Ponds), and Area of Concern (AOC) 7 (Former Coke Product Storage Area), consisting of two separate parcels and a total of 7.45 acres:

(the Property); and,

See attached Exhibit C (*The Landfill Property & AOC 5 - Holcim US Property*, inclusive of Exhibits C, and C.1-C.6) for parcels currently owned by Holcim (US) Inc., detailing five separate parcels including SWMU 10.1 (Quarry Cement Kiln Dust [CKD] Landfill, 40-acres), SWMU 10.2 (Waste Dust Hill CKD Landfill, 43-acres), SWMU 11.1 (Industrial Landfill No.1, 10-acres), SWMU 11.2 (Industrial Landfill No. 2, 5-acres), and AOC 5 (Clinker Storage Area, 20-acres), totaling 118 acres:

(the Landfill Property);

Property and Landfill Property may collectively be referred to as the Owner’s Property;

WHEREAS, the Property and the Landfill Property are situated in Pike County, Missouri;

WHEREAS, Owner desires to grant to the Holder this Covenant for the purpose of subjecting the Owner’s Property to certain activity and use limitations as provided in the Missouri Environmental Covenants Act;

WHEREAS, Missouri Department of Natural Resources enters into this Covenant as a “Department” pursuant to the Missouri Environmental Covenants Act, with all the attendant

rights of a “Department” under such Act, which include, but are not limited to, having a right to enforce this Covenant;

WHEREAS, Holder enters into this Covenant as a “Holder” pursuant to the Missouri Environmental Covenants Act, with all the attendant rights of a “Holder” under such Act, which include, but are not limited to, acquiring an interest in the Owner’s Property and a right to enforce this Covenant;

WHEREAS, Holcim (US) Inc. (as Holder) is subject to corrective action requirements related to the Property in accordance with the Work Plan for The Property (Property Work Plan), dated February 1, 2013, which requires Holcim (US) Inc. to file an Environmental Covenant for the Property with the appropriate recorder of deeds establishing certain activity and use limitations based on the presence of facility-specific contaminants of concern that remain above levels that allow for unrestricted land use;

WHEREAS, Holcim (US) Inc. (as Owner) is subject to corrective action requirements related to the Landfill Property pursuant to the landfill capping design reports prepared for the Landfill Property (report dated December 4, 2014, for AOC 5; and, report dated January 23, 2015, for SMWUs 10.1, 10.2, 11.1, and 11.2) (Work Plans), which require Holcim (US) Inc. to file an Environmental Covenant for the Landfill Property with the appropriate recorder of deeds establishing certain activity and use limitations based on the presence of facility-specific contaminants of concern that remain above levels that allow for unrestricted land use, and identifies capped areas requiring long-term operation and maintenance to ensure the integrity of the final covers;

WHEREAS, Pike Lincoln County Port Authority (as Owner) is subject to the notification, reporting, and certain activity and use limitations as established in this Covenant, and as provided in the Missouri Environmental Covenants Act;

WHEREAS, the environmental response project conducted at the Owner’s Property included the following activities:

PRC Environmental Management Inc. (PRC) completed a RCRA Facility Assessment (RFA) of the Holcim Clarksville facility in 1992, including a Preliminary Review and Visual Site Inspection. PRC identified 34 SWMUs and 4 AOCs based on its investigation. An RFA Update was performed in 2012 by Golder Associates Inc. (Golder), with the Department’s site visit performed on May 16 and 17, 2012. The RFA Update resulted in a revised list of 38 SWMUs and 8 AOCs. As a result of these investigations, nine units were identified as permitted units requiring RCRA closure, seven units were identified with a status of “No RCRA Facility Investigation (RFI) Needed - No Further Action (NFA) Requested,” and an RFI was needed for the remaining units. For the purposes of this Covenant, SWMU 26 and AOC 7 apply to the Property, and SWMUs 10.1, 10.2, 11.1, 11.2, and AOC 5 apply to the Landfill Property.

In September 2012, others performed a subsurface investigation in support of a potential property transaction. The resulting analytical data was compared to EPA Regional

Screening Levels (RSLs), updated April 2012, and site-specific background values, where applicable.

At the Property, select polycyclic aromatic hydrocarbons (PAHs) exceeded RSLs based on either a residential exposure scenario or an industrial exposure scenario at SWMU 26 and AOC 7. Golder submitted a Work Plan for the Property to the Department on February 1, 2013, to establish interim measures at AOC 7 and SWMU 26 to remove impacted process materials in support of a NFA determination in these areas. The Department conditionally approved the Property Work Plan in a letter dated February 5, 2013. The Property Work Plan, using PAHs, vanadium, and nickel as the indicator constituents of concern (COCs) for confirmation sampling, addressed petroleum coke removal within the vicinity of the settling area associated with SWMU 26, the coke product storage area associated with AOC 7, and additional surrounding areas including Outfall #005 and associated ditches. In accordance with the Property Work Plan, petroleum coke and associated soil was excavated from the settling area of SWMU 26 and AOC 7. Following removal activities, closure confirmation soil samples were collected in accordance with the Work Plan from the floor of the excavated areas. Based on the results of the samples collected and analyzed, petroleum coke and associated soil at AOC 7 and SWMU 26 were successfully removed, and COCs were below their respective Industrial RSLs. Following implementation of the Property Work Plan, Golder submitted a backfill justification for "The Property," AOC 7 and SWMU 26, dated March 1, 2013, to the Department. The Department approved the backfill justification in a letter dated April 3, 2013. Following Department approval of the backfill justification and based on the potential buyers' future planned use of the Property, the AOC 7 and SWMU 26 excavation areas were contoured to improve safety and accessibility. No imported material was used in this process. Storm water in the contoured areas is expected to run off to the surrounding area or discharge via surface infiltration.

At the Landfill Property, arsenic and benzo(a)pyrene were detected above their respective EPA Industrial RSLs. Although detections of arsenic were above the Industrial RSLs in each sample collected at the Landfill Property, detections were below the Missouri-specific arsenic value (geometric mean) as outlined in the Geochemical Survey of Missouri. Benzo(a)pyrene was detected slightly above the Industrial RSL at SWMU 11.2 at a depth of 70-72 feet below ground surface. Soil caps were proposed for the five areas that make up the Landfill Property in two separate Work Plans provided to the Department. Golder submitted a Work Plan to the Department on December 4, 2014, for AOC 5 (AOC Work Plan). The Department approved the AOC Work Plan on December 18, 2014, and work to cap AOC 5 was conducted from May to September 2015. Golder submitted a Work Plan to the Department on January 23, 2015, for the four SWMUs of the Landfill Property (SWMU Work Plan). The Department approved the SWMU Work Plan on July 1, 2015, and work to cap the SMWUs was conducted between 2015 and 2016.

A ninth AOC was identified and granted preliminary NFA status in a letter dated June 14, 2017. The remaining units not individually mentioned thus far were properly closed and granted preliminary NFA status by the Department over time since 2009, with the exception of SWMU 25. SWMU 25, Quarry Settling Ponds, is located within the Landfill

Property and is still in use with discharge regulated under a Missouri State Operating Permit (MSOP), MO-0000159, as Outfall #002. SWMU 25 is sampled quarterly for chemical oxygen demand, oil and grease, pH, and total suspended solids; no further corrective action is required for SWMU 25 and continued use of SMWU 25 as a storm water settling basin is appropriate as long as the MSOP continues to be renewed for that regulatory purpose;

WHEREAS, for the Property, upon completion of the environmental response project described above and summarized in the *Summary Report and Request for Closure, AOC 7 and SWMU 26, Holcim (US) Inc., Clarksville, Missouri*, dated May 9, 2013, contaminants of concern, which include, but may not be limited to, PAHs, specifically benzo(a)pyrene and dibenz(a,h)anthracene, will remain on the Property above levels that allow for the unrestricted use of the Property; and

WHEREAS, for the Landfill Property, upon completion of the environmental response project described above and summarized in several documents maintained in the Department's offices in Jefferson City, Missouri, and EPA's offices in Lenexa, Kansas, contaminants of concern, which include, but may not be limited to, PAHs, specifically benzo(a)pyrene, will remain on the Landfill Property above levels that allow for the unrestricted use of the Landfill Property; and

WHEREAS, the environmental response project described above are deemed protective if, and only if, the activity and use limitations described in this Covenant remain in place for as long as the contaminants of concern remain at the Owner's Property above levels that allow for the unrestricted use of the Owner's Property, and the continued long-term operation and maintenance activities at the Landfill Property.

NOW THEREFORE, Owner, Holder, and the Department agree to the following:

1. **Parties.**

The Owner, Holder, and the Department are parties to this Covenant, and may enforce it as provided in Section 260.1030, RSMo.

2. **Activity and Use Limitations.**

Holder hereby subjects the Owner's Property to, and Owner agrees to comply with, the following activity and use limitations:

LAND USE RESTRICTIONS:

A. No Residential Land Use:

Based on reports on file at EPA's offices in Lenexa, Kansas, and the Department's offices in Jefferson City, Missouri, the Owner's Property currently meet the EPA's and Department's standards for non-residential use. Therefore, contaminants of concern remaining at the Owner's Property do not pose a significant current or future risk to human health or the environment so long as the restrictions below remain in place.

The Owner's Property shall **not** be used for residential purposes, which for purposes of this Covenant include but are not limited to: single family homes, duplexes, multi-plexes, apartments, condominiums, schools, retirement or senior/child-care facilities, or any land use where persons can be expected to reside.

SOIL RESTRICTIONS:

B. Construction Worker Notice:

In the event that construction or excavation work is to be performed that may expose workers to contaminated soil on the Owner's Property, Owner shall ensure that actual notice is provided in advance, both verbally and in writing, to any person or entity performing any work that will or is likely to result in exposure to such soil, so that appropriate protective measures are taken to protect such workers' health and safety in accordance with applicable health and safety laws and regulations. Such notice shall include, but not be limited to, providing a copy of this Covenant to any individuals conducting or otherwise responsible for the work. Owner shall maintain copies of any such written notice for a period of at least three years and shall provide copies of such records to the Department and/or Holder upon request. This restriction applies to the specific boundaries and locations, which includes a buffer of ten feet, as stated on Exhibits B.1, C.2, C.4, and C.6.

C. Long-term Soil Cover Operation and Maintenance of the Landfill Property and AOC 5:

Long-term management of the Landfill Property includes, but is not limited to, mowing, clearing, and grubbing of the caps at least three times per year as well as monthly cap inspections including evaluation of berm slopes, ditches, vegetation, cover settlement, erosion (maintenance of two-foot thick clay cap and minimum six-inch thick vegetative barrier), and drainage to ensure the integrity of the covers. This restriction applies to the specific boundaries and locations, which includes a buffer of ten feet, as stated on Exhibits C.2, C.4, and C.6.

3. Change in Use of Property

If any person desires in the future to use the Property or the Landfill Property for any purpose or in any manner that is prohibited by this Covenant, the Department and the Holder must be notified in advance, so that a Modification, Temporary Deviation, or Termination request can be considered as described below. Further analyses and/or response actions may be required prior to any such use.

4. Running with the Land.

This Covenant shall be binding upon Owner and Owner's heirs, successors, assigns, and other transferees in interest (collectively referred to as Transferees)

during their period of ownership (except that the obligation described below in Paragraph 18 to redirect any misdirected communication shall continue beyond an Owner/Transferee's period of ownership), and shall run with the land, as provided in Section 260.1012, RSMo, subject to amendment or termination as set forth herein. The term "Transferee(s)," as used in this Covenant, shall mean any future owner of any interest in the Owner's Property, or any portion thereof, including, but not limited to, owners of an interest in fee simple, mortgagees (subject to applicable lender liability protections prescribed by law), easement holders, and/or lessees.

5. **Location of Files and Records.**

Records of this environmental response project for the Owner's Property are currently located in the Department's offices in Jefferson City, Missouri, and EPA's offices in Lenexa, Kansas. Information regarding the environmental response project may be obtained by making a request to the Department pursuant to the Missouri "Sunshine Law," Chapter 610, RSMo, by referencing the site identification name of Holcim (US) Incorporated/Geocycle, LLC, Clarksville, Missouri, EPA ID# MOD029729688, and/or to EPA pursuant to the United States Freedom of Information Act, 5 U.S.C. § 552.

6. **Enforcement.**

Compliance with this Covenant may be enforced as provided in Section 260.1030, RSMo. The Department and EPA (and any successor agencies) are expressly granted the power to enforce this Covenant. Failure to timely enforce compliance with this Covenant or the activity and use limitations contained herein by any party shall not bar subsequent enforcement by such party and shall not be deemed a waiver of the party's right to take action to enforce any non-compliance. Nothing in this Covenant shall restrict any person from exercising any authority or rights under any other applicable law.

In addition to or in lieu of any other remedy authorized by law, prior to taking legal action to enforce this Covenant, the Department may require Owner to submit a plan to investigate and/or correct any alleged violation of this Covenant, in which case the Department shall provide written notification to the Holder. If such Owner fails to act within the required timeframe or if the Department finds a proposed remedy unacceptable, the Department may pursue any remedy authorized by law. In such event, the Department shall provide written notification to the Holder, prior to or contemporaneously with any legal action taken to enforce this Covenant. Should EPA decide to exercise its right to enforce this Covenant, EPA shall so notify the Department and the Holder at least 30 calendar days in advance of taking formal action to do so.

7. **Right of Access.**

Owner, on behalf of itself and any Transferees, hereby grants to the Holder, the Department, EPA and their respectively authorized agents, contractors, and employees, the right to access the Owner's Property at all reasonable times, with

at least ninety-six (96) hours notice to Owner, for implementation, monitoring, inspection, or enforcement of this Covenant and the related environmental response project. Nothing herein shall be deemed to limit or otherwise impede the Department or EPA's rights of access and entry under federal or state law or other agreement.

8. **Compliance Reporting.**

Owner shall submit to the Holder, Department, and EPA by no later than January 31 of each year, documentation verifying that the activity and use limitations imposed hereby were in place and complied with during the preceding calendar year. The documentation shall include the following statement, and be signed by the Owner:

I certify that to the best of my knowledge, after thorough evaluation of appropriate facts and information, the information contained in or accompanying this submission is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

In the event that an Owner or Holder becomes aware of any non-compliance with the activity and use limitations described in Paragraph 2 above, such person or entity shall notify all other Parties to this Covenant in writing as soon as possible, but no later than 10 business days thereafter.

9. **Additional Rights.**

None Specified.

10. **Notice upon Conveyance.**

Each instrument hereafter conveying any interest in the Owner's Property, or any portion thereof, shall contain a notice of the activity and use limitations set forth in this Covenant, and provide the recording reference for this Covenant. The notice shall be substantially in the following form:

THE INTEREST CONVEYED HEREBY IS SUBJECT TO AN
ENVIRONMENTAL COVENANT, DATED _____, 20____,
RECORDED IN THE OFFICE OF THE RECORDER OF DEEDS OF
_____ COUNTY, _____, ON _____, 20____, AS
DOCUMENT _____, BOOK____, PAGE _____.

Owner shall notify the Holder, Department, and EPA within 10 days following each conveyance of an interest in any portion of the Owner's Property. The notice shall include the name, address, and telephone number of the Transferee, and a copy of the deed or other documentation evidencing the conveyance.

11. **Representations and Warranties.**

Owner hereby represents and warrants to the Holder and Department that:

- a) Owner has the power and authority to enter into this Covenant, to grant the rights and interests herein provided and to carry out all of Owner's obligations hereunder;
- b) this Covenant will not materially violate or contravene or constitute a material default under any other agreement, document or instrument to which Owner is a party or by which Owner may be bound or affected; and
- c) Owner is the sole owner of the Owner's Property—Pike Lincoln County Port Authority solely owns the Property, and Holcim solely owns the Landfill Property—and each entity holds fee simple title to its respective property, which is free, clear, and unencumbered.

12. **Amendments, Termination, and Temporary Deviations.**

This Covenant may be amended or terminated by approval of the Department, Holder, and the current Owner/Transferee of record at the time of such amendment or termination, pursuant to Section 260.1027, RSMo. Any other Parties to this Covenant hereby waive the right to consent to any amendment to, or termination of, this Covenant. Following signature by all requisite persons or entities on any amendment or termination of this Covenant, Owner/Transferee shall record and distribute such documents as described below.

Temporary deviations from the obligations or restrictions specified in this Covenant may be approved by the Department in lieu of a permanent amendment to this Covenant. Owner/Transferee may submit a written request to the Department to temporarily deviate from specified requirements described herein for a specific purpose and timeframe, which shall not exceed 90 days. Any such request shall be transmitted to the Holder and the Department as described below. The request must specifically invoke this paragraph of this Covenant, fully explain the basis for such temporary deviation, and demonstrate that protection of human health and the environment will be maintained. The Department will evaluate the request and convey approval or denial in writing. Owner/Transferee may not deviate from the requirements of this Covenant unless and until such approval has been obtained.

13. **Severability.**

If any provision of this Covenant is found to be unenforceable in any respect, the validity, legality, and enforceability of the remaining provisions shall not in any way be affected or impaired.

14. **Governing Law and Venue.**

This Covenant shall be governed by and interpreted in accordance with the laws of the State of Missouri. The Department and the Owner agree that all disputes, legal actions, suits, and proceedings arising out of or relating to this Covenant must be brought exclusively in the 19th Judicial Circuit Court of Cole County, Missouri.

15. **Recordation.**

Within 30 days after the date of the final required signature upon this Covenant or any amendment or termination thereof, Holder shall record this Covenant with the appropriate recorder of deeds for each county in which any portion of the Owner's Property is situated. Holder shall be responsible for any costs associated with recording this Covenant.

16. **Effective Date.**

The effective date of this Covenant shall be the date upon which the fully executed Covenant has been recorded with the office of the recorder of the county in which the Property and the Landfill Property are situated.

17. **Distribution of Covenant.**

Within 30 days following the recording of this Covenant, or any amendment or termination of this Covenant, Holder shall, in accordance with Section 260.1018, RSMo, distribute a file- and date-stamped copy of the Covenant as recorded with the appropriate recorder of deeds (including book and page numbers) to: (a) each of the Parties hereto; (b) each person holding a recorded interest in the Owner's Property, including any mortgagees or easement holders; (c) each person in possession of the Owner's Property; (d) each municipality or other unit of local government in which the Owner's Property is located; (e) EPA; and (f) any other person designated herein.

18. **Contact Information.**

Any document or other item required by this Covenant to be given to another party hereto shall be sent to:

If to Owner:

Regional Head, North America
Holcim (US) Inc.
8700 West Bryn Mawr Avenue, Suite 300
Chicago, IL 60631

Pike Lincoln County Port Authority
316 West Main Street
Bowling Green, MO 63334

If to Holder:

Regional Head, North America
Holcim (US) Inc.
8700 West Bryn Mawr Avenue, Suite 300
Chicago, IL 60631

If to Department:

Project Manager – Holcim (US) Inc./Geocycle, LLC, Clarksville, MO
Engineering Section, Waste Management Program
P.O. Box 176
Jefferson City, MO 65102-0176

If to EPA:

Chief, Land, Chemical and Redevelopment Division
RCRA Oversight, Authorization Grants & PCB Branch
U.S. Environmental Protection Agency – Region 7
11201 Renner Blvd.
Lenexa, KS 66219

The Owner, Holder, Department, or EPA may change their designated recipient of such notices by providing written notice of the same to each other. If a former Owner/Transferee who no longer has an interest in the Owner's Property receives any notice or other submittal under this Covenant, then such former Owner/Transferee shall notify the Department, Holder, EPA, and the current Owner/Transferee of the Owner's Property regarding the misdirected communication.

19. Reservation of Rights.

This Covenant is a necessary component of the environmental response project described above. Nothing in this Covenant shall be construed so as to relieve any owner from the obligation to comply with this Covenant during their period of ownership, or the obligation to comply with any other source of law. This Covenant is not a permit, nor does it modify any permit, order, agreement, decree, or judgment issued under any federal, state, or local laws or regulations, and the Department does not warrant or aver in any manner that an owner's compliance with this Covenant will constitute compliance with any such requirements. The Department and EPA reserve all legal and equitable remedies available to enforce this Covenant or any other legal requirement, and/or to address any imminent and substantial endangerment to the public health or welfare or the environment arising at, or posed by, the Owner's Property. Nothing herein shall be construed so as to prevent the Department, Holder, or EPA from taking any independent actions as allowed by law.

20. Entirety of Agreement.

This Covenant, including all Exhibits attached hereto embodies the entire, final, and complete agreement and understanding between the Parties and replaces and supersedes all prior discussions and agreements between them with respect to its subject matter.

The undersigned represent and certify that they are authorized to sign this Covenant on behalf of their respective Parties.

IT IS SO AGREED:

FOR OWNER/HOLDER (HOLCIM US INC):

By: _____

Toufic Tabbara
Regional Head, North America
Holcim (US) Inc.
8700 West Bryn Mawr Avenue, Suite 300
Chicago, IL 60631

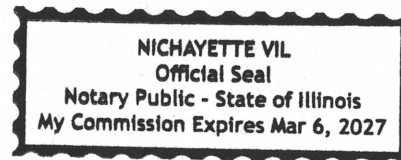
Date: _____

4/10/2023

STATE OF _____)
)
COUNTY OF _____)

ILLINOIS

COOK



On this 10 day of April, 2023, before me a Notary Public in and for said state, personally appeared Toufic Tabbara, Regional Head, North America of Holcim (US) Inc., known to me to be the person who executed the within Covenant on behalf of said corporation and acknowledged to me that he/she executed the same for the purposes therein stated.

Nichayette Vil
Notary Public

FOR OWNER (PIKE LINCOLN COUNTY PORT AUTHORITY):

By: Carolyn Wisecarver
Carolyn Wisecarver
Executive Director
Pike Lincoln County Port Authority
316 West Main St.
Bowling Green, MO 63334

Date: 4-26-23

STATE OF Missouri)
)
COUNTY OF Pike)

On this 26th day of April, 2023, before me a Notary Public in and for said state, personally appeared Carolyn Wisecarver, Executive Director of Pike Lincoln County Port Authority, known to me to be the person who executed the within Covenant on behalf of said corporation and acknowledged to me that he/she executed the same for the purposes therein stated.

Amber Nicole Brooks
Notary Public

Amber Nicole Brooks
Notary Public-Notary Seal
State of Missouri
Pike County
My Commission Expires: July 26, 2025
Commission #21941989

FORREST H. LUCK
MY COMMISSION EXPIRES
JANUARY 6, 2024
PIKE COUNTY
COMMISSION #20112003



FOR DEPARTMENT:

By: Chris Nagel
Name (print): Chris Nagel
Title: Director, Waste Management Program
Address: Missouri Department of Natural Resources
PO Box 176
Jefferson City, MO 65102-0176

Date: 5/10/2023

STATE OF MISSOURI)
COUNTY OF Cole)

On this 10 day of May, 2023 before me a Notary Public in and for said state, personally appeared Chris Nagel, Director of the Waste Management Program of the Missouri Department of Natural Resources, a state agency, known to me to be the person who executed the within Covenant on behalf of said agency by authority of its Director and acknowledged to me that he executed the same for the purposes therein stated.



FORREST H LUCK
My Commission Expires
January 6, 2024
Cole County
Commission #20117038

Forrest H. Luck
Notary Public
Forrest H. Luck

Exhibit A – Owner’s Property Map

Figure not available due to size.
Please see hard copy or separate electronic file online at
[Environmental Covenant MOD029729688, Exhibit A - Owner's Property Map](#)

Exhibit B—The Property - Pike Lincoln County Port Authority Property

Figure not available due to size.

Please see hard copy or separate electronic file online at

[Environmental Covenant MOD029729688, Exhibit B - The Property - Pike Lincoln County Port Authority Property](#)

Exhibit B.1 – Plat of Survey for SWMU 26, AOC 7 & Legal Descriptions

Figure not available due to size.

Please see hard copy or separate electronic file online at

[Environmental Covenant MOD029729688, Exhibit B.1 - Plat of Survey SWMU 26 AOC 7 Legal Description](#)

Exhibit C—The Landfill Property & AOC 5 - Holcim US Property

Figure not available due to size.

Please see hard copy or separate electronic file online at

[Environmental Covenant MOD029729688, Exhibit C - The Landfill Property AOC 5 Holcim US Property](#)

Exhibit C.1 – Plat of Survey for SWMUs 10.1, 10.2, 11.1, 11.2, & AOC 5

Figure not available due to size.

Please see hard copy or separate electronic file online at

[Environmental Covenant MOD029729688 Exhibit C-1 - Plat of Survey for SWMUs 10.1 10.2 11.1 11.2 AOC 5](#)

Exhibit C.2 – Plat of Survey for AOC 5 & Legal Description

Figure not available due to size.

Please see hard copy or separate electronic file online at
[Environmental Quality MOD029729688, Exhibit C.2 - Plat of Survey for AOC 5 Legal Description](#)

Exhibit C.3 – Plat of Survey for SWMUs 10.2 & 11.1

Figure not available due to size.

Please see hard copy or separate electronic file online at

[Environmental Covenant MOD029729688, Exhibit C.3 - Plat of Survey for SWMU 10.2 11.1](#)

Exhibit C.4 – Plat of Survey Legal Descriptions for SWMUs 10.2 & 11.1

Figure not available due to size.

Please see hard copy or separate electronic file online at

[Environmental Covenant MOD029729688, Exhibit C.4 - Plat of Survey Legal Description for SWMUs 10.2 11.1](#)

Exhibit C.5 – Plat of Survey for SWMUs 10.1 & 11.2

Figure not available due to size.

Please see hard copy or separate electronic file online at
[Environmental Covenant MOD029729688, Exhibit C.5 - Plat of Survey for SWMUs 10.1 11.2](#)

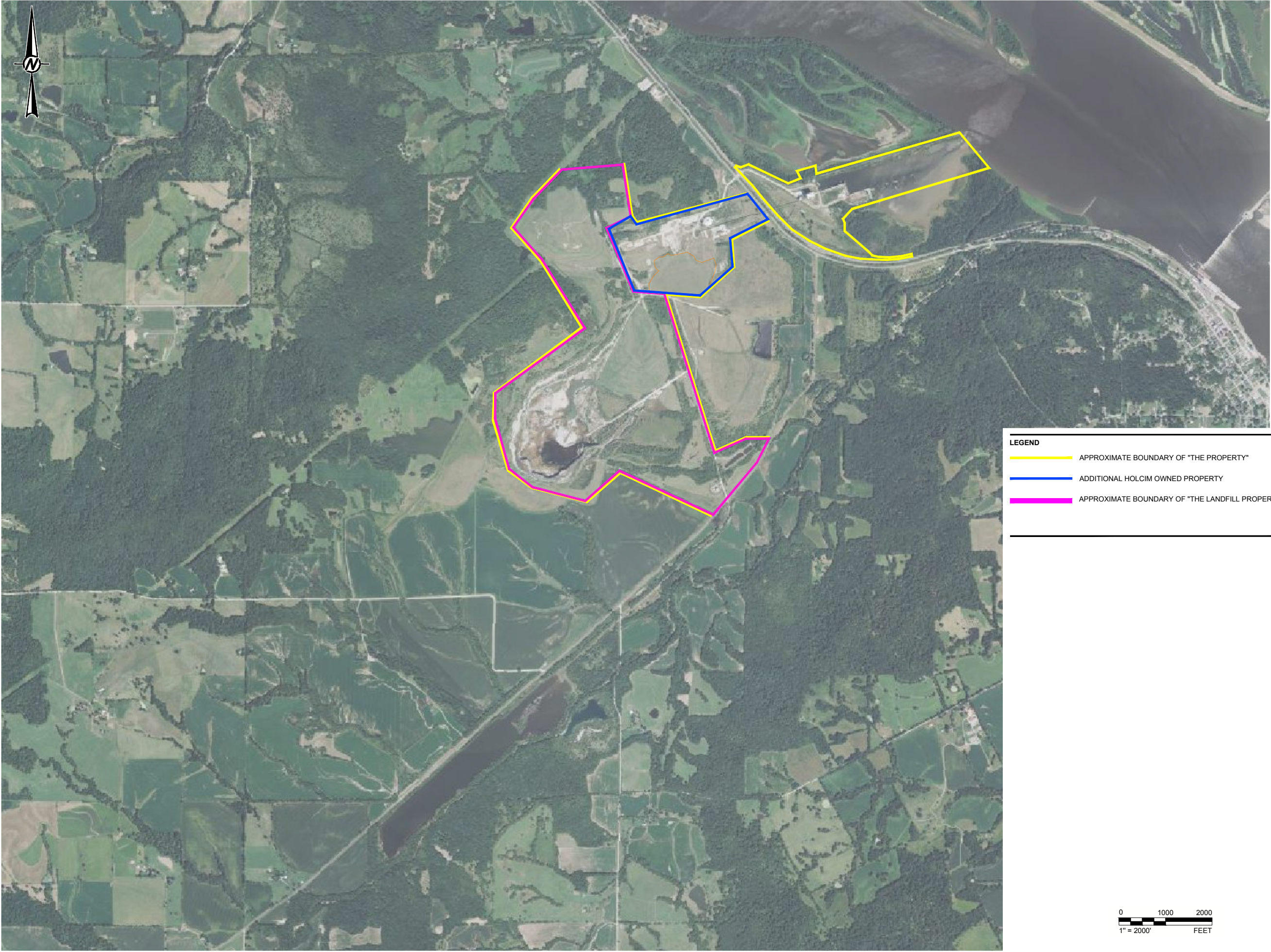
Exhibit C.6 – Plat of Survey Legal Descriptions for SWMUs 10.1 & 11.2

Figure not available due to size.

Please see hard copy or separate electronic file online at

[Environmental Covenant MOD029729688, Exhibit C.6 - Plat of Survey Legal Descriptions SWMUs 10.1 11.2](#)

Path: C:\Users\JFVerny\Goldier Associates\09384255-HOLCIM CLARKSVILLE REM ASSESS.MXD Technical Work\600 DRAFT\ING\PRODUCTION\ | File Name: Exhibit A - Copy Fig 2.dwg | Last Edited By: eferney Date: 2022-04-18 Time: 11:54:58 AM | Printed By: JFVerny Date: 2022-04-18 Time: 12:07:11 PM



- LEGEND**
- APPROXIMATE BOUNDARY OF "THE PROPERTY"
 - ADDITIONAL HOLCIM OWNED PROPERTY
 - APPROXIMATE BOUNDARY OF "THE LANDFILL PROPERTY"

PROJECT
REMEDIAL ASSESSMENT

CLIENT
HOLCIM (US) INC.
CLARKSVILLE, MISSOURI

TITLE
ORIGINAL SITE PLAN FOR HOLCIM
PROPERTY AREAS

CONSULTANT

GOLDER ASSOCIATES INC.
701 EMERSON ROAD
SUITE 250
CREVE COEUR, MO 63141
[+1] (314) 984 8800
www.golder.com



PROJECT NO.
09384255

REV.	YYYY-MM-DD	DESCRIPTION	ETD	ETD	BTD	CMR
A	2022-04-18	ORIGINAL	ETD	ETD	BTD	CMR
REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED

REV. of EXHIBIT

A

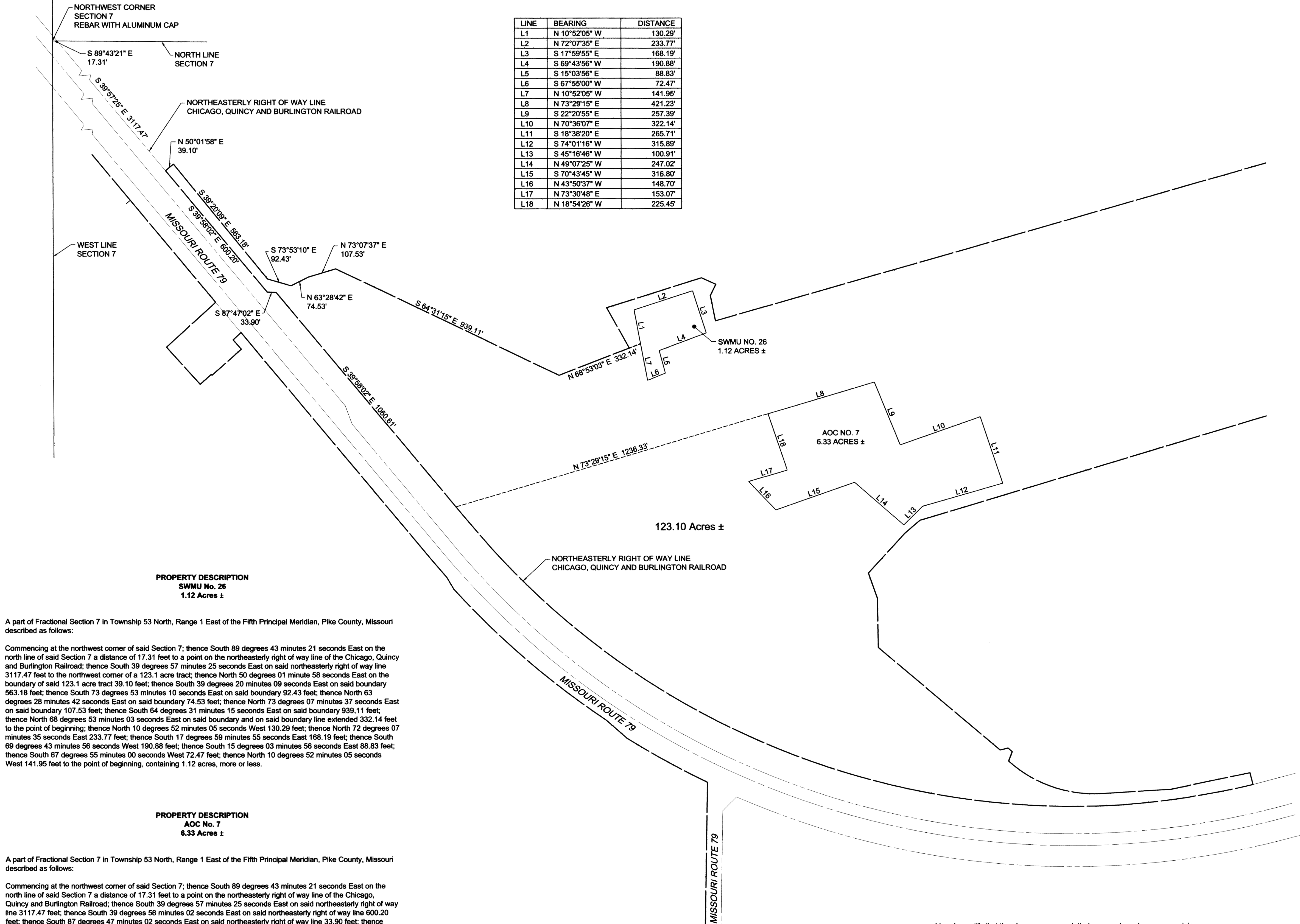
1" = 2000' IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B

LINE	BEARING	DISTANCE
L1	N 10°52'05" W	130.29'
L2	N 72°07'35" E	233.77'
L3	S 17°59'55" E	168.19'
L4	S 69°43'56" W	190.88'
L5	S 15°03'56" E	88.83'
L6	S 67°55'00" W	72.47'
L7	N 10°52'05" W	141.95'
L8	N 73°29'15" E	421.23'
L9	S 22°20'55" E	257.39'
L10	N 70°36'07" E	322.14'
L11	S 18°38'20" E	265.71'
L12	S 74°01'16" W	315.89'
L13	S 45°16'46" W	100.91'
L14	N 49°07'25" W	247.02'
L15	S 70°43'45" W	316.80'
L16	N 43°50'37" W	148.70'
L17	N 73°30'48" E	153.07'
L18	N 18°54'26" W	225.45'

THE DRAWING HAS BEEN CONSTRUCTED TO THE STANDARD SCALE NOTED. A GRAPHIC SCALE IS PROVIDED FOR INTERPRETATION OF REDUCED DRAWINGS. SCALE ANY DRAWING WITH CAUTION.

DESIGNED	DRAWN	CHECKED	DATE	REVISION DESCRIPTION	DATE
JCC/ECB	SPM/CJH		APRIL 2013		
PROJECT NO.	FILE NO.	SCALE			
12-0191	SWMU26-AOC7	1" = 200'			

FULL SCALE DRAWING IS 22"x34"



A part of Fractional Section 7 in Township 53 North, Range 1 East of the Fifth Principal Meridian, Pike County, Missouri described as follows:

Commencing at the northwest corner of said Section 7; thence South 89 degrees 43 minutes 21 seconds East on the north line of said Section 7 a distance of 17.31 feet to a point on the northeasterly right of way line of the Chicago, Quincy and Burlington Railroad; thence South 39 degrees 57 minutes 25 seconds East on said northeasterly right of way line 3117.47 feet to the northwest corner of a 123.1 acre tract; thence North 50 degrees 01 minute 58 seconds East on the boundary of said 123.1 acre tract 39.10 feet; thence South 39 degrees 20 minutes 09 seconds East on said boundary 563.18 feet; thence South 73 degrees 53 minutes 10 seconds East on said boundary 92.43 feet; thence North 63 degrees 28 minutes 42 seconds East on said boundary 74.53 feet; thence North 73 degrees 07 minutes 37 seconds East on said boundary 107.53 feet; thence South 64 degrees 31 minutes 15 seconds East on said boundary 939.11 feet; thence North 68 degrees 53 minutes 03 seconds East on said boundary and on said boundary line extended 332.14 feet to the point of beginning; thence North 10 degrees 52 minutes 05 seconds West 130.29 feet; thence North 72 degrees 07 minutes 35 seconds East 233.77 feet; thence South 17 degrees 59 minutes 55 seconds East 168.19 feet; thence South 69 degrees 43 minutes 56 seconds West 190.88 feet; thence South 15 degrees 03 minutes 56 seconds East 88.83 feet; thence South 67 degrees 55 minutes 00 seconds West 72.47 feet; thence North 10 degrees 52 minutes 05 seconds West 141.95 feet to the point of beginning, containing 1.12 acres, more or less.

A part of Fractional Section 7 in Township 53 North, Range 1 East of the Fifth Principal Meridian, Pike County, Missouri described as follows:

Commencing at the northwest corner of said Section 7; thence South 89 degrees 43 minutes 21 seconds East on the north line of said Section 7 a distance of 17.31 feet to a point on the northeasterly right of way line of the Chicago, Quincy and Burlington Railroad; thence South 39 degrees 57 minutes 25 seconds East on said northeasterly right of way line 3117.47 feet; thence South 39 degrees 58 minutes 02 seconds East on said northeasterly right of way line 600.20 feet; thence South 87 degrees 47 minutes 02 seconds East on said northeasterly right of way line 33.90 feet; thence South 39 degrees 58 minutes 02 seconds East on said northeasterly right of way line 1060.61 feet; thence North 73 degrees 29 minutes 15 seconds East 1236.33 feet to the point of beginning; thence continuing North 73 degrees 29 minutes 15 seconds East 421.23 feet; thence South 22 degrees 20 minutes 55 seconds East 257.39 feet; thence North 70 degrees 36 minutes 07 seconds East 322.14 feet; thence South 18 degrees 38 minutes 20 seconds East 265.71 feet; thence South 74 degrees 01 minute 16 seconds West 315.89 feet; thence South 45 degrees 16 minutes 46 seconds West 100.91 feet; thence North 49 degrees 07 minutes 25 seconds West 247.02 feet; thence South 70 degrees 43 minutes 45 seconds West 316.80 feet; thence North 43 degrees 50 minutes 37 seconds West 148.70 feet; thence North 73 degrees 30 minutes 48 seconds East 153.07 feet; thence North 18 degrees 54 minutes 26 seconds West 225.45 feet to the point of beginning, containing 6.33 acres, more or less.

I hereby certify that the above survey as platted was made under my supervision and that the same is true and correct to the best of my knowledge and belief.

I further state that the described property as shown on this plat was surveyed in accordance with the current Missouri Minimum Standards for Property Boundary Survey, and that the same is Rural Class property.

Stephen P. Mock
Stephen P. Mock - Missouri Professional Land Surveyor No. 2539



BASIS OF BEARINGS: MO EAST NAD83
SURVEYED FOR: HOLCIM, INC.
FIELD WORK COMPLETED APRIL 11, 2013.

DESIGN FIRM NO. 184-2738

KLINGNER & ASSOCIATES, P.C.
Engineers • Architects • Surveyors

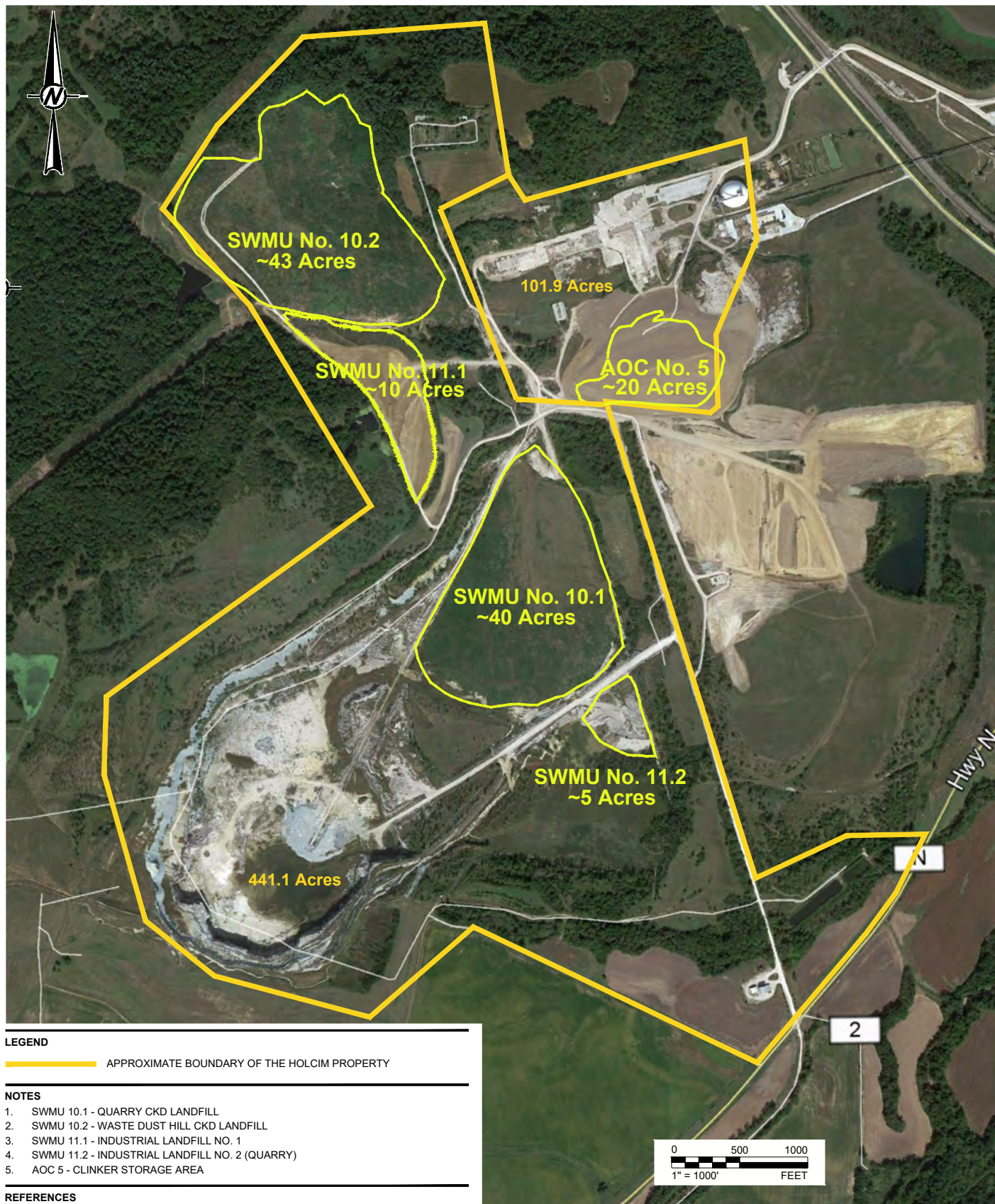
616 North 24th Street, Quincy, IL
4510 Paris Gravel Road, Hannibal, MO
610 N. 4th Street, Suite 100, Burlington, IA
49 North Prairie Street, Galesburg, IL
Internet Address:
Ph (217)223-3670 - Fax (217)223-3603
Ph (573)221-0020 - Fax (573)221-0012
Ph (319)753-1636 - Fax (319)752-3605
Ph (309)342-4042 - Fax (309)341-3781
www.klingner.com

A PART OF FRACTIONAL SECTION 7 IN
TOWNSHIP 53 NORTH, RANGE 1 EAST OF THE
FIFTH PRINCIPAL MERIDIAN, PIKE COUNTY,
MISSOURI

PLAT OF SURVEY
SWMU NO. 26 & AOC NO. 7

SHEET NO.

1/1



LEGEND

APPROXIMATE BOUNDARY OF THE HOLCIM PROPERTY

NOTES

1. SWMU 10.1 - QUARRY CKD LANDFILL
2. SWMU 10.2 - WASTE DUST HILL CKD LANDFILL
3. SWMU 11.1 - INDUSTRIAL LANDFILL NO. 1
4. SWMU 11.2 - INDUSTRIAL LANDFILL NO. 2 (QUARRY)
5. AOC 5 - CLINKER STORAGE AREA

REFERENCES

KLINGER & ASSOCIATES, P.C. PRELIMINARY SURVEY IN 2012

CLIENT

HOLCIM (US) INC.
CLARKSVILLE, MISSOURI

CONSULTANT



YYYY-MM-DD 2019-08-30

DESIGNED PJJ

PREPARED PJJ

REVIEWED PJJ

APPROVED CMR

PROJECT

REMEDIAL ASSESSMENT

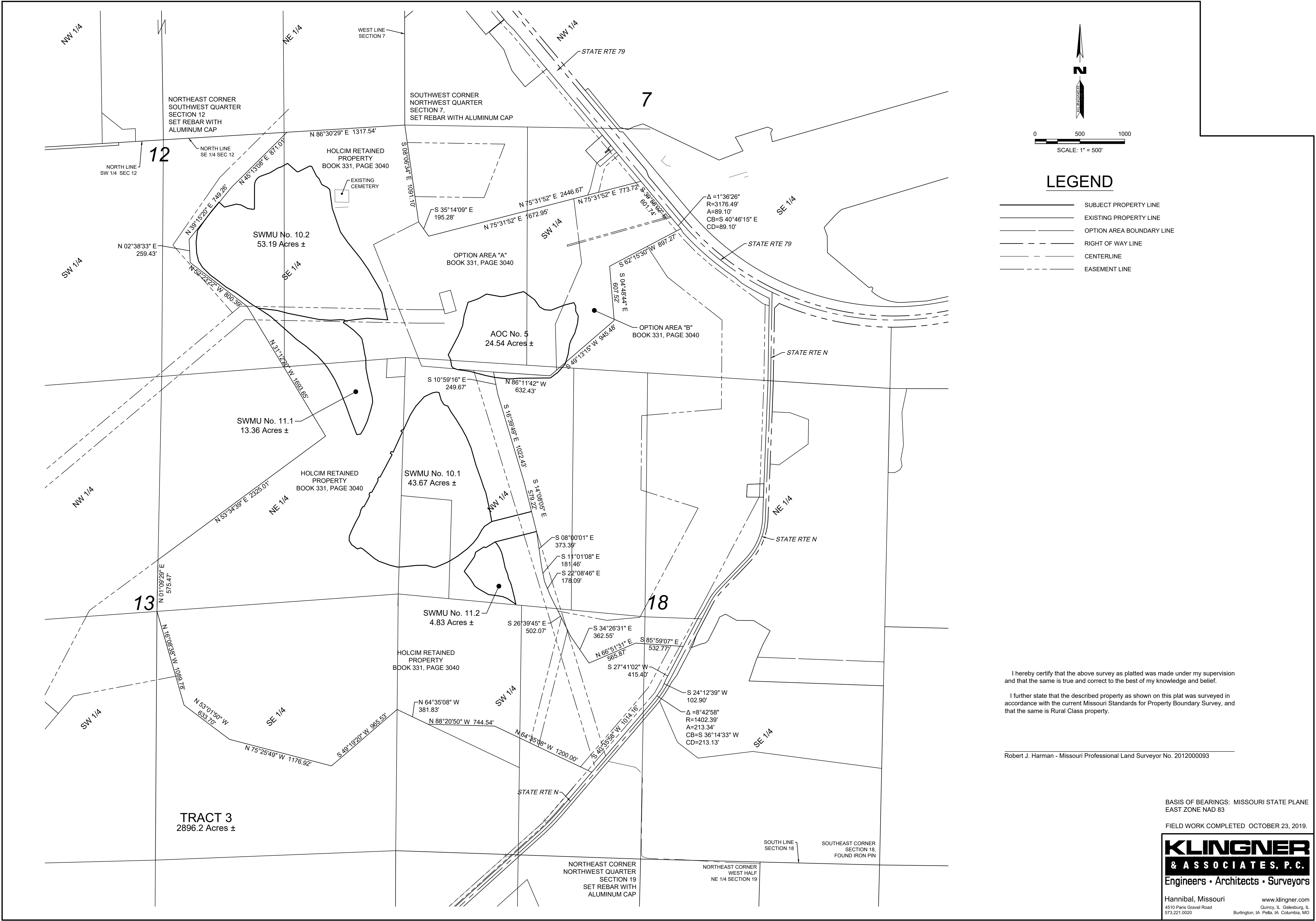
TITLE

REVISED SITE BOUNDARY FOR HOLCIM PROPERTY

PROJECT NO.
09384255

REV.

EXHIBIT
C-1



LEGEND

- SUBJECT PROPERTY LINE
- EXISTING PROPERTY LINE
- OPTION AREA BOUNDARY LINE
- RIGHT OF WAY LINE
- CENTERLINE
- EASEMENT LINE

I hereby certify that the above survey as platted was made under my supervision and that the same is true and correct to the best of my knowledge and belief.

I further state that the described property as shown on this plat was surveyed in accordance with the current Missouri Standards for Property Boundary Survey, and that the same is Rural Class property.

Robert J. Harman - Missouri Professional Land Surveyor No. 2012000093

BASIS OF BEARINGS: MISSOURI STATE PLANE
EAST ZONE NAD 83

FIELD WORK COMPLETED OCTOBER 23, 2019.

KLINGNER
& ASSOCIATES, P.C.
Engineers • Architects • Surveyors

Hannibal, Missouri
4510 Paris Gravel Road
573.221.0020

Quincy, IL
Colesburg, IL
Burlington, IA
Pella, IA
Columbia, MO

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Klingner & Associates, P.C.
Missouri State Certificate of Authority
NO. LS-182-F

ROBERT J. HARMAN
MO# LS-2012000093

PLAT OF SURVEY
SURVEYED FOR GOLDER ASSOCIATES INC.

A PART OF SECTIONS 7 & 18 IN TOWNSHIP 53 NORTH OF THE BASE LINE
AND RANGE 1 EAST OF THE FIFTH PRINCIPAL MERIDIAN AND A PART OF
SECTIONS 12 & 13 IN TOWNSHIP 53 NORTH OF THE BASE LINE AND RANGE 1
WEST OF THE FIFTH PRINCIPAL MERIDIAN, ALL IN PIKE COUNTY, MISSOURI

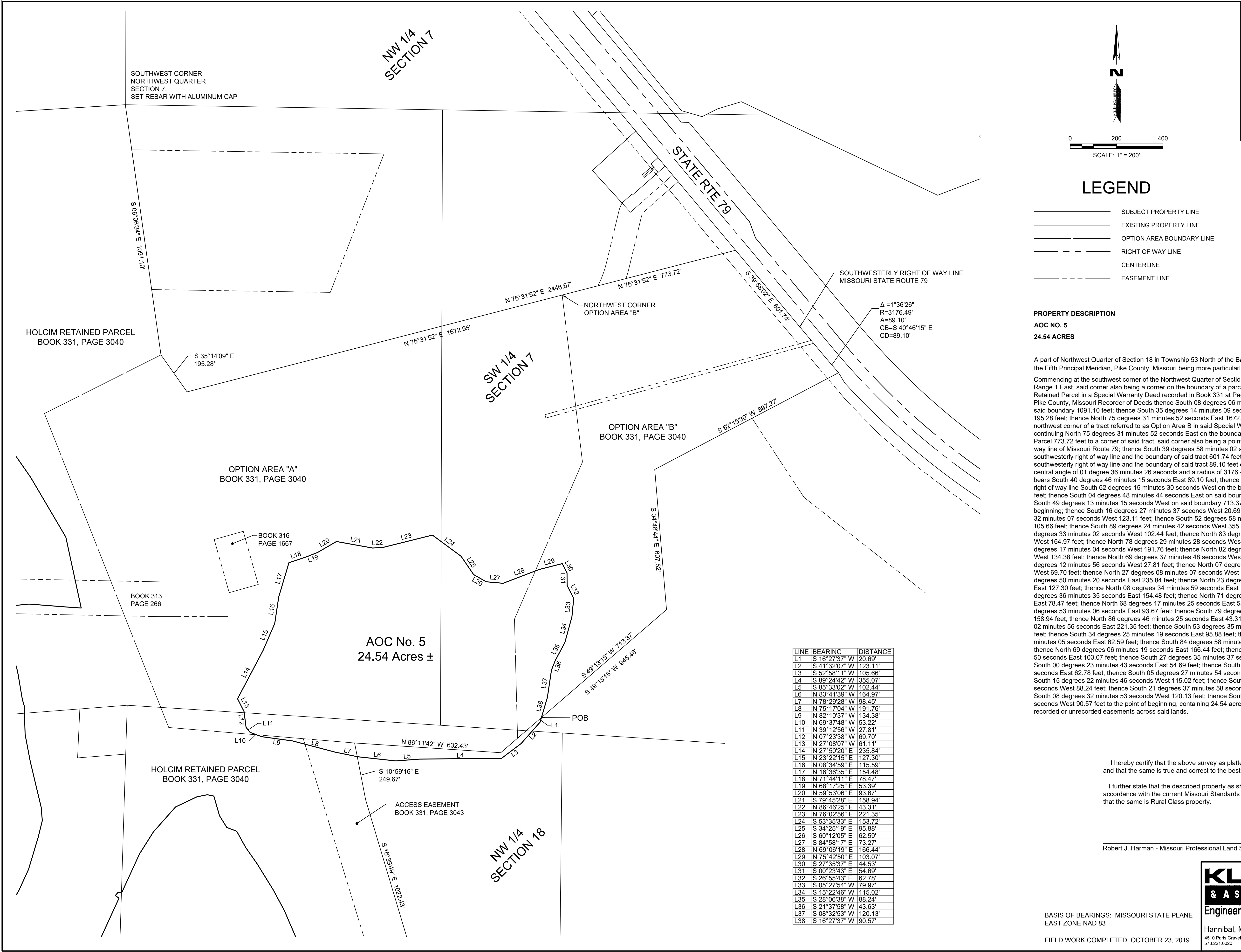
REVISION HISTORY			
MARK	DESCRIPTION	DATE	APPR

Non-Reduced Sheet Size: 22" x 34"
Full sized plans have been prepared using standard scales.
Reduced size plans may not conform to standard scales.

DESIGNED	DRAWN
ECB/MMWJ	RJH/CJH
FIELD	FIELD BOOK
ECB/MMWJ	I-34B/27
CHECKED	CHECK DATE
CJH/MMWJ	
FILE NO.	SCALE
190227.dwg	1" = 200'

SHEET TITLE

PROJECT NO.
19-0227
DRAWING ISSUED DATE:
SHEET
1 of 6



LEGEND

- SUBJECT PROPERTY LINE
- EXISTING PROPERTY LINE
- OPTION AREA BOUNDARY LINE
- RIGHT OF WAY LINE
- CENTERLINE
- EASEMENT LINE

PROPERTY DESCRIPTION
AOC NO. 5
24.54 ACRES

A part of Northwest Quarter of Section 18 in Township 53 North of the Baseline and Range 1 East of the Fifth Principal Meridian, Pike County, Missouri being more particularly described as follows:

Commencing at the southwest corner of the Northwest Quarter of Section 7 in said Township 53 North, Range 1 East, said corner also being a corner on the boundary of a parcel referred to as Holcim Retained Parcel in a Special Warranty Deed recorded in Book 331 at Page 3040 in the Office of the Pike County, Missouri Recorder of Deeds thence South 08 degrees 06 minutes 34 seconds East on said boundary 1091.10 feet; thence South 35 degrees 14 minutes 09 seconds East on said boundary 195.28 feet; thence North 75 degrees 31 minutes 52 seconds East 1672.95 on said boundary to the northwest corner of a tract referred to as Option Area B in said Special Warranty Deed; thence continuing North 75 degrees 31 minutes 52 seconds East on the boundary of said Holcim Retained Parcel 773.72 feet to a corner of said tract, said corner also being a point on the southwesterly right of way line of Missouri Route 79; thence South 39 degrees 58 minutes 02 seconds East on said southwesterly right of way line and the boundary of said tract 601.74 feet; thence southeasterly on said southwesterly right of way line and the boundary of said tract 89.10 feet on a curve to the left having a central angle of 01 degree 36 minutes 26 seconds and a radius of 3176.49 feet, the chord of said curve bears South 40 degrees 46 minutes 15 seconds East 89.10 feet; thence leaving said southwesterly right of way line South 62 degrees 15 minutes 30 seconds West on the boundary of said tract 897.27 feet; thence South 04 degrees 48 minutes 44 seconds East on said boundary 607.52 feet; thence South 49 degrees 13 minutes 15 seconds West on said boundary 713.37 feet to the true point of beginning; thence South 16 degrees 27 minutes 37 seconds West 20.69 feet; thence South 41 degrees 32 minutes 07 seconds West 123.11 feet; thence South 52 degrees 58 minutes 11 seconds West 105.66 feet; thence South 89 degrees 24 minutes 42 seconds West 355.07 feet; thence South 85 degrees 33 minutes 02 seconds West 102.44 feet; thence North 83 degrees 41 minutes 39 seconds West 164.97 feet; thence North 78 degrees 29 minutes 28 seconds West 98.45 feet; thence North 75 degrees 17 minutes 04 seconds West 191.76 feet; thence North 82 degrees 10 minutes 37 seconds West 134.38 feet; thence North 69 degrees 37 minutes 48 seconds West 53.22 feet; thence North 39 degrees 12 minutes 56 seconds West 27.81 feet; thence North 07 degrees 23 minutes 38 seconds West 69.70 feet; thence North 27 degrees 08 minutes 07 seconds West 61.11 feet; thence North 27 degrees 50 minutes 20 seconds West 235.84 feet; thence North 23 degrees 22 minutes 15 seconds West 127.30 feet; thence North 08 degrees 34 minutes 59 seconds West 115.59 feet; thence North 16 degrees 36 minutes 35 seconds West 154.48 feet; thence North 71 degrees 44 minutes 11 seconds West 78.47 feet; thence North 68 degrees 17 minutes 25 seconds West 53.39 feet; thence North 59 degrees 53 minutes 06 seconds West 93.67 feet; thence North 79 degrees 45 minutes 28 seconds West 158.94 feet; thence North 86 degrees 46 minutes 25 seconds West 43.31 feet; thence North 76 degrees 02 minutes 56 seconds West 221.35 feet; thence South 53 degrees 35 minutes 33 seconds East 153.72 feet; thence South 34 degrees 25 minutes 19 seconds East 95.88 feet; thence South 60 degrees 12 minutes 05 seconds East 62.59 feet; thence South 84 degrees 58 minutes 17 seconds East 73.27 feet; thence North 69 degrees 06 minutes 19 seconds East 166.44 feet; thence North 75 degrees 42 minutes 50 seconds East 103.07 feet; thence South 27 degrees 35 minutes 37 seconds East 44.53 feet; thence South 00 degrees 23 minutes 43 seconds East 54.69 feet; thence South 26 degrees 55 minutes 43 seconds East 62.78 feet; thence South 05 degrees 27 minutes 54 seconds East 79.97 feet; thence South 15 degrees 22 minutes 46 seconds West 115.02 feet; thence South 28 degrees 06 minutes 38 seconds West 88.24 feet; thence South 21 degrees 37 minutes 58 seconds West 43.63 feet; thence South 08 degrees 32 minutes 53 seconds West 120.13 feet; thence South 16 degrees 27 minutes 37 seconds West 90.57 feet to the point of beginning, containing 24.54 acres more or less, subject to any recorded or unrecorded easements across said lands.

I hereby certify that the above survey as platted was made under my supervision and that the same is true and correct to the best of my knowledge and belief.

I further state that the described property as shown on this plat was surveyed in accordance with the current Missouri Standards for Property Boundary Survey, and that the same is Rural Class property.

Robert J. Harman - Missouri Professional Land Surveyor No. 2012000093

BASIS OF BEARINGS: MISSOURI STATE PLANE
EAST ZONE NAD 83

FIELD WORK COMPLETED OCTOBER 23, 2019.

KLINGNER
& ASSOCIATES, P.C.
Engineers • Architects • Surveyors

Hannibal, Missouri

4510 Park Gravel Road
Quincy, IL 61820
573.221.0020

www.klingner.com

Quincy, IL 61820
Burlington, IA 508
Pella, IA 50157

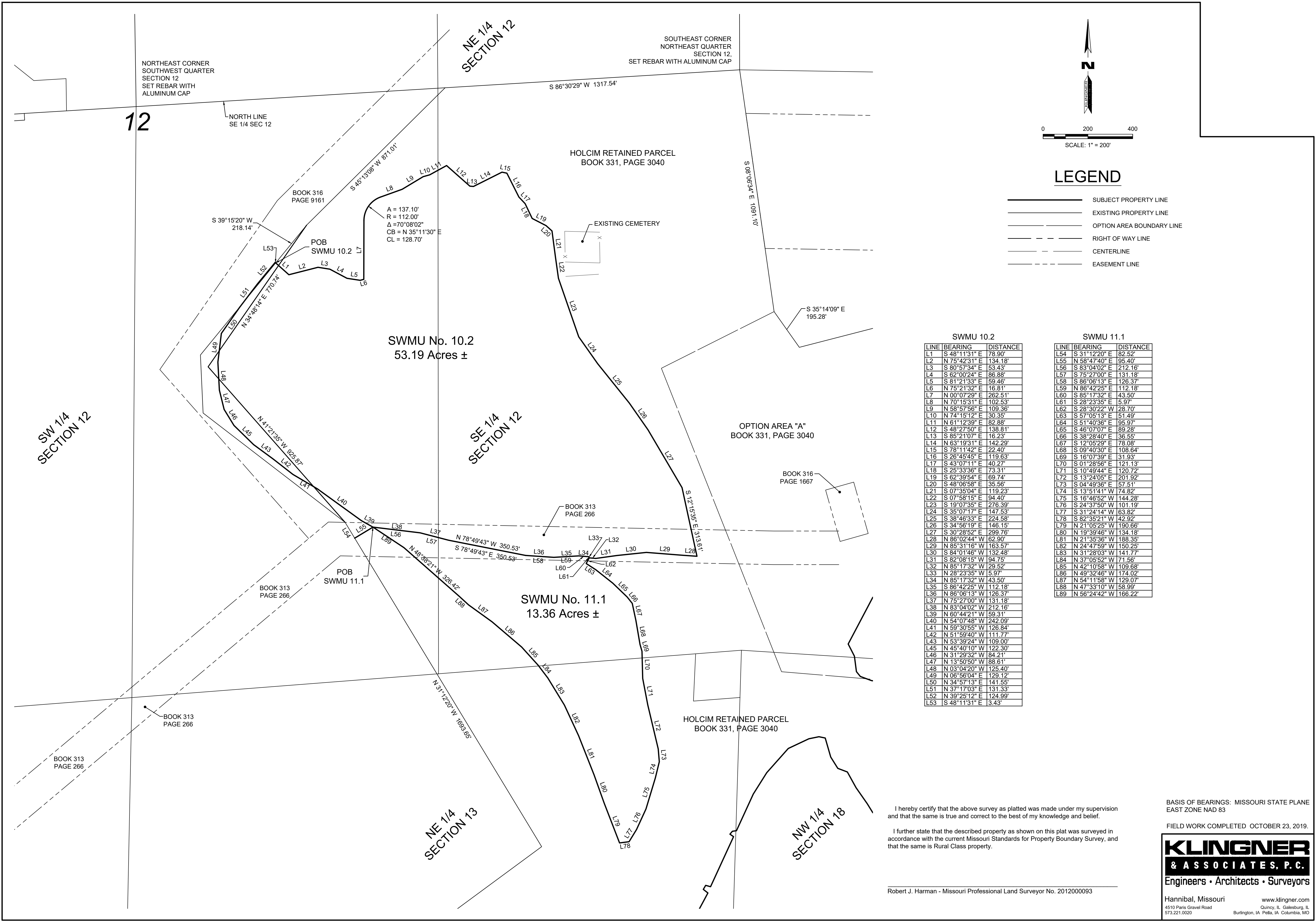
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Klingner & Associates, P.C.
Missouri State Certificate of Authority
LS-182-F

ROBERT J. HARMAN
MO# LS-2012000093

PLAT OF SURVEY
SURVEYED FOR GOLDER ASSOCIATES INC.
A PART OF THE SOUTHWEST QUARTER OF SECTION 7 AND A PART OF THE NORTHWEST QUARTER OF SECTION 18, ALL IN TOWNSHIP 53 NORTH OF THE BASELINE AND RANGE 1 EAST OF THE FIFTH PRINCIPAL MERIDIAN, PIKE COUNTY, MISSOURI

REVISION HISTORY			
MARK	DESCRIPTION	DATE	APPR
Non-Reduced Sheet Size: 22" x 34"			
Full sized plans have been prepared using standard scales. Reduced size plans may not conform to standard scales.			
DESIGNED	DRAWN		
ECB/MWJ	RJH/CJH		
FIELD	FIELD BOOK		
ECB/MWJ	I-34B/27		
CHECKED	CHECK DATE		
CJH/MWJ			
FILE NO.	SCALE		
190227 AOC5.dwg	1" = 200'		
SHEET TITLE			
19-0227 AOC 5			
PROJECT NO.			
19-0227			
DRAWING ISSUED DATE:			
SHEET			
2 of 6			



LEGEND

- SUBJECT PROPERTY LINE
- EXISTING PROPERTY LINE
- OPTION AREA BOUNDARY LINE
- RIGHT OF WAY LINE
- CENTERLINE
- EASEMENT LINE

SWMU 10.2		
LINE	BEARING	DISTANCE
L1	S 48°11'31" E	78.90'
L2	N 75°42'31" E	134.18'
L3	S 80°57'34" E	53.43'
L4	S 62°00'24" E	86.88'
L5	S 81°21'33" E	59.46'
L6	N 75°21'32" E	16.81'
L7	N 00°07'29" E	262.51'
L8	N 70°15'31" E	102.53'
L9	N 58°57'56" E	109.36'
L10	N 74°15'12" E	30.35'
L11	N 61°12'39" E	82.88'
L12	S 48°27'50" E	138.81'
L13	S 85°21'07" E	16.23'
L14	N 63°19'31" E	142.29'
L15	S 78°11'42" E	22.40'
L16	S 26°45'45" E	119.63'
L17	S 43°07'11" E	40.27'
L18	S 25°33'36" E	73.31'
L19	S 62°39'54" E	69.74'
L20	S 48°06'58" E	35.56'
L21	S 07°35'04" E	119.23'
L22	S 07°58'15" E	94.40'
L23	S 19°07'35" E	276.39'
L24	S 35°07'17" E	147.53'
L25	S 38°46'33" E	224.58'
L26	S 34°56'19" E	146.15'
L27	S 30°28'52" E	293.76'
L28	N 86°02'44" W	62.90'
L29	N 85°31'16" W	163.57'
L30	S 84°01'46" W	132.48'
L31	S 82°08'15" W	94.75'
L32	N 85°17'32" W	29.52'
L33	N 28°23'35" W	5.97'
L34	N 85°17'32" W	43.50'
L35	S 86°42'25" W	112.18'
L36	N 86°06'13" W	126.37'
L37	N 75°27'00" W	131.18'
L38	N 83°04'02" W	212.16'
L39	N 60°44'21" W	59.31'
L40	N 54°07'48" W	242.09'
L41	N 59°30'55" W	126.84'
L42	N 51°59'40" W	111.77'
L43	N 53°39'24" W	109.00'
L44	N 45°40'10" W	122.30'
L45	N 31°29'32" W	84.21'
L46	N 13°50'50" W	88.61'
L47	N 03°04'20" W	125.40'
L48	N 06°56'04" E	129.12'
L49	N 34°57'13" E	141.55'
L50	N 37°17'03" E	131.33'
L51	N 39°25'12" E	124.99'
L52	S 48°11'31" E	3.43'

SWMU 11.1		
LINE	BEARING	DISTANCE
L54	S 31°12'20" E	82.52'
L55	N 58°47'40" E	95.40'
L56	S 83°04'02" E	212.16'
L57	S 75°27'00" E	131.18'
L58	S 86°06'13" E	126.37'
L59	N 86°42'25" E	112.18'
L60	S 85°17'32" E	43.50'
L61	S 28°23'35" E	5.97'
L62	S 28°30'22" E	28.70'
L63	S 57°05'13" E	51.49'
L64	S 51°40'36" E	95.97'
L65	S 46°07'07" E	89.28'
L66	S 38°28'40" E	36.55'
L67	S 12°05'29" E	78.08'
L68	S 09°40'30" E	108.64'
L69	S 16°07'39" E	31.93'
L70	S 01°28'56" E	121.13'
L71	S 10°49'44" E	120.72'
L72	S 13°24'05" E	201.92'
L73	S 04°49'36" E	57.51'
L74	S 13°51'41" W	74.82'
L75	S 16°46'52" W	144.28'
L76	S 24°37'50" W	101.19'
L77	S 31°24'14" W	63.82'
L78	S 82°35'21" W	42.92'
L79	N 21°05'25" W	190.66'
L80	N 19°39'46" W	134.18'
L81	N 21°35'36" W	188.35'
L82	N 24°47'59" W	150.25'
L83	N 31°28'03" W	141.77'
L84	N 37°05'52" W	71.56'
L85	N 42°10'58" W	109.68'
L86	N 49°32'46" W	174.02'
L87	N 54°11'58" W	129.07'
L88	N 47°33'10" W	58.99'
L89	N 56°24'42" W	166.22'

I hereby certify that the above survey as platted was made under my supervision and that the same is true and correct to the best of my knowledge and belief.

I further state that the described property as shown on this plat was surveyed in accordance with the current Missouri Standards for Property Boundary Survey, and that the same is Rural Class property.

Robert J. Harman - Missouri Professional Land Surveyor No. 2012000093

BASIS OF BEARINGS: MISSOURI STATE PLANE
EAST ZONE NAD 83

FIELD WORK COMPLETED: OCTOBER 23, 2019.

KLINGNER
& ASSOCIATES, P.C.
Engineers • Architects • Surveyors

Hannibal, Missouri
4510 Park Gravel Road
573.221.0020

www.klingner.com
Quincy, IL, Galesburg, IL,
Burlington, IA, Pella, IA, Columbus, MO

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Klingner & Associates, P.C.
Missouri State Certificate of Authority
No.LS-182-F

ROBERT J. HARMAN
MO# LS-2012000093

PLAT OF SURVEY
SURVEYED FOR GOLDER ASSOCIATES INC.

A PART OF THE SOUTHEAST QUARTER OF SECTION 12 AND A
PART OF THE NORTHEAST QUARTER OF SECTION 13, ALL IN
TOWNSHIP 53 NORTH OF THE BASE LINE AND RANGE 1 WEST OF
THE FIFTH PRINCIPAL MERIDIAN, PIKE COUNTY, ILLINOIS

REVISION HISTORY			
MARK	DESCRIPTION	DATE	APPR

Non-Reduced Sheet Size: 22" x 34"

Full sized plans have been prepared using standard scales. Reduced size plans may not conform to standard scales.

DESIGNED	DRAWN
ECB/MMWJ	RJH/CJH
CHECKED	FIELD BOOK
CJH/MMWJ	I-34B/27
FILE NO.	CHECK DATE
190227 SWMU 10.dwg	
SHEET TITLE	

190227 SWMU 10

PROJECT NO.
19-0227

DRAWING ISSUED DATE:

SHEET
3 of 6

53.19 ACRES

Commencing at the southeast corner of the Northeast Quarter of Section 12, said corner also being a corner on the boundary of a parcel referred to as Holcim Retained Parcel being described in a Special Warranty Deed recorded in Book 331 at Page 3040 in the Office of the Pike County, Missouri Recorder of Deeds; thence South 86 degrees 30 minutes 29 seconds West on the north line of said Southeast Quarter and said boundary 1317.54 feet; thence South 45 degrees 13 minutes 08 seconds West on said boundary 871.01 feet; thence South 39 degrees 15 minutes 20 seconds West on said boundary 218.14 feet to the true point of beginning; thence South 48 degrees 11 minutes 31 seconds East 78.90 feet; thence North 75 degrees 42 minutes 31 seconds East 134.18 feet; thence South 80 degrees 57 minutes 34 seconds East 53.43 feet; thence South 62 degrees 00 minutes 24 seconds East 86.88 feet; thence South 81 degrees 21 minutes 33 seconds East 59.46 feet; thence North 75 degrees 21 minutes 32 seconds East 16.81 feet; thence North 00 degrees 07 minutes 29 seconds East 262.51 feet; thence 137.10 feet on a curve having a central angle of 70 degrees 08 minutes 02 seconds and a radius of 112.00 feet and a chord bearing and distance of North 35 degrees 11 minutes 30 seconds East 128.70 feet; thence North 70 degrees 15 minutes 31 seconds East 102.53 feet; thence North 58 degrees 57 minutes 56 seconds East 109.36 feet; thence North 74 degrees 15 minutes 12 seconds East 30.35 feet; thence North 61 degrees 12 minutes 39 seconds East 86.13 feet; thence South 48 degrees 27 minutes 50 seconds East 138.81 feet; thence South 85 degrees 21 minutes 07 seconds East 16.23 feet; thence North 63 degrees 19 minutes 31 seconds East 142.29 feet; thence South 78 degrees 11 minutes 42 seconds East 22.40 feet; thence South 26 degrees 45 minutes 45 seconds East 119.63 feet; thence South 43 degrees 07 minutes 11 seconds East 40.27 feet; thence South 25 degrees 33 minutes 36 seconds East 73.31 feet; thence South 62 degrees 39 minutes 54 seconds East 69.74 feet; thence South 48 degrees 06 minutes 58 seconds East 35.56 feet; thence South 07 degrees 35 minutes 04 seconds East 119.23 feet; thence South 07 degrees 58 minutes 15 seconds East 94.40 feet; thence South 19 degrees 07 minutes 35 seconds East 276.39 feet; thence South 35 degrees 07 minutes 17 seconds East 147.53 feet; thence South 38 degrees 46 minutes 33 seconds East 224.58 feet; thence South 34 degrees 56 minutes 19 seconds East 146.15 feet; thence South 30 degrees 28 minutes 52 seconds East 299.76 feet; thence South 12 degrees 15 minutes 35 seconds East 313.61 feet; thence North 86 degrees 02 minutes 44 seconds West 62.90 feet; thence North 85 degrees 31 minutes 16 seconds West 163.57 feet; thence South 84 degrees 01 minute 46 seconds West 132.48 feet; thence South 82 degrees 08 minutes 15 seconds West 94.75 feet; thence North 85 degrees 17 minutes 32 seconds West 29.52 feet; thence North 28 degrees 23 minutes 35 seconds West 5.97 feet; thence North 85 degrees 17 minutes 32 seconds West 43.50 feet; thence South 86 degrees 42 minutes 25 seconds West 112.18 feet; thence North 86 degrees 06 minutes 13 seconds West 126.37 feet; thence North 78 degrees 49 minutes 43 seconds West 350.53 feet; thence North 75 degrees 27 minutes 00 seconds West 131.18 feet; thence North 83 degrees 04 minutes 02 seconds West 212.16 feet; thence North 60 degrees 44 minutes 21 seconds West 59.31 feet; thence North 54 degrees 07 minutes 48 seconds West 242.09 feet; thence North 59 degrees 30 minutes 55 seconds West 126.84 feet; thence North 51 degrees 59 minutes 40 seconds West 111.77 feet; thence North 53 degrees 39 minutes 24 seconds West 109.00 feet; thence North 45 degrees 40 minutes 10 seconds West 122.30 feet; thence North 31 degrees 29 minutes 32 seconds West 84.21 feet; thence North 13 degrees 50 minutes 50 seconds West 88.61 feet; thence North 03 degrees 04 minutes 20 seconds West 125.40 feet; thence North 06 degrees 56 minutes 04 seconds East 129.12 feet; thence North 34 degrees 57 minutes 13 seconds East 141.55 feet; thence North 37 degrees 17 minutes 03 seconds East 131.33 feet; thence North 39 degrees 25 minutes 12 seconds East 124.99 feet; thence South 48 degrees 11 minutes 31 seconds East 3.43 feet to the point of beginning, containing 53.19 acres more or less, subject to any recorded or unrecorded easements across said lands.

13.36 ACRES

Commencing at the southeast corner of the Northeast Quarter of Section 12, said point also being a corner on the boundary of a tract referred to as the Holcim Retained Parcel being described in a Special Warranty Deed recorded in Book 331 at Page 3040 in the Office of the Pike County, Missouri Recorder of Deeds, thence South 86 degrees 30 minutes 29 seconds West on the north line of said Southeast Quarter and the boundary of said parcel 1317.54 feet to a point on the easterly right of way line of the Missouri Edison Company as described in a document recorded in Book 316 at Page 9161; thence South 45 degrees 13 minutes 08 seconds West on said boundary and said easterly right of way line 871.01 feet; thence South 34 degrees 48 minutes 14 seconds West on said parcel and said easterly right of way line 770.74 feet, thence South 41 degrees 21 minutes 35 seconds East on said boundary and easterly right of way line 925.87 feet; thence South 31 degrees 12 minutes 20 seconds East 82.52 feet; thence North 58 degrees 47 minutes 40 seconds East 95.40 feet to a point on the south line of a tract referred to as SWMU No. 10.2 and the true point of beginning; thence South 83 degrees 04 minutes 02 seconds East on said south line 212.16 feet; thence continuing on said south line South 75 degrees 27 minutes 00 seconds East 131.18 feet; thence South 78 degrees 49 minutes 43 seconds East 350.53 feet; thence South 86 degrees 06 minutes 13 seconds East on said south line 126.37 feet; thence North 86 degrees 42 minutes 25 seconds East on said south line 112.18 feet; thence South 85 degrees 17 minutes 32 seconds East on said south line 43.50 feet; thence South 28 degrees 23 minutes 35 seconds East on said south line 5.97 feet; thence leaving said south line South 28 degrees 30 minutes 22 seconds West 28.70 feet; thence South 57 degrees 05 minutes 13 seconds East 51.49 feet; thence South 51 degrees 40 minutes 36 seconds 95.97 feet; thence South 46 degrees 07 minutes 07 seconds East 89.28 feet; thence South 38 degrees 28 minutes 40 seconds East 36.55 feet; thence South 12 degrees 05 minutes 29 seconds East 78.08 feet; thence 09 degrees 40 minutes 30 seconds East 108.64 feet; thence South 16 degrees 07 minutes 39 seconds East 31.93 feet; thence South 01 degree 28 minutes 56 seconds East 121.13 feet; thence South 10 degrees 49 minutes 44 seconds East 120.72 feet; thence 13 degrees 24 minutes 05 seconds East 201.92 feet; thence South 04 degrees 49 minutes 36 seconds East 57.51 feet; thence South 13 degrees 51 minutes 41 seconds West 74.82 feet; thence South 16 degrees 46 minutes 52 seconds West 144.28 feet; thence South 24 degrees 37 minutes 50 seconds West 101.19 feet; thence South 31 degrees 24 minutes 14 seconds West 63.82 feet; thence South 82 degrees 35 minutes 21 seconds West 42.92 feet; thence North 21 degrees 05 minutes 25 seconds West 190.66 feet; thence North 19 degrees 39 minutes 46 seconds West 134.18 feet; thence North 21 degrees 35 minutes 36 seconds West 188.35 feet; thence North 24 degrees 47 minutes 59 seconds West 150.25 feet; thence North 31 degrees 28 minutes 03 seconds West 141.77 feet; thence North 37 degrees 05 minutes 52 seconds West 71.56 feet; thence North 42 degrees 10 minutes 58 seconds West 109.68 feet; thence North 49 degrees 32 minutes 46 seconds West 174.02 feet; thence North 54 degrees 11 minutes 58 seconds West 129.07 feet; thence North 47 degrees 33 minutes 10 seconds West 58.99 feet; thence North 48 degrees 38 minutes 21 seconds West 326.42 feet; thence North 56 degrees 24 minutes 42 seconds West 166.22 feet to the point of beginning, containing 13.36 acres more or less, subject to any recorded or unrecorded easements across said lands.

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Klingner & Associates, P.C.
Missouri State Certificate of Authority
No. LS-182-F

ROBERT J. HARMAN
MO# LS-2012000093

PLAT OF SURVEY
SURVEYED FOR GOLDER ASSOCIATES INC.

A PART OF THE SOUTHEAST QUARTER OF SECTION 12 AND A PART OF THE NORTHEAST QUARTER OF SECTION 13, ALL IN TOWNSHIP 53 NORTH OF THE BASE LINE AND RANGE 1 WEST OF THE FIFTH PRINCIPAL MERIDIAN, PIKE COUNTY, MISSOURI!

REVISION HISTORY			
MARK	DESCRIPTION	DATE	APPR

Non-Reduced Sheet Size: 17" x 22"

Full sized plans have been prepared using standard scales.
Reduced size plans may not conform to standard scales.

DESIGNED	DRAWN RJH/CJH
FIELD ECB/MWJ	FIELD BOOK
CHECK MWJ/CWL	CHECK DATE
FILE NO. 190227 SWMU 10.dwg	SCALE

SHEET TITLE

190227 SWMU 10

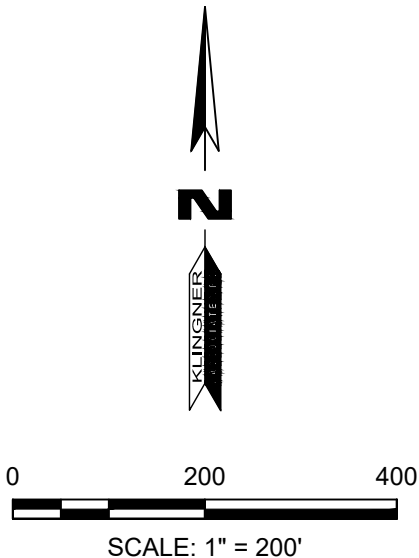
PROJECT NO.
19-0227
DRAWING ISSUED DATE:

SHEET

4 of 6

KLINGNER
& ASSOCIATES, P.C.
Engineers • Architects • Surveyors

Hannibal, Missouri www.klingner.com
4510 Paris Gravel Road Quincy, IL Galesburg, IL
573.221.0020 Burlington, IA Pella, IA Columbia, MO



 SUBJECT PROPERTY LINE
 EXISTING PROPERTY LINE
 OPTION AREA BOUNDARY LINE
 RIGHT OF WAY LINE
 CENTERLINE
 EASEMENT LINE

SWMU 11.2			SWMU 10.1		
LINE	BEARING	DISTANCE	LINE	BEARING	DISTANCE
L1	S 39°17'42" E	42.40'	L24	S 56°26'20" W	99.22'
L2	S 31°20'30" E	54.22'	L25	S 35°28'47" W	53.03'
L3	S 22°33'04" E	52.35'	L26	S 29°05'41" W	89.05'
L4	S 13°19'06" E	99.02'	L27	S 38°18'47" W	81.62'
L5	S 11°22'43" E	62.61'	L28	S 45°23'52" W	88.50'
L6	S 21°01'27" E	84.56'	L29	S 52°36'24" W	136.24'
L7	S 10°09'50" E	41.61'	L30	S 58°30'35" W	91.84'
L8	S 23°59'58" E	75.63'	L31	S 61°25'03" W	95.11'
L9	S 14°09'43" E	153.19'	L32	S 66°47'16" W	118.74'
L10	S 11°33'49" E	76.71'	L33	S 73°16'36" W	30.35'
L11	N 55°51'41" W	110.04'	L34	N 79°48'22" W	23.32'
L12	N 67°11'48" W	56.88'	L35	N 74°06'44" W	73.16'
L13	N 79°46'26" W	73.77'	L36	S 89°11'28" W	109.67'
L14	N 83°10'34" W	87.55'	L37	S 83°57'16" W	150.77'
L15	N 60°21'13" W	130.94'	L38	S 87°11'33" W	60.31'
L16	N 53°22'24" W	50.83'	L39	N 76°24'52" W	80.95'
L17	N 32°09'04" W	92.34'	L40	N 70°26'46" W	135.75'
L18	N 38°37'23" W	110.24'	L41	N 58°01'51" W	62.17'
L19	N 34°59'49" E	199.56'	L42	N 50°26'29" W	160.67'
L20	N 14°26'06" E	51.27'	L43	N 59°55'05" W	30.81'
L21	S 57°16'06" E	109.85'	L45	S 73°05'32" W	40.05'
L22	S 67°44'28" E	21.45'	L46	S 53°59'49" W	78.98'
L23	N 58°47'47" E	123.59'	L47	N 31°37'03" W	53.97'
			L48	N 01°59'28" E	50.72'
			L49	N 22°54'08" E	68.26'
			L50	N 25°38'08" E	95.33'
			L51	N 28°57'38" E	93.40'
			L52	N 15°16'02" E	68.88'
			L53	N 31°54'46" E	36.30'
			L54	N 89°14'23" E	12.73'
			L55	N 29°11'53" E	84.12'
			L56	N 26°47'32" E	53.83'
			L57	N 28°59'29" W	15.36'
			L58	N 22°17'12" E	25.50'
			L59	N 82°20'11" E	21.96'
			L60	N 28°08'00" E	72.48'
			L61	N 28°31'56" E	72.15'
			L62	N 03°28'55" W	22.70'
			L63	N 31°31'19" E	21.84'
			L64	N 86°13'33" E	13.64'
			L65	N 28°11'10" E	283.22'
			L66	N 52°12'35" W	25.97'
			L67	N 28°24'19" E	21.05'
			L68	S 74°21'44" E	22.69'
			L69	N 24°39'01" E	245.91'
			L70	N 55°19'42" W	19.61'
			L71	N 40°31'31" E	17.08'
			L72	N 81°43'37" E	18.36'
			L73	N 24°38'05" E	180.11'
			L74	N 32°11'34" E	112.71'
			L75	N 41°38'20" E	144.70'
			L76	N 64°43'08" E	101.67'
			L77	N 78°35'20" E	45.89'
			L78	S 78°17'28" E	28.71'
			L79	S 16°05'35" E	89.20'
			L80	S 31°53'10" E	59.80'
			L81	S 69°20'00" E	45.69'
			L82	S 28°51'47" E	79.95'
			L83	S 34°58'21" E	87.57'
			L84	S 31°46'37" E	129.86'
			L85	S 28°16'14" E	101.66'
			L86	S 23°15'53" E	136.28'
			L87	S 15°50'54" E	199.87'
			L88	S 19°44'11" E	173.87'
			L89	S 17°51'49" E	84.40'
			L90	S 22°06'14" E	65.94'
			L91	S 12°29'30" E	204.33'
			L92	S 10°18'28" E	125.11'

NOTE:
SEE SHEET 1 FOR BEARINGS AND DISTANCES
NOT SHOWN ON THIS SHEET FROM POINT OF
COMMENCEMENT TO POINT OF BEGINNING FOR
PROPERTIES SWMU 11.2 AND SWMU 10.1

I hereby certify that the above survey as platted was made under my supervision and that the same is true and correct to the best of my knowledge and belief.

I further state that the described property as shown on this plat was surveyed in accordance with the current Missouri Standards for Property Boundary Survey, and that the same is Rural Class property.

Robert J. Harman - Missouri Professional Land Surveyor No. 2012000093

BASIS OF BEARINGS: MISSOURI STATE PLANE
EAST ZONE NAD 83

FIELD WORK COMPLETED OCTOBER 23, 2019.

KLINGNER
& ASSOCIATES, P.C.
Engineers • Architects • Surveyors

Hannibal, Missouri

4510 Paris Gravel Road
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Klinger & Associates, P.C.
Missouri State Certificate of Authority
LS-182-F

ROBERT J. HARMAN
MO# LS-2012000093

PLAT OF SURVEY
SURVEYED FOR GOLDER ASSOCIATES INC.

A PART OF THE SOUTHWEST QUARTER OF SECTION 18 IN TOWNSHIP 53 NORTH
OF THE BASE LINE AND RANGE 1 EAST OF THE FIFTH PRINCIPAL MERIDIAN AND
A PART OF THE NORTHEAST QUARTER OF SECTION 13 IN TOWNSHIP 53 NORTH OF
THE BASELINE AND RANGE 1 WEST OF THE FIFTH PRINCIPAL MERIDIAN, ALL IN
PIKE COUNTY, MISSOURI

REVISION HISTORY			
MARK	DESCRIPTION	DATE	APPR

Non-Reduced Sheet Size: 22" x 34"
Full sized plans have been prepared using standard scale
Reduced size plans may not conform to standard scale

DESIGNED	DRAWN RJH/CJH
FIELD ECB/MWJ	FIELD BOOK I-34B/27
CHECKED CWL/MWJ	CHECK DATE

FILE NO. 90227 SWMU 11.dwg	SCALE 1" = 200'
SHEET TITLE	

190227 SWMU 11

PROJECT NO. 19-0227
DRAWING ISSUED DATE:

SHEET
5 of 6

PROPERTY DESCRIPTION

SWMU NO. 11.2

4.83 ACRES

A part of Northwest Quarter of Section 18 in Township 53 North of the Baseline and Range 1 East of the Fifth Principal Meridian, Pike County, Missouri being more particularly described as follows:

Commencing at the southwest corner of the Northwest Quarter of Section 7 in said Township 53 North, Range 1 East, said corner also being a corner of a parcel referred to as Holcim Retained Parcel being described in a Special Warranty Deed recorded in Book 331 at Page 3040 in the Office of the Pike County , Missouri Recorder of Deeds thence South 08 degrees 06 minutes 34 seconds East on said boundary 1091.10 feet; thence South 35 degrees 14 minutes 09 seconds East on said boundary 195.28 feet; thence North 75 degrees 31 minutes 52 seconds East on said boundary 1672.95 to the northwest corner of a tract referred to as Option Area B in said Special Warranty Deed; thence continuing North 75 degrees 31 minutes 52 seconds East on the boundary of said parcel 773.72 feet to a corner of said tract, said corner also being a point on the southwesterly right of way line of Missouri Route 79; thence South 39 degrees 58 minutes 02 seconds East on said southwesterly right of way line and the boundary of said parcel 601.74 feet; thence southeasterly on said southwesterly right of way line and the boundary of said parcel 89.10 feet on a curve to the left having a central angle of 01 degree 36 minutes 26 seconds and a radius of 3176.49 feet, the chord of said curve bears South 40 degrees 46 minutes 15 seconds East 89.10 feet; thence leaving said southwesterly right of way line South 62 degrees 15 minutes 30 seconds West on said boundary 897.27 feet, thence South 04 degrees 48 minutes 44 seconds East on said boundary 607.52 feet; thence South 49 degrees 13 minutes 15 seconds West on said boundary 945.48 feet; thence continuing on said boundary North 86 degrees 11 minutes 42 seconds West 632.43 feet; thence continuing on said boundary South 10 degrees 59 minutes 16 seconds East 249.67 feet; thence continuing on said boundary South 16 degrees 39 minutes 49 seconds East 1022.43 feet; thence continuing on said boundary South 14 degrees 08 minutes 05 seconds East 571.70 feet, thence leaving said boundary South 75 degrees 51 minutes 55 seconds West 476.36 feet to the true point of beginning, thence South 39 degrees 17 minutes 42 seconds East 42.40 feet; thence South 31 degrees 20 minutes 50 seconds East 54.22 feet; thence South 22 degrees 33minutes 04 seconds East 52.35 feet; thence South 13 degrees 19 minutes 06 seconds East 99.02 feet; thence South 11 degrees 22 minutes 43 seconds East 62.61 feet, thence South 21 degrees 01 minute 27 seconds East 84.56; thence South 10 degrees 09 minutes 50 seconds East 41.61 feet; thence South 23 degrees 59 minutes 58 seconds East 72.63 feet; thence South 14 degrees 09 minutes 43 seconds East 153.19 feet; thence South 11 degrees 33 minutes 49 seconds East 76.71 feet; thence North 55 degrees 51 minutes 41 seconds West 110.04 feet; thence North 67 degrees 11 minutes 48 seconds West 56.88 feet; thence North 79 degrees 46 minutes 26 seconds west 73.77 feet; thence North 83 degrees 10 minutes 34 seconds West 87.55 feet, thence North 60 degrees 21 minutes 13 seconds West 130.94; thence North 53 degrees 22 minutes 24 seconds West 50.83 feet; thence North 32 degrees 09 minutes 04 seconds West 92.34 feet; thence North 38 degrees 37 minutes 23 seconds West 110.24 feet; thence North 34 degrees 59 minutes 49 seconds west 199.56 feet; thence North 14 degrees 26 minutes 06 seconds East 51.27 feet, thence North 57 degrees 16 minutes 06 seconds East 109.85 feet; thence South 67 degrees 44 minutes 28 seconds East 21.45 feet; thence North 58 degrees 47 minutes 47 seconds East 123.59 feet to the point of beginning, containing 4.83 acres more or less, subject to any recorded or unrecorded easements across said lands.

PROPERTY DESCRIPTION

SWMU NO. 10.1

43.67 ACRES

A part of Northwest Quarter of Section 18 in Township 53 North of the Baseline and Range 1 East of the Fifth Principal Meridian, Pike County, Missouri being more particularly described as follows:

Commencing at the southwest corner of the Northwest Quarter of Section 7 in said Township 53 North, Range 1 East, said corner also being a corner of a parcel referred to as Holcim Retained Parcel being described in a Special Warranty Deed recorded in Book 331 at Page 3040 in the Office of the Pike County , Missouri Recorder of Deeds thence South 08 degrees 06 minutes 34 seconds East on said boundary 1091.10 feet; thence South 35 degrees 14 minutes 09 seconds East on said boundary 195.28 feet; thence North 75 degrees 31 minutes 52 seconds East on said boundary 1672.95 feet to the northwest corner of a tract referred to as Option Area B in said Special Warranty Deed; thence continuing North 75 degrees 31 minutes 52 seconds East on the boundary of said tract 773.72 feet to a corner of said tract, said corner also being a point on the southwesterly right of way line of Missouri Route 79; thence South 39 degrees 58 minutes 02 seconds East on said southwesterly right of way line and the boundary of said tract 601.74 feet; thence southeasterly on said southwesterly right of way line and the boundary of said tract 89.10 feet on a curve to the left having a central angle of 01 degree 36 minutes 26 seconds and a radius of 3176.49 feet, the chord of said curve bears South 40 degrees 46 minutes 15 seconds East 89.10 feet; thence leaving said southwesterly right of way line South 62 degrees 15 minutes 30 seconds West on the boundary of said tract 897.27 feet, thence South 04 degrees 48 minutes 44 seconds East on said boundary 607.52 feet; thence South 49 degrees 13 minutes 15 seconds West on said boundary 945.48 feet; thence continuing on said boundary North 86 degrees 11 minutes 42 seconds West 632.43 feet; thence continuing on said boundary South 10 degrees 59 minutes 16 seconds East 249.67 feet; thence continuing on said boundary South 16 degrees 39 minutes 49 seconds East 1022.43 feet; thence continuing on said boundary South 14 degrees 08 minutes 05 seconds East 341.91 feet, thence leaving said boundary South 75 degrees 51 minutes 55 seconds West 457.73 feet to the true point of beginning, thence South 56 degrees 26 minutes 20 seconds West 99.22 feet; thence South 35 degrees 28 minutes 47 seconds West 53.03 feet; thence South 29 degrees 05 minutes 41 seconds west 89.05 feet; thence South 38 degrees 18 minutes 47 seconds West 81.62 feet; thence South 45 degrees 23 minutes 52 seconds West 88.50 feet; thence South 52 degrees 36 minutes 24 seconds West 136.24 feet; thence South 58 degrees 30 minutes 35 seconds West 91.84 feet; thence South 61 degrees 25 minutes 35 seconds West 50.11 feet; thence South 66 degrees 47 minutes 16 seconds West 118.74 feet; thence South 73 degrees 16 minutes 36 seconds West 30.35 feet; thence North 79 degrees 48 minutes 22 seconds West 23.32 feet; thence North 74 degrees 06 minutes 44 seconds West 73.16 feet; thence South 89 degrees 11 minutes 28 seconds West 109.67 feet; thence South 83 degrees 57 minutes 16 seconds West 150.77 feet; thence South 87 degrees 11 minutes 33 seconds West 60.31 feet; thence North 76 degrees 24 minutes 52 seconds West 80.05 feet; thence North 70 degrees 26 minutes 46 seconds West 135.75 feet; thence North 58 degrees 01 minute 51 seconds West 62.17 feet; thence North 50 degrees 26 minutes 29 seconds West 160.67 feet; thence North 59 degrees 55 minutes 05 seconds West 30.81 feet; thence South 73 degrees 05 minutes 32 seconds West 40.05 feet; thence North 53 degrees 59 minutes 49 seconds West 78.98 feet; thence North 31 degrees 37 minutes 03 seconds West 53.97 feet; thence North 01 degree 59 minutes 28 seconds East 50.27 feet; thence North 22 degrees 54 minutes 08 seconds East 68.26 feet; thence North 25 degrees 38 minutes 08 seconds East 95.33 feet; thence North 28 degrees 57 minutes 38 seconds East 93.40 feet; thence North 15 degrees 16 minutes 02 seconds East 68.88 feet; thence North 31 degrees 54 minutes 46 seconds East 36.30 feet; thence North 89 degrees 14 minutes 23 seconds East 12.73 feet; thence North 29 degrees 11 minutes 53 seconds East 84.12 feet; thence North 25 degrees 47 minutes 32 seconds East 53.83 feet; thence North 28 degrees 59 minutes 29 seconds West 15.36 feet; thence North 22 degrees 17 minutes 12 seconds East 25.50 feet; thence North 82 degrees 20 minutes 11 seconds East 21.96 feet; thence North 28 degrees 08 minutes 00 seconds east 72.48 feet; thence North 28 degrees 31 minutes 56 seconds East 72.15 feet; thence North 03 degrees 28 minutes 55 seconds West 22.70 feet; thence North 31 degrees 31 minutes 19 seconds East 21.94 feet; thence North 86 degrees 13 minutes 33 seconds East 13.64 feet; thence North 28 degrees 11 minutes 10 seconds East 283.22 feet; thence North 52 degrees 12 minutes 35 seconds West 25.97 feet; thence North 28 degrees 24 minutes 19 seconds East 21.05 feet; thence South 74 degrees 21 minutes 44 seconds East 22.69 feet; thence North 24 degrees 39 minutes 01 second East 245.91 feet; thence North 55 degrees 19 minutes 42 seconds West 19.61 feet; thence North 40 degrees 31 minutes 31 seconds East 17.08 feet, thence North 81 degrees 43 minutes 37 seconds East 18.36 feet, thence North 24 degrees 38 minutes 05 seconds East 180.11 feet; thence North 32 degrees 11 minutes 34 seconds East 112.71 feet; thence North 41 degrees 38 minutes 20 seconds East 144.70 feet; thence North 64 degrees 43 minutes 08 seconds East 101.67 feet; thence North 78 degrees 35 minutes 20 seconds East 45.89 feet, thence South 78 degrees 17 minutes 28 seconds East 28.71 feet, thence South 16 degrees 05 minutes 35 seconds East 88.20 feet; thence South 31 degrees 53 minutes 10 seconds East 59.80 feet; thence South 69 degrees 20 minutes 10 seconds East 45.69 feet; thence South 28 degrees 51 minutes 47 seconds East 79.95 feet; thence South 34 degrees 58 minutes 21 seconds 87.57 feet; thence South 31 degrees 46 minutes 37 seconds East 129.86 feet; thence South 28 degrees 16 minutes 14 seconds East 101.66 feet; thence South 23 degrees 15 minutes 53 seconds East 136.28 feet; thence South 15 degrees 50 minutes 54 seconds East 199.97 feet; thence South 19 degrees 44 minutes 11 seconds East 173.87 feet; thence South 17 degrees 51 minutes 49 seconds East 84.40 feet; thence South 22 degrees 06 minutes 14 seconds East 65.94 feet; thence South 12 degrees 29 minutes 30 seconds East 204.33 feet; thence South 10 degrees 18 minutes 28 seconds East 125.11 feet to the point of beginning, containing 43.67 acres more or less, subject to any recorded or unrecorded easements across said lands.

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Engineers • Architects • Surveyors

Hannibal, Missouri

4510 Paris Gravel Road

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Missouri State Certificate of Authority
No. LS-182-F

ROBERT J. HARMAN
MO# LS-2012000093

PLAT OF SURVEY
SURVEYED FOR GOLDER ASSOCIATES INC.
A PART OF THE SOUTHEAST QUARTER OF SECTION 12 AND A PART OF THE NORTHEAST QUARTER OF SECTION 13, ALL IN TOWNSHIP 53 NORTH OF THE BASE LINE AND RANGE 1 WEST OF THE FIFTH PRINCIPAL MERIDIAN, PIKE COUNTY, MISSOURI

REVISION HISTORY			
MARK	DESCRIPTION	DATE	APPR

Non-Reduced Sheet Size: 17" x 22"

Full sized plans have been prepared using standard scales.
Reduced size plans may not conform to standard scales.

DESIGNED	DRAWN RJH/CJH
FIELD ECB/MWJ	FIELD BOOK I-34B/27
CHECK MWJ/CWL	CHECK DATE
FILE NO. 190227 SWMU 11.dwg	SCALE

SHEET TITLE

190227 SWMU 11

PROJECT NO.
19-0227

DRAWING ISSUED DATE:

SHEET
6 of 6

Missouri

Division of Labor Standards

WAGE AND HOUR SECTION



MIKE KEHOE, Governor

Annual Wage Order No. 32

Section 082
PIKE COUNTY

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

Original Signed by

Logan Hobbs, Director
Division of Labor Standards

Filed With Secretary of State: March 10, 2025

Last Date Objections May Be Filed: April 9, 2025

Prepared by Missouri Department of Labor and Industrial Relations

Building Construction Rates for
PIKE County

Section 082

OCCUPATIONAL TITLE	**Prevailing Hourly Rate
Asbestos Worker	\$25.86*
Boilermaker	\$25.86*
Bricklayer-Stone Mason	\$25.86*
Carpenter	\$66.91
Lather	
Linoleum Layer	
Millwright	
Pile Driver	
Cement Mason	\$25.86*
Plasterer	
Communication Technician	\$25.86*
Electrician (Inside Wireman)	\$68.29
Electrician Outside Lineman	\$25.86*
Lineman Operator	
Lineman - Tree Trimmer	
Groundman	
Groundman - Tree Trimmer	
Elevator Constructor	\$25.86*
Glazier	\$25.86*
Ironworker	\$73.75
Laborer	\$56.54
General Laborer	
First Semi-Skilled	
Second Semi-Skilled	
Mason	\$25.86*
Marble Mason	
Marble Finisher	
Terrazzo Worker	
Terrazzo Finisher	
Tile Setter	
Tile Finisher	
Operating Engineer	\$74.25
Group I	
Group II	
Group III	
Group III-A	
Group IV	
Group V	
Painter	\$55.49
Plumber	\$80.35
Pipe Fitter	
Roofer	\$25.86*
Sheet Metal Worker	\$25.86*
Sprinkler Fitter	\$25.86*
Truck Driver	\$25.86*
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
PIKE County

Section 082

OCCUPATIONAL TITLE	**Prevailing Hourly Rate
Carpenter	\$57.86
Millwright	
Pile Driver	
Electrician (Outside Lineman)	\$25.86*
Lineman Operator	
Lineman - Tree Trimmer	
Groundman	
Groundman - Tree Trimmer	
Laborer	\$55.30
General Laborer	
Skilled Laborer	
Operating Engineer	\$72.31
Group I	
Group II	
Group III	
Group IV	
Truck Driver	\$25.86*
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.

BID FORM

**PIKE LINCOLN COUNTY PORT AUTHORITY
316 W MAIN ST.
BOWLING GREEN, MO 63334**

REQUEST NO. 1

DATE: 10/2/2025

SEALED BIDS, SUBJECT TO THE ATTACHED CONDITIONS WILL
BE RECEIVED AT THIS OFFICE UNTIL

3:00 PM Central Time, October 23, 2025

AND THEN PUBLICLY OPENED AND READ FOR FURNISHING
THE FOLLOWING SUPPLIES OR SERVICES.

**BIDS TO BE BASED F.O.B. PIKE LINCOLN COUNTY
PORT AUTHORITY**

Submit net bid as cash discount stipulations will not be considered.

F.O.B. Destination:

14561 Hwy. 79
Clarksville, MO 63336

SIGN AND RETURN BEFORE TIME SET FOR OPENING

BUYER:	Carolyn Wisecarver	BUYER TELEPHONE:	573-324-4297
	Pike Lincoln County Port Authority (PLCPA)	BUYER EMAIL:	pikelincolncountypor@yahoo.com

This Request for Bid (RFB) is to establish a contract with a general contractor to **construct the new dock wall structure as specified in the Bid Documents**, with an anticipated contract period of one hundred eighty (180) days, and with a completion date one hundred eighty (180), from the date of the provision of the Notice to Proceed by the Pike Lincoln County Port Authority.

BASE BID - Sheet Pile Dock Wall with Aggregate Drive					
Bid Item #	Description	Qty	U/M	Unit Price	Extended Price
	BASE				
0001	Mobilization and Demobilization	1	JOB		\$ -
0002	Demolition	1	JOB		\$ -
0003	Structure Excavation	1	JOB		\$ -
0004	Steel Sheet Pile Structural System	1	JOB		\$ -
0005	Select Fill	6,367	CU YD		\$ -
0006	Fill Stone	1,900	TONS		\$ -
0007	Surface Aggregate	807	TONS		\$ -
0008	Cast-in-Place Reinforced Concrete Pile Cap with Anchor Block	306	CU YD		\$ -
0009	Reinforcing Steel (Epoxy Coated) for Pile Cap with Anchor Block	32,760	LBS		\$ -
TOTAL BASE BID					\$ -
Bid Option 1 - Sheet Pile Dock Wall with Reinforced Concrete Slab in lieu of Aggregate Drive					
Bid Item #	Description	Qty	U/M	Unit Price	Extended Price
	BID OPTION 1				
0005	Select Fill	(33)	CU YD		\$ -
0007	Surface Aggregate	(807)	TONS		\$ -
0008A	Cast-in-Place Reinforced Concrete Slab-on-Grade	381	CU YD		\$ -
0009A	Reinforcing Steel (Epoxy Coated) for Slab-on-Grade	81,700	LBS		\$ -
0010	Type 5 Aggregate Base (6 inch thick)	1,143	SQ YD		\$ -
TOTAL BID OPTION 1					\$ -
Note: "(##)" Denotes quantity deduct from Base Bid.					

(SEE ATTACHED FOR CONDITIONS AND INSTRUCTIONS)

In compliance with this Request for Bid and subject to all conditions thereof, the undersigned bidder agrees to furnish and deliver any or all the items on which prices were bid within the timeframe specified herein after receipt of formal purchase order.

Date: _____
Telephone No.: _____
Fax No.: _____
Email Address: _____

Firm Name: _____
Address: _____
By (Signature): _____
Type/Print Name: _____
Title: _____

DOCK WALL STRUCTURE

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we _____,
_____ as Principal and _____, as Surety are held and firmly bound
unto the **STATE OF MISSOURI** (acting by and through the **Pike Lincoln County Port Authority**) in the penal
sum of:

Dollars

(\$ _____) to be paid to the **Pike Lincoln County Port Authority**, the Principal and Surety
binding themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by
these presents.

Sealed with our seals and dated this _____

THE CONDITION OF THIS OBLIGATION is such that:

WHEREAS, the Principal is submitting herewith a bid to the Pike Lincoln County Port Authority to provide
demolition/construction services as set out in the bid to which this bond is attached.

NOW THEREFORE, if the Pike Lincoln County Port Authority shall accept the bid of the Principal and if said
Principal shall properly execute and deliver to the Pike Lincoln County Port Authority the contract and contract
bond in compliance with the requirements of the proposal, the specifications and the provisions of law, to the
satisfaction of the Pike Lincoln County Port Authority, then this obligation shall be void and of no effect, otherwise
to remain in full force and effect.

In the event the said Principal shall, in the judgment of the Pike Lincoln County Port Authority, fail to comply with
any requirement as set forth in the preceding paragraph, then the State of Missouri acting through the Pike Lincoln
County Port Authority shall immediately and forthwith be entitled to recover the full penal sum above set out,
together with court costs, attorney's fees and any other expense of recovery.

(SEAL)

Principal

By

Signature

(SEAL)

Surety

By

Attorney-in-Fact

*NOTE: This bond must be executed by the PRINCIPAL and by a CORPORATE SURETY authorized to conduct surety business in
the State of Missouri.*

RETURN TO: Pike Lincoln County Port Authority
 RE: GC Contractor Questionnaire
 316 West Main Street
 Bowling Green, MO 63334
 or pikelincolncountypor@yahoo.com

**SUBMIT COMPLETED FORM
 A MINIMUM OF 7 CALENDAR DAYS
 PRIOR TO BID OPENING**

CONTRACTOR QUESTIONNAIRE

- ☐ An Individual
- ☐ A Partnership
- ☐ A Corporation
- ☐ A Joint Venture
- ☐ A Limited Liability Corp.
- ☐ A Limited Liability Partnership

 Legal Name of the Corporation, Firm or Individual Contractor

 Fictitious Name, etc. - Name under which you wish to bid (as registered with the Missouri Secretary of State)

P.O. Box _____ City _____ State _____ Zip _____

Street Address _____ City _____ State _____ Zip _____

NOTE: If the zip code for the street address is different than the P.O. Box zip code, please indicate above.

Telephone No. _____ Fax No. _____ Date Submitted: _____

Please list a contact person and/or e-mail address: _____

This organization has _____ years experience as a general contractor and/or _____ years experience as a subcontractor in the general contractor field.

This organization has completed or contracted to complete the following projects within the last three years. (Attach additional sheets as needed.)

Contract Amount	Type of Work	When Completed	Location City and State	Project Owner's Name and Address

Listed below are all the officers, owners and directors of this firm, their present position, and their construction experience. (Attach additional sheets as needed.)

Name	Present Position or Office	Years of Construction Experience	Magnitude and Type of Work	In What Capacity

CONTRACTOR QUESTIONNAIRE

Do any of the people listed above:

- (a) Perform a management or supervisory function for any other business?

Yes _____ No _____ (If yes list below)

Name

Title

Company Name & Function

- (b) Work for or own other firms which have a business relationship with your firm?

Yes _____ No _____ (If yes list below)

Name

Title

Company Name & Function

If a Corporation, attach a copy of the organization's current Annual Registration Report, or initial report if a new Corporation, on file with the Corporation Division of the Missouri Secretary of State's Office. Each Corporation which is a party to a joint venture shall submit the same required report with its joint venture contractor questionnaire. If applicable, attach a certified copy of the fictitious name registration with the Missouri Secretary of State.

If this firm or any of the above individuals have been debarred or restricted from bidding by any state or federal organization check here ☐ and attach details.

* * * * *

This firm will comply with all written requests by the Missouri Department of Labor and Industrial Relations, Division of Labor Standards, to provide information for the purpose of establishing a prevailing wage.

Signature(s) _____

(If partnership all partners must sign)

* * * * *

AFFIDAVIT

_____, being duly sworn stated that (s)he is _____
(Typed or Printed Officer's Name) (Title of Officer)

of _____ and that all statements on this form and attachments thereto are true and correct.
(Name of firm)

Signature of Officer

Subscribed and sworn to before me by _____,
who personally appeared before me and is known to me to be the person described in and who executed the foregoing affidavit, and
acknowledged that (circle one) he or she executed the same as (circle one) his or her free act and
deed.

IN WITNESS WHEREOF I have hereto set my hand and affixed my official seal at my office in _____,
this _____ day of _____, 20 _____

Seal of
Notary Public

Notary Public Signature

Typed or Printed Name of Notary Public

My Commission expires _____, 20 _____

BUY AMERICA CERTIFICATION

49 U.S.C. 5323i

49 U.S.C. Part 661

Certification requirement for procurement of steel, iron, or manufactured products (including rolling stock).

Certificate of Compliance with 49 U.S.C. 5323(j)(1)

The bidder or offeror hereby certifies that it will meet the requirements of 49 U.S.C. 5323(j)(1) and the applicable regulations in 49 CFR Part 661.5.

Date _____

Company Name _____

Signature _____

Title _____

Certificate of Non-Compliance with 49 U.S.C. 5323(j)(1)

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j)(1) and 49 C.F.R. 661.5, but it may qualify for an exception pursuant to 49 U.S.C. 5323(j)(2)(A), 5323(j)(2)(B), or 5323(j)(2)(D), and 49 C.F.R. 661.7.

Date _____

Company Name _____

Signature _____

Title _____

ANTI-COLLUSION STATEMENT

STATE OF _____)
) SS.
COUNTY OF _____)

_____ being first
duly sworn, deposes and says that he is _____
Title of Person Signing

of _____

Name of Bidder

that all statements made and facts set out in the bid for the above project are true and correct; and that the bidder (The person, firm, association, or corporation making said bid) has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with such bid or any contract which may result from its acceptance.

Affiant further certifies that bidder is not financially interested in, or financially affiliated with, any other bidder for the above project.

By _____

By _____

By _____

Sworn to before me this _____ day of _____, 20____.

Notary Public

My Commission Expires _____

CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

Bidder Company Name: _____

INSTRUCTIONS FOR CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION:

1. By signing and submitting this bid, the prospective lower tier participant is providing the signed certification set out below.
2. The certification referred to in this paragraph is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the State may pursue available remedies, including suspension and/or debarment.
3. The prospective lower tier participant shall provide immediate written notice to the State if at any time the prospective lower tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
4. The terms “covered transaction,” “debarred,” “suspended,” “ineligible,” “lower tier covered participant,” “persons,” “lower tier covered transaction,” “principal,” “bid,” and “voluntarily excluded,” as used in this paragraph, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549, 49 CFR part 29. You may contact the State for assistance in obtaining a copy of those regulations.
5. The prospective lower tier participant agrees by submitting this bid that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized in writing by the State.
6. The prospective lower tier participant further agrees by submitting this bid that it will include the clause titled “Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion — Lower Tier Covered Transaction,” without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.
7. A participant in a covered transaction may rely upon certification of a prospective participant in a lower tier covered transaction that it is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principles. Each participant may, but is not required to, check the Nonprocurement List issued by U.S. General Service Administration.
8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this paragraph. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings. Except for transactions authorized under subparagraph 5 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to all remedies available to the Federal Government, the State may pursue available remedies including suspension and/or debarment.

CERTIFICATION

1. The prospective lower tier participant certifies, by submission of this bid, that neither it nor its “principals” (as defined at 49 CFR section 29.105(p)) is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency.
2. When the prospective lower tier participant is unable to certify to the statements in this certification, such prospective participant shall attach an explanation to this certification.

Bidder Name: _____

By: _____

Date: _____

Name: _____

Title: _____



**PIKE LINCOLN COUNTY PORT AUTHORITY
DOCK WALL STRUCTURE
CLARKSVILLE, MISSOURI**

CONSTRUCTION SPECIFICATIONS

Issue Date: 10/1/2025

SUBMITTAL – FINAL – ISSUE FOR BID

CERTIFICATION
Pike-Lincoln County Port Authority
Dock Wall Structure
Clarksville, Missouri

Certification of the Engineer of Record

I hereby certify these documents were prepared by me, or under my direct personal supervision, and I am a duly Licensed Professional Engineer under the laws of the State of Missouri.



Calvin P. Austiff, P.E.

Missouri License No. 2020025111

My license Renewal Date is December 31, 2026

Applies to: Attached Construction Specification Divisions 01, 02, 03, 05, and 31

10/1/2025

Date

Title: Bid Schedule
Project Name: Pike-Lincoln County Dock Wall Repair
Date: 9/19/2025

BASE BID - Sheet Pile Dock Wall with Aggregate Drive

Bid Item #	Description	Qty	U/M	Unit Price	Extended Price
	BASE				
0001	Mobilization and Demobilization	1	JOB		\$ -
0002	Demolition	1	JOB		\$ -
0003	Structure Excavation	1	JOB		\$ -
0004	Steel Sheet Pile Structural System	1	JOB		\$ -
0005	Select Fill	6,367	CU YD		\$ -
0006	Fill Stone	1,900	TONS		\$ -
0007	Surface Aggregate	807	TONS		\$ -
0008	Cast-in-Place Reinforced Concrete Pile Cap with Anchor Block	306	CU YD		\$ -
0009	Reinforcing Steel (Epoxy Coated) for Pile Cap with Anchor Block	32,760	LBS		\$ -
TOTAL BASE BID					\$ -

Bid Option 1 - Sheet Pile Dock Wall with Reinforced Concrete Slab in lieu of Aggregate Drive

Bid Item #	Description	Qty	U/M	Unit Price	Extended Price
	BID OPTION 1				
0005	Select Fill	(33)	CU YD		\$ -
0007	Surface Aggregate	(807)	TONS		\$ -
0008A	Cast-in-Place Reinforced Concrete Slab-on-Grade	381	CU YD		\$ -
0009A	Reinforcing Steel (Epoxy Coated) for Slab-on-Grade	81,700	LBS		\$ -
0010	Type 5 Aggregate Base (6 inch thick)	1,143	SQ YD		\$ -
TOTAL BID OPTION 1					\$ -

Note: "(##)" Denotes quantity deduct from Base Bid.

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DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01 11 00

SUMMARY OF WORK

9/19/2025

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 - 1.1.2 Location
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PART 3 EXECUTION (NOT APPLICABLE)

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SECTION 01 11 00

SUMMARY OF WORK
9/19/2025

PART 1 GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

1.1.1 Project Description

Base Bid: Work includes partial demolition of the existing tied-back sheet pile dock wall along the south side of the barge harbor, demolition of the existing reinforced concrete cap and slab along the length of the existing dock wall, construction of a new tied-back sheet pile dock wall to replace the existing dock wall, construction of a new sheet pile anchor wall, construction of a new reinforced concrete pile cap, construction of an aggregate drive behind the new dock wall, and all incidental related work.

The new construction will be approximately 450 feet of tied-back sheet pile dock wall constructed to match the approximate existing top of cap elevations and alignment. Fill, compaction, and grading will be required to bring the area behind the new dock wall to the proper elevations.

Bid Option 1: In lieu of constructing an aggregate drive behind the new dock wall, Bid Option 1 work includes construction of a reinforced concrete slab-on-grade along the length of the new dock wall. Bid Option 1 also includes construction of an aggregate base for the slab-on-grade. All other work required under the Base Bid is included in Bid Option 1. Refer to the Bid Schedule.

1.1.2 Location

The project is located on private property along the Mississippi River at the former Holcim Cement Plant and Port in Clarksville, Missouri. The exact location of the project is included in the Contract Drawings. The project site is owned and operated by the Pike-Lincoln County Port Authority (Port Authority).

1.2 OCCUPANCY OF PREMISES

Before work is started, arrange with the Port Authority sequence of procedure, means of access, space for storage of materials and equipment, and use of the land area at the project site. Construction staging and storage areas shall be coordinated with the Port Authority.

1.3 EXISTING WORK

In addition to FAR 52.236-9 Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements:

a. Remove or alter existing work in such a manner as to prevent injury or damage to any portions of the existing work which remain.

b. Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as approved by the Engineer. At the completion of operations, existing work

must be in a condition equal to or better than that which existed before new work started.

1.4 LOCATION OF UNDERGROUND UTILITIES

Obtain digging permits prior to start of excavation, and comply with local requirements for locating and marking underground utilities. Contact local utility locating service a minimum of 72 hours prior to excavating, to mark utilities, and within sufficient time required if work occurs on a Monday or after a Holiday. Verify existing utility locations indicated on Contract Drawings, within area of work.

1.4.1 Notification Prior to Excavation

Notify the Port Authority at least 15 days prior to starting excavation work.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

-- End of Section --

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DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01 20 00

PRICE AND PAYMENT PROCEDURES

9/19/2025

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 - 1.4.1.3 Structure Excavation (Item 0003)
 - 1.4.1.3.1 Payment
 - 1.4.1.3.2 Unit of Measure
 - 1.4.1.4 Steel Sheet Pile Structural System (Item 0004)
 - 1.4.1.4.1 Payment
 - 1.4.1.4.2 Unit of Measure
 - 1.4.1.5 Select Fill (Item 0005)
 - 1.4.1.5.1 Payment
 - 1.4.1.5.2 Measurement
 - 1.4.1.5.3 Unit of Measure
 - 1.4.1.6 Fill Stone (Item 0006)
 - 1.4.1.6.1 Payment
 - 1.4.1.6.2 Measurement
 - 1.4.1.6.3 Unit of Measure
 - 1.4.1.7 Surface Aggregate (Item 0007)
 - 1.4.1.7.1 Payment
 - 1.4.1.7.2 Measurement
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 - 1.4.1.8 Cast-in-Place Reinforced Concrete Pile Cap with Anchor Block (Item 0008)
 - 1.4.1.8.1 Payment
 - 1.4.1.8.2 Measurement
 - 1.4.1.8.3 Unit of Measure
 - 1.4.1.9 Reinforcing Steel (Epoxy Coated) for Pile Cap with Anchor Block (Item 0009)
 - 1.4.1.9.1 Payment
 - 1.4.1.9.2 Measurement
 - 1.4.1.9.3 Unit of Measure
 - 1.4.2 BID OPTION 1
 - 1.4.2.1 Select Fill (Item 0005)
 - 1.4.2.1.1 Payment
 - 1.4.2.1.2 Measurement
 - 1.4.2.1.3 Unit of Measure

- 1.4.2.2 Surface Aggregate (Item 0007)
 - 1.4.2.2.1 Payment
 - 1.4.2.2.2 Measurement
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- 1.4.2.3 Cast-in-Place Reinforced Concrete Slab-on-Grade (Item 0008A)
 - 1.4.2.3.1 Payment
 - 1.4.2.3.2 Measurement
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- 1.4.2.4 Reinforcing Steel (Epoxy Coated) for Concrete Slab-on-Grade (Item 0009A)
 - 1.4.2.4.1 Payment
 - 1.4.2.4.2 Measurement
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 - 1.4.2.5.1 Payment
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PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

-- End of Section Table of Contents --

SECTION 01 20 00

PRICE AND PAYMENT PROCEDURES
9/19/2025

PART 1 GENERAL

1.1 CONTRACT COST BREAKDOWN

The Contractor must furnish within 30 days after the date of Notice to Proceed, and prior to the submission of its first partial payment estimate, a breakdown of its single job pay item or items which will be reviewed by the Port Authority as to propriety of distribution of the total cost to the various accounts. Any unbalanced items as between early and late payment items or other discrepancies will be revised by the Port Authority to agree with a reasonable cost of the work included in the various items. This Contract cost breakdown will then be utilized as the basis for progress payments to the Contractor.

1.2 SINGLE JOB PAYMENT ITEMS

Payment items for the work of this Contract for which Contract job payments will be made are listed in the BIDDING SCHEDULE and described below. All costs for items of work, which are not specifically mentioned to be included in a particular job or unit price payment item, are included in the listed job item most closely associated with the work involved. The job price and payment made for each item listed constitutes full compensation for furnishing all plant, labor, materials, and equipment, and performing any associated Contractor quality control, environmental protection, meeting safety requirements, tests and reports, and for performing all work required for which separate payment is not otherwise provided.

1.3 UNIT PRICE PAYMENT ITEMS

Payment items for the work of this Contract on which the Contract unit price payments will be made are listed in the BIDDING SCHEDULE and described below. The unit price and payment made for each item listed constitutes full compensation for furnishing all plant, labor, materials, and equipment, and performing any associated Contractor quality control, environmental protection, meeting safety requirements, tests and reports, and for performing all work required for each of the unit price items.

1.4 BIDDING SCHEDULE

1.4.1 BASE BID

1.4.1.1 Mobilization and Demobilization (Item 0001)

1.4.1.1.1 Payment

A lump sum payment will be made for costs associated with mobilization and demobilization. Payment for mobilization and demobilization will also include payment for all costs associated with work zone traffic control, waterway traffic control, temporary relocation of utilities, temporary construction signage and fencing, site preparation and cleanup, and site modifications and restoration work.

Site modification and restoration work shall be considered to include costs associated with modifying the site to facilitate construction and restoring the construction site, including any construction staging, laydown, or temporary access areas, to its preexisting condition or better. Anticipated work includes, but is not limited to, establishment of construction laydown areas, placing and removing of temporary signage and construction fencing, and removal and reinstallation of chain link fences and gates. Site restoration work limits shall be approved by the Port Authority and the site condition following site restoration work is subject to approval by the Port Authority, prior to payment being made. No additional allowance will be made for construction beyond the approved limits, unless authorized.

1.4.1.1.2 Unit of Measure

Unit of measure: JOB

1.4.1.2 Demolition (Item 0002)

1.4.1.2.1 Payment

A lump sum payment will be made for costs associated with demolition of the existing structure and other site features as required to facilitate the proposed construction. Payment for this item will include payment for all work required to locate the existing deadman anchor in the field which includes performing required excavation and other operations incidental thereto to complete the work.

1.4.1.2.2 Unit of Measure

Unit of measure: JOB

1.4.1.3 Structure Excavation (Item 0003)

1.4.1.3.1 Payment

A lump sum payment will be made for costs associated with excavation for the proposed structure, which includes performing required excavation and other operations incidental thereto, Contractor-furnished disposal area(s) and disposition of excess excavated material and unsuitable and frozen materials.

1.4.1.3.2 Unit of Measure

Unit of measure: JOB

1.4.1.4 Steel Sheet Pile Structural System (Item 0004)

1.4.1.4.1 Payment

A lump sum payment will be made for costs associated with the complete steel sheet pile structural system. This includes but is not limited to steel sheetpile construction, walers, tie rods and turnbuckles, connections, high-strength bolts, nuts, and washers, struts, braces, erection seats, anchor bolts, miscellaneous steel components, dock cleats, mooring rings, timber fenders, ladder assemblies, and other operations incidental thereto to complete the work.

1.4.1.4.2 Unit of Measure

Unit of Measure: JOB

1.4.1.5 Select Fill (Item 0005)

1.4.1.5.1 Payment

Payment will be made for costs associated with furnishing, transporting, delivering, and placing select fill.

1.4.1.5.2 Measurement

The total quantity of material for which payment will be made will be the theoretical quantity of material required as indicated on the Contract Drawings. No allowance will be made for over placement of any material outside the required limits unless authorized. Theoretical limits of select fill are identified on the Contract Drawings.

1.4.1.5.3 Unit of Measure

Unit of measure: Cubic Yard

1.4.1.6 Fill Stone (Item 0006)

1.4.1.6.1 Payment

Payment will be made for costs associated with furnishing, transporting, delivering, and placing fill stone.

1.4.1.6.2 Measurement

The total quantity of material for which payment will be made will be the theoretical quantity of material required as indicated on the Contract Drawings. No allowance will be made for over placement of any material outside the required limits unless authorized. Theoretical limits of fill stone are identified on the Contract Drawings.

1.4.1.6.3 Unit of Measure

Unit of measure: Net ton (2000 lb)

1.4.1.7 Surface Aggregate (Item 0007)

1.4.1.7.1 Payment

Payment will be made for costs associated with furnishing, transporting, delivering, and placing surface aggregate for construction of aggregate drive as indicated on the Contract Drawings.

1.4.1.7.2 Measurement

The total quantity of material for which payment will be made will be the theoretical quantity of material required as indicated on the Contract Drawings. No allowance will be made for over placement of any material outside the required limits unless authorized. Theoretical limits of surface aggregate are identified on the Contract Drawings.

1.4.1.7.3 Unit of Measure

Unit of measure: Net ton (2000 lb)

1.4.1.8 Cast-in-Place Reinforced Concrete Pile Cap with Anchor Block (Item 0008)

1.4.1.8.1 Payment

Payment will be made for costs associated with constructing the proposed reinforced concrete pile cap with anchor block. Payment will include costs associated with formwork, jointing, surface finishing, curing, and any other items incidental thereto to complete the construction of the proposed reinforced concrete pile cap with anchor block.

1.4.1.8.2 Measurement

The total quantity for which payment will be made will be the quantity of concrete as indicated by the limits shown on the Contract Drawings. No allowance will be made for over placement of concrete outside the required limits unless authorized.

1.4.1.8.3 Unit of Measure

Unit of Measure: Cubic Yard

1.4.1.9 Reinforcing Steel (Epoxy Coated) for Pile Cap with Anchor Block (Item 0009)

1.4.1.9.1 Payment

Payment will be made for costs associated with reinforcing steel for the proposed reinforced concrete pile cap with anchor block. Payment will include costs associated with engineering, furnishing, transporting, delivering, installing, field modifying, repairing, and any other items incidental thereto to complete the construction of the proposed reinforced concrete pile cap with anchor block.

1.4.1.9.2 Measurement

The total quantity for which payment will be made will be the quantity of reinforcing steel as indicated on the Contract Drawings.

1.4.1.9.3 Unit of Measure

Unit of Measure: Pound

1.4.2 BID OPTION 1

In lieu of constructing an aggregate drive behind the new dock wall, Bid Option 1 work includes construction of a reinforced concrete slab-on-grade along the length of the new dock wall. Bid Option 1 also includes construction of an aggregate base for the slab-on-grade. All other work required under the Base Bid is included in Bid Option 1. Refer to the BIDDING SCHEDULE below for additional bid items included in Bid Option 1, as well as required bid item deducts from the Base Bid.

1.4.2.1 Select Fill (Item 0005)

1.4.2.1.1 Payment

Payment will be made for costs associated with furnishing, transporting, delivering, and placing select fill.

1.4.2.1.2 Measurement

The total quantity of material for which payment will be made will be the theoretical quantity of material required as indicated on the Contract Drawings for Bid Option 1. No allowance will be made for over placement of any material outside the required limits of Bid Option 1 unless authorized. Theoretical limits of select fill for Bid Option 1 are identified on the Contract Drawings. The Contractor's bid for Select Fill for Bid Option 1 shall represent the quantity and cost deduct required from the Base Bid.

1.4.2.1.3 Unit of Measure

Unit of measure: Cubic Yard

1.4.2.2 Surface Aggregate (Item 0007)

1.4.2.2.1 Payment

Surface aggregate is not required under Bid Option 1. Payment will not be made for costs associated with furnishing, transporting, delivering, and placing surface aggregate.

1.4.2.2.2 Measurement

The Contractor's bid for Surface Aggregate for Bid Option 1 shall represent the quantity and cost deduct required from the Base Bid.

1.4.2.2.3 Unit of Measure

Unit of measure: Net ton (2000 lb)

1.4.2.3 Cast-in-Place Reinforced Concrete Slab-on-Grade (Item 0008A)

1.4.2.3.1 Payment

Payment will be made for costs associated with constructing the proposed reinforced concrete slab-on-grade. Payment will include costs associated with formwork, jointing, surface finishing, curing, and any other items incidental thereto to complete the construction of the proposed reinforced concrete slab-on-grade.

1.4.2.3.2 Measurement

The total quantity for which payment will be made will be the quantity of concrete as indicated by the limits shown on the Contract Drawings. No allowance will be made for over placement of concrete outside the required limits unless authorized.

1.4.2.3.3 Unit of Measure

Unit of Measure: Cubic Yard

1.4.2.4 Reinforcing Steel (Epoxy Coated) for Concrete Slab-on-Grade (Item 0009A)

1.4.2.4.1 Payment

Payment will be made for costs associated with reinforcing steel for the proposed reinforced concrete slab-on-grade. Payment will include costs associated with engineering, furnishing, transporting, delivering, installing, field modifying, repairing, and any other items incidental thereto to complete the construction of the proposed reinforced concrete slab-on-grade.

1.4.2.4.2 Measurement

The total quantity for which payment will be made will be the quantity of reinforcing steel as indicated on the Contract Drawings.

1.4.2.4.3 Unit of Measure

Unit of Measure: Pound

1.4.2.5 Type 5 Aggregate Base (6 Inch Thick) (Item 0010)

1.4.2.5.1 Payment

Payment will be made for costs associated with furnishing, transporting, delivering, and placing the aggregate base for the reinforced concrete slab-on-grade as indicated on the Contract Drawings.

1.4.2.5.2 Measurement

The total quantity of material for which payment will be made will be the theoretical quantity of material required as indicated on the Contract Drawings. No allowance will be made for over placement of any material outside the required limits unless authorized. Theoretical limits of the aggregate base are identified on the Contract Drawings.

1.4.2.5.3 Unit of Measure

Unit of measure: Square Yard

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

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attached ENG Form 4025-R

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SECTION 01 33 00

SUBMITTAL PROCEDURES
9/19/2025

PART 1 GENERAL

1.1 SUMMARY

1.1.1 Submittal Information

The Engineer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections. Each submittal is to be complete and in sufficient detail to allow ready determination of compliance with contract requirements.

Units of weights and measures used on all submittals are to be the same as those used in the contract drawings.

Contractor shall check and approve all items prior to submittal and stamp, sign and date indicating action taken. Proposed deviations from the contract requirements are to be clearly identified. Include within submittals items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M Manuals (including parts list); certifications; warranties; and other such required submittals.

A submittal register showing items of equipment and materials for when submittals are required by the specifications is provided as an attachment to this Section.

1.1.2 Submission of Submittals

Schedule and provide submittals requiring Engineer approval before acquiring the material or equipment covered thereby. Pick up and dispose of samples not incorporated into the work in accordance with manufacturer's Safety Data Sheets (SDS) and in compliance with existing laws and regulations.

1.2 DEFINITIONS

1.2.1 Submittal Descriptions (SD)

Submittal requirements are specified in the technical sections. Examples and descriptions of submittals identified by the Submittal Description (SD) numbers and titles follow:

SD-01 Preconstruction Submittals

Submittals that are required prior to or at the start of construction (work) or the next major phase of the construction on a multiphase contract.

Engineer or Port Authority approved Division 01 preconstruction submittals that are required prior to or commencing with the start of work shall be submitted within 30 calendar days of contract award

unless specified elsewhere in the specifications.

Contractor approved Division 01 submittals that are required prior to or commencing with the start of work shall be submitted within 45 calendar days of contract award unless specified elsewhere in the specifications.

Preconstruction Submittals include schedules and a tabular list of locations, features, and other pertinent information regarding products, materials, equipment, or components to be used in the work.

Certificates Of Insurance

Surety Bonds

List Of Proposed Subcontractors

List Of Proposed Products

Baseline Network Analysis Schedule (NAS)

Submittal Register

Schedule Of Prices Or Earned Value Report

Health and Safety Plan

Work Plan

Quality Control (QC) plan

Environmental Protection Plan

SD-02 Shop Drawings

Drawings, diagrams and schedules specifically prepared to illustrate some portion of the work.

Diagrams and instructions from a manufacturer or fabricator for use in producing the product and as aids to the Contractor for integrating the product or system into the project.

Drawings prepared by or for the Contractor to show how multiple systems and interdisciplinary work will be coordinated.

SD-03 Product Data

Catalog cuts, illustrations, schedules, diagrams, performance charts, instructions and brochures illustrating size, physical appearance and other characteristics of materials, systems or equipment for some portion of the work.

Samples of warranty language when the contract requires extended product warranties.

SD-05 Design Data

Design calculations, mix designs, analyses or other data pertaining to a part of work.

SD-06 Test Reports

Report signed by authorized official of testing laboratory that a material, product or system identical to the material, product or system to be provided has been tested in accord with specified requirements. Unless specified in another section, testing must have been within three years of date of contract award for the project.

Report that includes findings of a test required to be performed on an actual portion of the work or prototype prepared for the project before shipment to job site.

Report that includes finding of a test made at the job site or on sample taken from the job site, on portion of work during or after installation.

Investigation reports

Daily logs and checklists

Final acceptance test and operational test procedure

SD-07 Certificates

Statements printed on the manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that the product, system, or material meets specification requirements. Must be dated after award of project contract and clearly name the project.

Document required of Contractor, or of a manufacturer, supplier, installer or Subcontractor through Contractor. The document purpose is to further promote the orderly progression of a portion of the work by documenting procedures, acceptability of methods, or personnel qualifications.

Confined space entry permits

Text of posted operating instructions

SD-11 Closeout Submittals

Documentation to record compliance with technical or administrative requirements or to establish an administrative mechanism.

Submittals required for Guiding Principle Validation (GPV) or Third Party Certification (TPC).

Special requirements necessary to properly close out a construction contract. For example, Record Drawings and as-built drawings. Also, submittal requirements necessary to properly close out a major phase of construction on a multi-phase contract.

1.2.2 Approving Authority

Office or designated person authorized to approve the submittal.

1.2.3 Work

As used in this section, on-site and off-site construction required by contract documents, including labor necessary to produce submittals, construction, materials, products, equipment, and systems incorporated or to be incorporated in such construction. In exception, excludes work to produce SD-01 submittals.

1.3 SUBMITTALS

Engineer approval is required for submittals with an "E" classification. Submittals not having an "E" classification are for information only. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Submittal Register; E

Transmittal Form; E

1.4 SUBMITTAL CLASSIFICATION

1.4.1 Engineer Approved (E)

Engineer approval is required for extensions of design, critical materials, variations, equipment whose compatibility with the entire system must be checked, and other items as designated by the Engineer. These submittals are considered to be "shop drawings."

Engineer approval is required for any variations from the Solicitation or the Accepted Proposal and for other items as designated by the Engineer.

1.4.2 For Information Only

Submittals not requiring Engineer approval will be for information only. These submittals are not considered to be "shop drawings."

1.5 PREPARATION

1.5.1 Transmittal Form

Transmit each submittal, except sample installations and sample panels to the office of the approving authority using the transmittal form approved by the Engineer. Include all information prescribed by the transmittal form and required in paragraph IDENTIFYING SUBMITTALS. Use the submittal transmittal forms to record actions regarding samples.

Use the attached ENG Form 4025-R transmittal form, or an approved equivalent transmittal form, for submitting both Engineer-approved and information-only submittals. Submit in accordance with the instructions on the reverse side of the form. Properly complete this form by filling out all the heading blank spaces and identifying each item submitted. Exercise special care to ensure proper listing of the specification paragraph and sheet number of the contract drawings pertinent to the data submitted for each item.

1.5.2 Identifying Submittals

The Contractor must prepare, review and stamp submittals, including those provided by a subcontractor, before submittal to the Engineer.

Identify submittals, except sample installations and sample panels, with the following information permanently adhered to or noted on each separate component of each submittal and noted on transmittal form. Mark each copy of each submittal identically, with the following:

- a. Project title and location
- b. Dates of the drawings and revisions
- c. Name, address, and telephone number of Subcontractor, supplier, manufacturer, and any other Subcontractor associated with the submittal.
- d. Section number of the specification by which submittal is required
- e. Submittal description (SD) number of each component of submittal
- f. For a resubmission, add alphabetic suffix on submittal description, for example, submittal 18 would become 18A, to indicate resubmission
- g. Product identification and location in project.

1.5.3 Source Drawings for Shop Drawings

1.5.3.1 Source Drawings

The entire set of source drawing files (DWG or DGN) will not be provided to the Contractor.

1.5.4 Electronic File Format

Provide submittals in electronic format, with the exception of material samples required for SD-04 Samples items. Compile the submittal file as a single, complete document, to include the Transmittal Form described within, and also separately attach the native files which were used to create PDF. The attached files should include the original digital files used to create the submittal. Name the electronic submittal file specifically according to its contents, and coordinate the file naming convention with the Engineer. Electronic files must be of sufficient quality that all information is legible. Use PDF as the electronic format, unless otherwise specified or directed by the Engineer. Generate PDF files from original documents with bookmarks so that the text included in the PDF file is searchable and can be copied. If documents are scanned, optical character resolution (OCR) routines are required. Index and bookmark files exceeding 30 pages to allow efficient navigation of the file. When required, the electronic file must include a valid electronic signature or a scan of a signature.

E-mail electronic submittal documents smaller than 10MB to an e-mail address as directed by the Engineer. Provide electronic documents over 10 MB on an optical disc or through a secure electronic file sharing system.

1.6 INFORMATION ONLY SUBMITTALS

Submittals without a "E" designation must be certified by the QC manager and submitted to the Engineer for information-only. Provide information-only submittals to the Engineer a minimum of 14 calendar days prior to the Preparatory Meeting for the associated Definable Feature of Work (DFOW). Approval of the Engineer is not required on information only submittals. The Engineer will mark "receipt acknowledged" on submittals for information and will return only the transmittal cover sheet to the Contractor. Normally, submittals for information only will not be returned. However, the Engineer reserves the right to return unsatisfactory submittals and require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the Engineer from requiring removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing where required.

1.7 PROJECT SUBMITTAL REGISTER

A sample Project Submittal Register showing items of equipment and materials for when submittals are required by the specifications is provided as an attachment to this Section. Contractor shall submit a submittal register for approval by the Engineer.

1.7.1 Submittal Management

Prepare and maintain a submittal register, as the work progresses. Do not change data that is output in columns (c), (d), (e), and (f) as delivered by Engineer; retain data that is output in columns (a), (g), (h), and (i) as approved. As an attachment, provide a submittal register showing items of equipment and materials for which submittals are required by the specifications. This list may not be all-inclusive and additional submittals may be required. The Engineer will provide the initial submittal register in electronic format.

Column (c): Lists specification section in which submittal is required.

Column (d): Lists each submittal description (SD Number. and type, e.g., SD-02 Shop Drawings) required in each specification section.

Column (e): Lists one principal paragraph in each specification section where a material or product is specified. This listing is only to facilitate locating submitted requirements. Do not consider entries in column (e) as limiting the project requirements.

Thereafter, the Contractor is to track all submittals by maintaining a complete list, including completion of all data columns and all dates on which submittals are received by and returned by the Engineer.

1.7.2 Use of Submittal Register

Submit the submittal register. Include the QC plan and the project schedule. Verify that all submittals required for the project are listed and add missing submittals. Coordinate and complete the following fields

on the register submitted with the QC plan and the project schedule:

Column (a) Activity Number: Activity number from the project schedule.

Column (g) Contractor Submit Date: Scheduled date for the approving authority to receive submittals.

Column (h) Contractor Approval Date: Date that Contractor needs approval of submittal.

Column (i) Contractor Material: Date that Contractor needs material delivered to Contractor control.

1.7.3 Contractor Use of Submittal Register

Update the following fields in the Engineer-furnished submittal register program or equivalent fields in the program used by the Contractor with each submittal throughout the contract.

Column (b) Transmittal Number: List of consecutive, Contractor-assigned numbers.

Column (j) Action Code (k): Date of action used to record Contractor's review when forwarding submittals to QC.

Column (l) Date submittal transmitted.

Column (q) Date approval was received.

1.7.4 Approving Authority Use of Submittal Register

Update the following fields:

Column (b) Transmittal Number: List of consecutive, Contractor-assigned numbers.

Column (l) Date submittal was received.

Column (m) through (p) Dates of review actions.

Column (q) Date of return to Contractor.

1.7.5 Delivery of Copies

Submit an updated electronic copy of the submittal register to the Port Authority with each invoice request. Provide an updated Submittal Register monthly regardless of whether an invoice is submitted.

1.8 VARIATIONS

Variations from contract requirements require Engineer approval and will be considered where advantageous to the project.

1.8.1 Considering Variations

Discussion of variations with the Engineer before submission of a variation submittal will help ensure that functional and quality requirements are met and minimize rejections and resubmittals. For

variations that include design changes or some material or product substitutions, the Engineer may require an evaluation and analysis by a licensed professional engineer hired by the contractor.

Specifically point out variations from contract requirements in a transmittal letter. Failure to point out variations may cause the Engineer to require rejection and removal of such work at no additional cost to the Port Authority.

1.8.2 Proposing Variations

When proposing variation, deliver a submittal, clearly marked as a "VARIATION" to the Engineer, with documentation illustrating the nature and features of the variation including any necessary technical submittals and why the variation is desirable and beneficial to the project. If lower cost is a benefit, also include an estimate of the cost savings. In addition to documentation required for variation, include the submittals required for the item. Clearly mark the proposed variation in all documentation.

The Engineer will indicate an approval or disapproval of the variation request; and if not approved as submitted, will indicate the Engineer's reasons therefore. Any work done before such approval is received is performed at the Contractor's risk."

Specifically point out variations from contract requirements in a transmittal letter. Failure to point out variations may cause the Engineer to require rejection and removal of such work at no additional cost to the Port Authority.

Submittals that include variations proposed by the Contractor must be indicated as variations on the transmittal form. Set forth in writing the reason for any variations and note such variations on the submittal. The Engineer reserves the right to rescind inadvertent approval of submittals containing unnoted variations.

1.8.3 Warranting that Variations are Compatible

When delivering a variation for approval, the Contractor warrants that this contract has been reviewed to establish that the variation, if incorporated, will be compatible with other elements of work.

1.8.4 Review Schedule Extension

In addition to the normal submittal review period, a period of 15 working days will be allowed for the Engineer to consider submittals with variations.

1.9 SCHEDULING

Schedule and submit concurrently product data and shop drawings covering component items forming a system or items that are interrelated. Submit pertinent certifications at the same time. No delay damages or time extensions will be allowed for time lost in late submittals.

- a. Coordinate scheduling, sequencing, preparing, and processing of submittals with performance of work so that work will not be delayed by submittal processing. The Contractor is responsible for additional time required for Engineer reviews resulting from required

resubmittals. The review period for each resubmittal is the same as for the initial submittal.

- b. Submittals required by the contract documents are listed on the submittal register. If a submittal is listed in the submittal register but does not pertain to the contract work, the Contractor is to include the submittal in the register and annotate it "N/A" with a brief explanation. Approval by the Engineer does not relieve the Contractor of supplying submittals required by the contract documents but that have been omitted from the register or marked "N/A."
- c. Resubmit the submittal register and annotate it monthly with actual submission and approval dates. When all items on the register have been fully approved, no further resubmittal is required.

Engineer review will be completed within 15 calendar days after the date of submission.

1.9.1 Constraints

Conform to provisions of this section, unless explicitly stated otherwise for submittals listed or specified in this contract.

Submit complete submittals for each definable feature of the work. At the same time, submit components of definable features that are interrelated as a system.

When acceptability of a submittal is dependent on conditions, items, or materials included in separate subsequent submittals, the submittal will be returned without review.

Approval of a separate material, product, or component does not imply approval of the assembly in which the item functions.

1.10 ENGINEER APPROVING AUTHORITY

When the approving authority is the Engineer, the Engineer will:

- a. Note the date on which the submittal was received.
- b. Review submittals for approval within the scheduling period specified and only for conformance with project design concepts and compliance with contract documents.
- c. Identify returned submittals with one of the actions defined in paragraph REVIEW NOTATIONS and with comments and markings appropriate for the action indicated.

Upon completion of review of submittals requiring Engineer approval, stamp and date submittals. One copy of the submittal will be retained by the Engineer and one copy of the submittal will be returned to the Contractor.

1.10.1 Review Notations

Submittals will be returned to the Contractor with the following notations:

- a. Submittals marked "approved" or "accepted" authorize proceeding with the work covered.

- b. Submittals marked "approved as noted" or "approved, except as noted, resubmittal not required," or "Furnish as Corrected" authorize proceeding with the work covered provided that the Contractor takes no exception to the corrections.
- c. Submittals marked "not approved," "disapproved," or "revise and resubmit" indicate incomplete submittal or noncompliance with the contract requirements or design concept. Resubmit with appropriate changes. Do not proceed with work for this item until the resubmittal is approved.
- d. Submittals marked "not reviewed" indicate that the submittal has been previously reviewed and approved, is not required, does not have evidence of being reviewed and approved by Contractor, or is not complete. A submittal marked "not reviewed" will be returned with an explanation of the reason it is not reviewed. Resubmit submittals returned for lack of review by Contractor or for being incomplete, with appropriate action, coordination, or change.
- e. Submittals marked "receipt acknowledged" indicate that submittals have been received by the Engineer. This applies only to "information-only submittals" as previously defined.

1.11 DISAPPROVED SUBMITTALS

Make corrections required by the Engineer. If the Contractor considers any correction or notation on the returned submittals to constitute a change to the contract drawings or specifications, give notice to the Engineer. The Contractor is responsible for the dimensions and design of connection details and the construction of work. Failure to point out variations may cause the Engineer to require rejection and removal of such work at the Contractor's expense.

If changes are necessary to submittals, make such revisions and resubmit in accordance with the procedures above. No item of work requiring a submittal change is to be accomplished until the changed submittals are approved.

1.12 APPROVED SUBMITTALS

The Engineer's approval of submittals is not to be construed as a complete check, and indicates only that the general method of construction, materials, detailing, and other information are in general conformance with the construction documents.

Approval or acceptance by the Engineer for a submittal does not relieve the Contractor of the responsibility for meeting the contract requirements or for any error that may exist, because under the Quality Control (QC) requirements of this contract, the Contractor is responsible for ensuring information contained within each submittal accurately conforms with the requirements of the contract documents.

After submittals have been approved or accepted by the Engineer, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

1.13 WITHHOLDING OF PAYMENT

Payment for materials incorporated in the work will not be made if required approvals have not been obtained.

1.14 CERTIFICATION OF SUBMITTAL DATA

Certify the submittal data as follows on Form ENG 4025: "I certify that the above submitted items had been reviewed in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise stated.

____NAME OF CONTRACTOR _____ SIGNATURE OF CONTRACTOR

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

-- End of Section --

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION

Pike Lincoln County Dock Wall Structure

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH	GOVT CLASS S I F I C A T I O N O R A / E R E V I O W R	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION		DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	APPROVING AUTHORITY				MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
						SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION		DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION		
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		01 33 00	SD-01 Preconstruction Submittals														
			Submittal Register	1.7	E												
			Transmittal Form	1.5.1	E												
		01 45 00	SD-01 Preconstruction Submittals														
			Contractor Quality Control (CQC)	1.4.2													
			Plan														
			(E)														
		01 50 00	SD-01 Preconstruction Submittals														
			Construction Site Plan	1.2	E												
		01 57 19	SD-01 Preconstruction Submittals														
			Environmental Protection Plan	1.4	E												
		01 74 19	SD-01 Preconstruction Submittals														
			Construction Waste Management	1.4	E												
			Plan														
		01 78 00	SD-11 Closeout Submittals														
			As-Built Drawings	3.1	E												
			Final Approved Shop Drawings	3.2	E												
			As-Built Construction Contract		E												
			Specifications														
		02 41 00	SD-01 Preconstruction Submittals														
			Demolition Plan	1.3.2	E												
			Existing Conditions	1.10													
		03 30 00	SD-01 Preconstruction Submittals														
			Concrete Curing Plan	1.7.3.1	E												
			Mass Concrete Temperature	3.7.4	E												
			Control Plan														

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		03 30 00	Quality Control Plan	1.7.6	E												
			Quality Control Organizational Chart	1.7.7	E												
			Quality Control Personnel Certifications	1.7.7	E												
			Form Removal Schedule	1.7.2.1	E												
			Laboratory Accreditation	1.7.9	E												
			SD-02 Shop Drawings														
			Reinforcing Steel	1.7.2.2	E												
			Joints	1.7.2.3	E												
			SD-03 Product Data														
			Joint Filler	2.4.3	E												
			Formwork Materials	1.7.2.1	E												
			Formwork Materials	2.1	E												
			Cementitious Materials	2.3.1	E												
			Concrete Curing Materials	2.4.1	E												
			Reinforcement	2.6	E												
			Admixtures	2.3.4	E												
			Waterstops	2.2.2	E												
			Finishing Plan	1.7.3.2	E												
			Finishing Plan	1.7.5.1	E												
			Batching and Mixing Equipment	3.6	E												
			Conveying and Placing	3.7	E												
			Nonshrink Grout	2.4.2	E												
			SD-05 Design Data														
			Concrete Mix Design	1.7.1.1	E												

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						SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION	DATE RCD FRM APPR AUTH	
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		03 30 00	SD-06 Test Reports														
			Concrete Mix Design	1.7.1.1	E												
			Fly Ash	1.7.4.1	E												
			Pozzolan	1.7.4.1	E												
			Aggregates	1.7.4.2	E												
			Compressive Strength Tests	3.12.3.3	E												
			Flexural Strength Tests for Slab Concrete	3.12.3.4	E												
			Unit Weight of Structural Concrete	3.12.3.6	E												
			Chloride Ion Concentration	3.12.3.7	E												
			Air Content	3.12.3.5	E												
			Slump Tests	3.12.3.1	E												
			Water	2.3.2	E												
			Maturity Method Data	3.3.8	E												
			SD-07 Certificates														
			Reinforcing Bars	2.6.1	E												
			Safety Data Sheets	1.7.3.3	E												
			Field Testing Technician and Testing Agency	1.7.7.1	E												
		05 12 00	SD-01 Preconstruction Submittals														
			Erection and Erection Bracing Drawings	1.5.1.1	E												
			Welding Repair Plan	3.4	E												
			SD-02 Shop Drawings														

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		05 12 00	Fabrication And Connection Drawings	1.5.2	E												
			SD-03 Product Data														
			Welding Electrodes and Rods	2.4.1	E												
			SD-05 Design Data														
			Shoring And Temporary Bracing	1.5.2	E												
			Design Data and Computations	1.5.2	E												
			SD-06 Test Reports														
			Bolts, Nuts, and Washers	2.3	E												
			Bolt Testing Reports	3.7.2.1	E												
			Weld Testing Reports	3.7.1.2	E												
			SD-07 Certificates														
			Steel	2.2	E												
			Bolts, Nuts, and Washers	2.3	E												
			AISC Structural Steel Fabricator	1.4	E												
			Quality Certification														
			AISC Structural Steel Erector	1.4	E												
			Quality Certification														
			Welding Procedures and	1.5.3.1	E												
			Qualifications														
			Welding Electrodes and Rods	2.4.1	E												
			Certified Welding Inspector	3.7.1.1	E												
			Welding Procedure Specifications	3.4	E												
			(WPS)														
		05 50 14	SD-02 Shop Drawings														
			Fabrication Drawings	1.6.1	E												

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		05 50 14	Installation Drawings	1.6.2	E												
			Welding Repair Plan	2.7.2	E												
			SD-03 Product Data														
			Tie Rods And Accessories	2.2	E												
			Cast-In Anchor Bolts And Accessories	2.3	E												
			Dock Cleats and Accessories	2.4	E												
			Mooring Rings and Accessories	2.5	E												
			Welding Electrodes and Rods	2.6.1	E												
			Filler Metal	2.6.1.1.3.1													
			SD-05 Design Data														
			Design Data and Computations	1.6.3	E												
			SD-06 Test Reports														
			Mill Test Reports	2.1	E												
			SD-07 Certificates														
			Welding Procedures and Qualifications	1.6.4	E												
			Welding Electrodes and Rods	2.6.1	E												
			Certified Welding Inspector	2.7.1.1	E												
			Welding Procedure Specifications (WPS)	2.6.1.1.1	E												
			Weld Inspection Log	2.7.1.1	E												
		05 51 33	SD-02 Shop Drawings														
			Ladder Detail Drawings	1.4	E												
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		05 51 33	Paint Manufacturer's Product	2.3.1	E												
			Data Sheets														
			Ladder Materials	2.1	E												
			SD-07 Certificates														
			Fabricator Certification For	1.5	E												
			Ladder Assembly														
			Qualification Of Welders	1.6	E												
		31 00 00	SD-01 Preconstruction Submittals														
			Contractor's Work Plan	1.10	E												
			Contractor's Work Plan	1.11.1	E												
			Contractor's Work Plan	3.1.2	E												
			Contractor's Work Plan	3.1.3.2	E												
			Contractor's Work Plan	3.1.4	E												
			Contractor's Work Plan	3.7.2	E												
			Construction Equipment	1.9	E												
			Disposition of Surplus Material	3.11	E												
			Drawings and Calculations	3.1.4	E												
			SD-03 Product Data														
			Utilization of Excavated Materials	3.6	E												
			Select Fill	2.1.2	E												
			Fill Stone	2.1.1	E												
			Surface Aggregate	2.1.3	E												
			Aggregate Base for Slab	2.1.4	E												
			Soil Sampling Plan for Borrow		E												
			Source														
			Commercial Borrow Source	3.2.1	E												

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		31 00 00	SD-06 Test Reports														
			Testing	3.10	E												
			Environmental Soil Sampling		E												
			Report for Borrow Source														
		31 41 16	SD-01 Preconstruction Submittals														
			Delivery, Storage, and Handling	1.4	E												
			Plan														
			Contractor's Work Plan	1.7	E												
			Pulling and Redriving Plan	1.8	E												
			Installation Procedures	3.3.3.1	E												
			SD-02 Shop Drawings														
			Hot-Rolled Sheet Piling Plan and	1.5	E												
			Details														
			Steel Sheet Piling	2.1	E												
			Pile Placement	3.3.3.1	E												
			Pile Splicing	3.3.4	E												
			As-Driven Survey	3.3.7	E												
			SD-03 Product Data														
			Pile Driving Equipment	2.4	E												
			Delivery, Storage, And Handling	1.4	E												
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			Procedure For Insufficient Pile	3.3.4	E												
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SECTION 01 45 00

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9/19/2025

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-- End of Section Table of Contents --

SECTION 01 45 00

QUALITY CONTROL
9/19/2025

PART 1 GENERAL

1.1 PAYMENT

Separate payment will not be made for providing and maintaining an effective Quality Control program. Include all associated costs in the applicable Bid Schedule item.

1.2 SUBMITTALS

Engineer approval is required for submittals with a "E" classification. Submittals not having a "E" classification are for information only. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.

SD-01 Preconstruction Submittals

Contractor Quality Control (CQC) Plan; (E)

1.3 GENERAL REQUIREMENTS

Establish and maintain an effective quality control (QC) system. QC is comprised of plans, procedures, and organization necessary to produce an end product that complies with the Contract requirements. The QC system covers all construction operations, both onsite and offsite, and must be keyed to the proposed construction sequence. All on-site supervisors are responsible for the quality of work.

1.4 QUALITY CONTROL (QC) PROGRAM REQUIREMENTS

Establish and maintain a QC program as described in this section. The QC program consists of a QC Organization, QC Plan, QC Plan Meeting(s), QC meetings, submittal review and approval, testing, completion inspections, QC certifications, and documentation necessary to provide materials, equipment, workmanship, fabrication, construction and operations that comply with the requirements of this Contract. The QC program must cover on-site and off-site work and be keyed to the work sequence. No construction work or testing may be performed unless a QC Manager is on the work site. The QC Manager must report to an officer of the firm and not be subordinate to the Project Superintendent or the Project Manager. The QC Manager, Project Superintendent and Project Manager must work together effectively. Although the QC Manager is the primary individual responsible for quality control, all individuals will be held responsible for the quality of work on the job.

1.4.1 Meetings

1.4.1.1 Quality Control (QC) Meetings

After the start of construction, conduct weekly QC meetings led by the QC Manager at the work site with the Project Superintendent and the other personnel as necessary. The QC Manager is to prepare the minutes of the

meeting and provide a copy to the Engineer and/or Client upon request. As a minimum, accomplish the following at each meeting:

- a. Review the minutes of the previous meeting.
- b. Review the schedule and the status of work and deficiencies/rework. Review the most current approved schedule (in accordance with schedule specification) and the status of work and deficiencies/rework.
- c. Review the status of submittals and Request For Information (RFIs).
- d. Review the work to be accomplished in the next 3 weeks as defined by the schedule and all documentation required for that work.
- e. Review Testing Plan and Log including status of tests performed since last QC Meeting.
- f. Resolve QC and production problems. Discuss status of pending change orders.
- g. Address items that may require revising the QC Plan.
- h. Review effectiveness of the safety program.
- i. Review environmental requirements and procedures.

1.4.2 Contractor Quality Control (CQC) Plan

Submit no later than 30 days after Contract Award after receipt of notice to proceed, the CQC Plan proposed. Construction will be permitted to begin only after acceptance of the CQC Plan.

1.4.2.1 Content of Contractor Quality Control (CQC) Plan

Provide a CQC Plan, prior to start of construction that includes a table of contents, with major sections identified, pages numbered sequentially, and that documents the proposed methods and responsibilities for accomplishing quality control during the construction of the project. The CQC Plan must at a minimum include the following sections:

- a. A description of the quality control organization and acknowledgment that the QC staff will implement the quality control system for all aspects of the work specified.
- b. An organizational chart showing the quality control organization with individual names and job titles and lines of authority up to an executive of the company at the home office.
- c. NAMES AND QUALIFICATIONS: Names and qualifications, in resume format, (including position titles and durations for qualifying experiences) for each person in the QC organization.
- d. DUTIES, RESPONSIBILITY AND AUTHORITY OF QC PERSONNEL: Duties, responsibilities, and authorities of each person in the QC organization.
- e. OUTSIDE ORGANIZATIONS: A listing of outside organizations, that will be employed by the Contractor and a description of the services these firms will provide.

- f. APPOINTMENT LETTERS: Letters signed by an officer of the firm appointing the QC Manager and Alternate QC Manager, and stating that they are responsible for implementing and managing the QC program as described in this Contract. Include in this letter the responsibility of the QC Manager and Alternate QC Manager to implement and manage the three phases of control, and their authority to stop work that is not in compliance with the Contract.
- g. SUBMITTAL PROCEDURES AND INITIAL SUBMITTAL REGISTER: Procedures for reviewing, approving, scheduling, and managing submittals, including those of subcontractors, offsite fabricators, suppliers, and purchasing agents. Provide the name(s) of the person(s) in the QC organization authorized to review and certify submittals prior to approval. Provide the initial submittal of the Submittal Register as specified in Section 01 33 00 SUBMITTAL PROCEDURES.
- h. TESTING LABORATORY INFORMATION: Testing laboratory information required by the paragraph ACCREDITATION REQUIREMENTS, as applicable.
- i. TESTING PLAN AND LOG: A Testing Plan and Log that includes the tests required, associated feature of work required, referenced by the specification paragraph number requiring the test, the frequency, and the person responsible for each test.
- j. Procedures to complete construction deficiencies from identification through acceptable corrective action. Establish verification procedures that identified deficiencies have been corrected. This phase is performed prior to beginning work on each definable feature of work, after all required plans, documents, materials are approved, and after copies are at the work site.
- k. Reporting procedures, including proposed reporting formats.
- l. Procedures for submitting and reviewing design changes/variations prior to submission to the Engineer.
- m. PROCEDURES FOR COMPLETION INSPECTION: Procedures for identifying and documenting the completion inspection process. Include in these procedures the responsible party for punch out inspection, pre-final inspection, and final acceptance inspection.
- n. ORGANIZATION AND PERSONNEL CERTIFICATIONS LOG: Procedures for coordinating, tracking and documenting all certifications required for entities such as subcontractors, testing laboratories, suppliers, and personnel. The QC Manager will ensure that certifications are current, appropriate for the work being performed, and will not lapse during any period of the Contract that the work is being performed.

1.4.3 Acceptance of the Quality Control (QC) Plan

The Engineer's acceptance of the Contractor's QC Plan is required prior to the start of construction.

1.5 QUALITY CONTROL (QC) ORGANIZATION

1.5.1 Quality Control (QC) Manager

1.5.1.1 Duties

Provide a QC Manager at the work site to implement and manage the QC program. In addition to implementing and managing the QC program, the QC Manager may perform the duties of Project Superintendent. The QC Manager must conduct the QC meetings, perform submittal review and approval, ensure testing is performed and provide QC certifications and documentation required in this Contract.

1.5.1.2 Qualifications

The QC Manager must be an individual with a minimum of 7 years combined experience in the following positions: Project Superintendent, QC Manager, Project Manager, Project Engineer or Construction Manager on similar size and type construction Contracts which included the major trades that are part of this Contract. The individual must have at least 2 years experience as a QC Manager.

The QC Manager and all members of the QC organization must be capable of reading, writing, and conversing fluently in the English language.

1.5.2 Organizational Changes

Maintain the QC staff with personnel as required by the specification section at all times. When it is necessary to make changes to the QC staff, revise the CQC Plan to reflect the changes and submit the changes to the Engineer and/or Client upon request.

1.5.3 Alternate Quality Control (QC) Manager Duties and Qualifications

Designate an alternate for the QC Manager at the work site to serve in the event of the designated QC Manager's absence. The qualification requirements for the Alternate QC Manager must be the same as for the QC Manager.

1.6 SUBMITTAL AND DELIVERABLES REVIEW AND APPROVAL

Procedures for submission, review and approval of submittals are described in Section 01 33 00 SUBMITTAL PROCEDURES. Procedures must include field verification of relevant dimensions and component characteristics by the QC organization prior to submittal being sent. The CQC organization is responsible for certifying that all submittals and deliverables are in compliance with the Contract.

1.7 TESTING

Perform specified or required tests to verify that control measures are adequate to provide a product which conforms to Contract requirements. Testing includes operation and acceptance tests when specified. Procure the services of an approved testing laboratory. All testing shall be at the contractor's expense.

1.7.1 Accreditation Requirements

Construction materials testing laboratories must be accredited by a

laboratory accreditation authority and must submit a copy of the Certificate of Accreditation and Scope of Accreditation. The laboratory's scope of accreditation must include the appropriate ASTM standards. Laboratories engaged in Hazardous Materials Testing must meet the requirements of OSHA and EPA. The policy applies to the specific laboratory performing the actual testing, not just the Corporate Office.

1.7.2 Test Results

Cite applicable Contract requirements, tests or analytical procedures used. Provide actual results and include a statement that the item tested or analyzed conforms or fails to conform to specified requirements. If the item fails to conform, notify the Engineer immediately. Conspicuously stamp the cover sheet for each report in large red letters "CONFORMS" or "DOES NOT CONFORM" to the specification requirements, whichever is applicable. Test results must be signed by a testing laboratory representative authorized to sign certified test reports. Furnish the signed reports, certifications, and other documentation to the Engineer via the QC Manager.

1.8 COMPLETION INSPECTIONS

1.8.1 Punch-Out Inspection

Near the completion of all work the QC Manager must conduct an inspection of the work and develop a "punch list" of items which do not conform to the approved drawings, specifications, and Contract. Include in the punch list any remaining items on the "Deficiency/Rework Items List", that were not corrected prior to the Punch-Out Inspection. Include within the punch list the estimated date by which the deficiencies will be corrected. Provide a copy of the punch list to the Engineer and Port Authority.

The QC Manager, or staff, must make follow-on inspections to ascertain that all deficiencies have been corrected. All punch list items must be confirmed as corrected by the QC Manager. Once this is accomplished, notify the Engineer and Port Authority that the facility is ready for the "Pre-Final Inspection".

1.8.2 Pre-Final Inspection

The Engineer and QC Manager will perform this inspection to verify that the work is complete. A "Pre-Final Punch List" will be documented by the QC Manager as a result of this inspection. The QC Manager will ensure that all items on this list are corrected and concurred by the Engineer prior to notifying the Port Authority that a "Final" inspection with the Port Authority can be scheduled. All items noted on the "Pre-Final" inspection must be corrected and concurred by the Engineer in a timely manner and be accomplished before the Contract completion date for the work.

1.8.3 Final Acceptance Inspection

Notify the Engineer and Port Authority at least 14 calendar days prior to the date a final acceptance inspection can be held. State within the notice that all items previously identified on the pre-final punch list will be corrected and acceptable, along with any other unfinished Contract work, by the date of the final acceptance inspection. The Contractor must be represented by the QC Manager, the Project Superintendent, and others deemed necessary. Attendees for the Port Authority will include the

Engineer or Engineer's representative and personnel representing the Port Authority.

1.9 QUALITY CONTROL (QC) CERTIFICATIONS

1.9.1 Completion Certification

Upon completion of work under this Contract, the QC Manager must furnish a certificate to the Engineer and Port Authority attesting that "the work has been completed, inspected, tested and is in compliance with the Contract." Provide a copy of this final QC Certification to the Engineer and Port Authority.

1.10 DOCUMENTATION AND INFORMATION

Maintain current and complete records of on-site and off-site QC program operations and activities.

1.10.1 Quality Control Validation

Establish and maintain the following:

- a. CQC Meeting minutes in accordance with paragraph QUALITY CONTROL (QC) MEETINGS.
- b. All milestone inspections, arranged by Activity Number referenced to the construction schedule.
- c. An up-to-date copy of the Testing Plan and Log with supporting field test reports, arranged by specification section to which individual reports results are associated.
- d. Copies of all Contract modifications, arranged in numerical order. Also include documentation that modified work was accomplished.
- e. An up-to-date copy of the paragraph DEFICIENCY/REWORK ITEMS LIST.
- f. Upon commencement of Completion Inspections of the entire project or any defined portion, maintain up-to-date copies of all punch lists.

1.10.2 Testing Plan and Log

As tests are performed, the QC Manager will record on the "Testing Plan and Log" the date the test was performed and the date the test results were forwarded to the Engineer. Attach a copy of the updated "Testing Plan and Log" to the last daily CQC Report of each month. Provide a copy of the final "Testing Plan and Log" to the Engineer and Port Authority.

1.10.3 As-Built Drawings

The QC Manager must ensure the as-built drawings, required by Section 01 78 00 CLOSEOUT SUBMITTALS are kept current on a daily basis and marked to show deviations which have been made from the Contract drawings. The as-built drawings document commences with the QC Manager ensuring all amendments, or changes to the Contract prior to Contract award are accurately noted in the initial document set creating the accurate baseline of the Contract prior to any work starting. Ensure each deviation has been identified with the appropriate modifying documentation (e.g., PC No., Modification No., Request for Information No.). Upon

completion of work, the QC Manager will furnish a certificate attesting to the accuracy of the as-built drawings prior to submission to the Engineer and Port Authority.

1.11 NOTIFICATION ON NON-COMPLIANCE

The Engineer will notify the Contractor of any detected non-compliance with the Contract. Take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, is deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Port Authority may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders will be made the subject of a claim for extension of time for excess costs or damages by the Contractor.

1.12 DELIVERY, STORAGE, AND HANDLING

Designate receiving/storage areas for incoming material to be delivered according to installation schedule and to be placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication. Store and handle materials in a manner as to prevent loss from weather and other damage. Keep materials, products, and accessories covered and off the ground, and store in a dry, secure area. Prevent contact with material that may cause corrosion, discoloration, or staining. Protect all materials and installations from damage by the activities of other trades.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

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SECTION 01 50 00

TEMPORARY CONSTRUCTION FACILITIES AND CONTROLS
9/19/2025

PART 1 GENERAL

1.1 SUBMITTALS

Engineer approval is required for submittals with an "E" classification. Submittals not having an "E" classification are for information only. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Construction Site Plan; E

1.2 CONSTRUCTION SITE PLAN

Prior to the start of work, submit for Port Authority approval a site plan showing the locations and dimensions of temporary facilities (including layouts and details, equipment and material storage area (onsite and offsite), and access and haul routes, avenues of ingress/egress to the fenced area and details of the fence installation. Identify any areas which may have to be graveled to prevent the tracking of mud. Indicate if the use of a supplemental or other staging area is desired. Show locations of safety and construction fences, site trailers, construction entrances, trash dumpsters, temporary sanitary facilities, and worker parking areas.

PART 2 PRODUCTS

2.1 TEMPORARY SIGNAGE

2.1.1 Warning Signs

Post temporary signs, tags, and labels to give workers and the public adequate warning and caution of construction hazards. Attach signs to the perimeter fencing every 150 feet warning the public of the presence of construction hazards. Signs must require unauthorized persons to keep out of the construction site. Correct the data required by safety signs daily. Post signs at all points of entry designating the construction site as a hard hat area.

2.2 TEMPORARY TRAFFIC CONTROL

2.2.1 Barricades

Erect and maintain temporary barricades to limit access to hazardous areas. Barricades are required whenever access to paved areas such as roads, parking areas or sidewalks is prevented by construction activities or as otherwise necessary to ensure the safety of both pedestrian, worker, and vehicular traffic. Securely place barricades clearly visible with adequate illumination to provide sufficient visual warning of the hazard during both day and night.

2.3 FENCING

Provide fencing along the construction site and at all open excavations and tunnels to control access by unauthorized personnel. Safety fencing must be highly visible to be seen by pedestrians and vehicular traffic. Remove the fence upon completion and acceptance of the work.

PART 3 EXECUTION

3.1 EMPLOYEE PARKING

Construction Contract employees must park privately owned vehicles in an area designated by the Port Authority. Employee parking must not interfere with Port Authority operations.

3.2 AVAILABILITY AND USE OF UTILITY SERVICES

3.2.1 Temporary Utilities

Provide temporary utilities required for construction. Materials may be new or used, must be adequate for the required usage, not create unsafe conditions, and not violate applicable codes and standards.

3.2.2 Payment for Utility Services

The Contractor must provide their own utilities.

3.2.3 Sanitation

Provide and maintain within the construction area minimum field-type sanitary facilities. Locate the facilities behind the construction fence or out of the public view. Clean units and empty wastes at least once a week or more frequently into a municipal, district, or station sanitary sewage system, or remove waste to a commercial facility. Obtain approval from the system owner prior to discharge into a municipal, district, or commercial sanitary sewer system. Penalties or fines associated with improper discharge will be the responsibility of the Contractor. Follow all local regulations and procedures when discharging into the sanitary sewer system. Maintain these conveniences at all times. Include provisions for pest control and elimination of odors. Port Authority toilet facilities will not be available to Contractor's personnel.

3.2.4 Fire Protection

Provide temporary fire protection equipment for the protection of personnel and property during construction. Remove debris and flammable materials weekly to minimize potential hazards.

3.3 TRAFFIC PROVISIONS

3.3.1 Maintenance of Traffic

- a. Conduct operations in a manner that will not close a thoroughfare or interfere with traffic on railways or highways.

3.3.2 Protection of Traffic

Maintain and protect traffic on all affected roads during the construction period. Measures for the protection and diversion of traffic, including

the provision of watchmen and flagmen, erection of barricades, placing of lights around and in front of equipment the work, and the erection and maintenance of adequate warning, danger, and direction signs, will be as required by the State and local authorities having jurisdiction. Provide self-illuminated (lighted) barricades during hours of darkness. All personnel working in roadways will wear brightly-colored vests or other high visibility apparel. Protect the traveling public from damage to person and property. Minimize the interference with public traffic on roads selected for hauling material to and from the site. Investigate the adequacy of existing roads and their allowable load limit. Contractor is responsible for the repair of damage to roads caused by construction operations.

3.4 CONTRACTOR'S TEMPORARY FACILITIES

Contractor is responsible for security of their property. Provide adequate outside security lighting at the temporary facilities. Trailers must be anchored to resist high winds and meet applicable state or local standards for anchoring mobile trailers. The following applies:

3.4.1 Administrative Field Offices

Provide and maintain administrative field office facilities within the construction area at the designated site as required. Include any required administrative field offices in the Construction Site Plan. Port Authority office and warehouse facilities will not be available to the Contractor's personnel.

In the event a new building is constructed for the temporary project field office, remove the building from the site upon completion and acceptance of the work.

3.4.2 Storage Area

Construct a temporary 6 foot high chain link fence around trailers and materials. Include plastic strip inserts so that visibility through the fence is obstructed. Fence posts may be driven, in lieu of concrete bases, where soil conditions permit. Do not place or store trailers, materials, or equipment outside the fenced area. Trailers, equipment, or materials must not be open to public view with the exception of those items which are in support of ongoing work on the current day. Do not stockpile materials outside the fence in preparation for the next day's work. Park mobile equipment, such as tractors, wheeled lifting equipment, cranes, trucks, and like equipment within the fenced area at the end of each work day.

Keep fencing in a state of good repair and proper alignment. If the Contractor elects to traverse grassed or unpaved areas which are not established roadways with construction equipment or other vehicles, cover the grassed or unpaved areas with a layer of gravel as necessary to prevent rutting and the tracking of mud onto paved or established roadways; gravel gradation must be at the Contractor's discretion. Mow and maintain grass located within the boundaries of the construction site for the duration of the project. Grass and vegetation along fences, structures, under trailers, and in areas not accessible to mowers must be edged or trimmed neatly.

3.4.3 Supplemental Storage Area

Upon request, and pending availability, the Port Authority may designate another or supplemental area for the use and storage of trailers, equipment, and materials. This area may not be in close proximity of the construction site but will be within the installation boundaries. Maintain the area in a clean and orderly fashion and secured if needed to protect supplies and equipment. Utilities will not be provided to this area by the Port Authority.

3.4.4 Appearance of Trailers

- a. Trailers must be roadworthy and comply with all appropriate state and local vehicle requirements. Trailers which are rusted, have peeling paint or are otherwise in need of repair will not be allowed on Port Authority property. Trailers must present a clean and neat exterior appearance and be in a state of good repair.
- b. Maintain the temporary facilities. Failure to do so will be sufficient reason to require their removal at the Contractor's expense.

3.4.5 Safety Systems

Protect the integrity of all installed safety systems or personnel safety devices. If it is temporarily necessary to remove or disable personnel safety devices in order to accomplish Contract requirements, provide alternative means of protection prior to removing or disabling any permanently installed safety devices or equipment.

3.5 TEMPORARY PROJECT SAFETY FENCING

As soon as practicable, but not later than 15 days after the date established for commencement of work, furnish and erect temporary project safety fencing at the work site. Maintain the safety fencing during the life of the Contract and, upon completion and acceptance of the work, remove from the work site.

3.6 CLEANUP

Remove construction debris, waste materials, packaging material and the like from the work site daily. Any dirt or mud which is tracked onto paved or surfaced roadways must be cleaned away. Store all salvageable materials resulting from demolition activities within the fenced area described above or at the supplemental storage area. Neatly stack stored materials not in trailers, whether new or salvaged.

3.7 RESTORATION OF STORAGE AREA

Upon completion of the project remove the bulletin board, signs, barricades, haul roads, and all other temporary products from the site. After removal of trailers, materials, and equipment from within the fenced area, remove the fence. Restore areas used during the performance of the Contract to the original or better condition. Remove gravel used to traverse grassed areas and restore the area to its original condition, including top soil and seeding as necessary.

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SECTION 01 57 19

TEMPORARY ENVIRONMENTAL CONTROLS
9/19/2025

PART 1 GENERAL

1.1 SUBMITTALS

Engineer approval is required for submittals with an "E" classification. Submittals not having an "E" classification are for information only. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Environmental Protection Plan; E

1.2 ENVIRONMENTAL PROTECTION REQUIREMENTS

Provide and maintain, during the life of the contract, environmental protection as required by local, state, and federal regulations and as indicated herein. Plan for and provide environmental protective measures to control pollution that develops during construction practice. Plan for and provide environmental protective measures required to correct conditions that develop during the construction of permanent or temporary features associated with the project. Protect the environmental resources within the project boundaries and those affected outside the limits of permanent work during the entire duration of this Contract. Comply with federal, state, and local regulations pertaining to the environment, including water, air, solid waste, hazardous waste and substances, oily substances, and noise pollution.

Tests and procedures assessing whether construction operations comply with Applicable Environmental Laws may be required. All required testing shall be at the contractor's expense. Analytical work must be performed by qualified laboratories; and where required by law, the laboratories must be certified.

Comply with all local, state, and federal environmental laws, regulations, permits, and other environmental requirements.

1.3 QUALITY ASSURANCE

1.4 ENVIRONMENTAL PROTECTION PLAN

The purpose of the EPP is to present an overview of known or potential environmental issues that must be considered and addressed during construction. Incorporate construction related objectives and targets into the EPP. Include in the EPP measures for protecting natural and cultural resources, required reports, and other measures to be taken. Revise the EPP throughout the project to include any reporting requirements, changes in site conditions, or contract modifications that change the project scope of work in a way that could have an environmental impact. No requirement in this section will relieve the Contractor of any applicable federal, state, and local environmental protection laws and regulations. During Construction, identify, implement, and submit for

approval any additional requirements to be included in the EPP. Maintain the current version onsite.

The EPP includes, but is not limited to, the following elements:

1.4.1 General Overview and Purpose

1.4.1.1 Descriptions

A brief description of each specific plan required by environmental permit or elsewhere in this Contract.

1.4.1.2 Duties

The duties and level of authority assigned to the person(s) on the job site who oversee environmental compliance, such as who is responsible for adherence to the EPP, who is responsible for spill cleanup and training personnel on spill response procedures, who is responsible for manifesting hazardous waste to be removed from the site (if applicable), and who is responsible for training the Contractor's environmental protection personnel.

1.4.1.3 Procedures

A copy of any standard or project-specific operating procedures that will be used to effectively manage and protect the environment on the project site.

1.4.1.4 Communications

Communication and training procedures that will be used to convey environmental management requirements to Contractor employees and subcontractors.

1.4.1.5 Contact Information

Emergency contact information contact information (office phone number, cell phone number, and e-mail address).

1.4.2 General Site Information

1.4.2.1 Drawings

Drawings showing locations of proposed temporary excavations or embankments for haul roads, stream crossings, jurisdictional wetlands, material storage areas, structures, sanitary facilities, storm drains and conveyances, and stockpiles of excess soil.

1.4.2.2 Work Area

Work area plan showing the proposed activity in each portion of the area and identify the areas of limited use or nonuse. Include measures for marking the limits of use areas, including methods for protection of features to be preserved within authorized work areas and methods to control runoff and to contain materials on site, and a traffic control plan.

Show where any fuels, hazardous substances, solvents, or lubricants will be stored. Provide a spill plan to address any releases of those

materials.

1.4.2.3 Documentation

A letter signed by an officer of the firm appointing the Environmental Manager and stating that person is responsible for managing and implementing the Environmental Program as described in this contract. Include in this letter the Environmental Manager's authority to direct the removal and replacement of non-conforming work.

1.4.3 Management of Natural Resources

- a. Land resources
- b. Tree protection
- c. Replacement of damaged landscape features
- d. Temporary construction
- e. Stream crossings
- f. Fish and wildlife resources
- g. Wetland areas

1.4.4 Protection of the Environment from Waste Derived from Contractor Operations

Control and proper disposal of solid and sanitary waste.

Control and proper disposal of hazardous waste.

1.4.5 Prevention of Releases to the Environment

Procedures to prevent releases to the environment

Notifications in the event of a release to the environment

1.4.6 Regulatory Notification and Permits

List what notifications and permit applications must be made. Some permits require up to 180 days to obtain. Demonstrate that those permits have been obtained or applied for by including copies of applicable environmental permits. The EPP will not be approved until all of the necessary permits have been obtained.

1.5 LICENSES AND PERMITS

Obtain all necessary licenses and permits required for the construction of the project. Notify the Port Authority of all equipment that may require permits or special approvals that the Contractor plans to use on site.

- a. The following permits have been obtained by the Port Authority and are included as part of the Contract Documents as attachments following this specification section:

- (1) Clean Water Act Section 401 Water Quality Certification (Section 401) - Included in Contract Documents as attachment

- (2) Clean Water Act Section 404 Nationwide Permit (Section 404) - Included in Contract Documents as attachment
- (3) Rivers and Harbors Act Section 10 (Section 10) - Included in Contract Documents as attachment
- (4) Pike County Floodplain Development Permit - Included in Contract Documents as attachment

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 PROTECTION OF NATURAL RESOURCES

Minimize interference with, disturbance to, and damage to fish, wildlife, and plants, including their habitats.

Preserve the natural resources within the project boundaries and outside the limits of permanent work. Restore to an equivalent or improved condition upon completion of work that is consistent with the requirements of the applicable permits or as otherwise specified. Confine construction activities to within the limits of the work indicated or specified.

3.1.1 Flow Ways

Do not alter water flows or otherwise significantly disturb the native habitat adjacent to the project and critical to the survival of fish and wildlife, except as specified and permitted.

3.1.2 Vegetation

Except in areas to be cleared, do not remove, cut, deface, injure, or destroy trees or shrubs. Do not fasten or attach ropes, cables, or guys to existing nearby trees for anchorages. Where such use of attached ropes, cables, or guys is implemented, the Contractor is responsible for any resultant damage.

Protect existing trees that are to remain to ensure they are not injured, bruised, defaced, or otherwise damaged by construction operations. Remove displaced rocks from uncleared areas. Coordinate with local, state, and federal authorities as required to determine appropriate action for trees and other landscape features scarred or damaged by equipment operations.

3.1.3 Streams

Stream crossings must allow movement of materials or equipment without violating water pollution control standards of the federal, state, and local governments. Construction of stream crossing structures must be in compliance with all required permits including, but not limited to, Clean Water Act Section 404, and Section 401 Water Quality.

Appropriate permits are required before any equipment will be permitted to ford live streams. In areas where frequent crossings are required, install temporary culverts or bridges. Obtain Port Authority approval prior to installation. Remove temporary culverts or bridges upon completion of work, and repair the area to its original condition unless otherwise required by the Port Authority.

3.2 WASTE MINIMIZATION

Minimize the use of hazardous materials and the generation of waste. Include procedures for pollution prevention/ hazardous waste minimization in the Hazardous Waste Management Section of the EPP. Describe the anticipated types of the hazardous materials to be used in the construction.

3.2.1 Salvage, Reuse and Recycle

Identify anticipated materials and waste for salvage, reuse, and recycling. Describe actions to promote material reuse, resale or recycling. To the extent practicable, all scrap metal must be sent for reuse or recycling and will not be disposed of in a landfill.

Include the name, physical address, and telephone number of the hauler, if transported by a franchised solid waste hauler. Include the destination and, unless exempted, provide a copy of the state or local permit (cover) or license for recycling.

3.3 WASTE MANAGEMENT AND DISPOSAL

3.3.1 Solid Waste Management

3.3.1.1 Control and Management of Solid Wastes

Pick up solid wastes, and place in covered containers that are regularly emptied. Do not prepare or cook food on the project site. Prevent contamination of the site or other areas when handling and disposing of wastes. At project completion, leave the areas clean. Employ segregation measures so that no hazardous or toxic waste will become co-mingled with non-hazardous solid waste. Transport solid waste off Port Authority property and dispose of it in compliance with state and local requirements for solid waste disposal. A Subtitle D RCRA permitted landfill is the minimum acceptable offsite solid waste disposal option. Verify that the selected transporters and disposal facilities have the necessary permits and licenses to operate. Solid waste disposal offsite must comply with most stringent local, state, and federal requirements.

Manage hazardous material used in construction, including but not limited to, aerosol cans, waste paint, cleaning solvents, contaminated brushes, and used rags.

3.3.2 Control and Management of Hazardous Waste

Do not dispose of hazardous waste on Port Authority property. Do not discharge any waste to a sanitary sewer, storm drain, or to surface waters or conduct waste treatment or disposal on Port Authority.

3.3.2.1 Hazardous Waste/Debris Management

Identify construction activities that will generate hazardous waste or debris. Provide a documented waste determination for resultant waste streams. Identify, label, handle, store, and dispose of hazardous waste or debris in accordance with federal, state, and local regulations

Manage hazardous waste in accordance with the approved Hazardous Waste Management Section of the EPP. Store hazardous wastes in approved

containers. Do not bring hazardous waste onto Port Authority property.

3.3.2.2 Hazardous Waste Disposal

3.3.2.2.1 Responsibilities for Contractor's Disposal

Record and keep hazardous waste manifest.

3.3.2.2.1.1 Services

Provide service necessary for the final treatment or disposal of the hazardous material or waste in accordance with local, and state, laws and regulations within 60 days after the materials have been generated. These services include necessary personnel, labor, transportation, packaging, detailed analysis (if required for disposal or transportation, include manifesting or complete waste profile sheets, equipment, and compile documentation).

3.3.2.2.1.2 Labeling

During waste accumulation label all containers. Prior to offering a waste for off-site transport, determine the Department of Transportation's (DOT's) proper shipping names for waste (each container requiring disposal). Label all containers of hazardous waste with the words "Hazardous Waste" or other words to describe the contents of the container in accordance with applicable state or local regulations.

3.3.2.2.2 Contractor Disposal Turn-In Requirements

Hazardous waste generated must be disposed of in accordance with the following conditions to meet installation requirements:

- a. Drums must be compatible with waste contents and drums must meet DOT requirements for transportation of materials.
- b. Band drums to wooden pallets.
- c. No more than three 55 gallon drums or two 85 gallon over packs are to be banded to a pallet.
- d. Band using 1-1/4 inch minimum band on upper third of drum.
- e. Provide label.
- f. Leave 3 to 5 inches of empty space above volume of material.

3.3.2.3 Universal Waste Management

Manage the following categories of universal waste in accordance with federal, state, and local requirements:

- a. Batteries
- b. Lamps
- c. Mercury-containing equipment
- d. Aerosol cans

Mercury is prohibited in the construction of this facility, unless specified otherwise, and with the exception of mercury vapor lamps and fluorescent lamps. Dumping of mercury-containing materials and devices such as mercury vapor lamps, fluorescent lamps, and mercury switches, in rubbish containers is prohibited. Remove without breaking, pack to prevent breakage, and transport out of the activity in an unbroken condition for disposal as directed.

3.3.2.4 Electronics End-of-Life Management

Recycle or dispose of electronics waste, including, but not limited to, used electronic devices such computers, monitors, hard-copy devices, televisions, mobile devices, in accordance with state, and local requirements.

3.3.3 Releases/Spills of Oil and Hazardous Substances

3.3.3.1 Response and Notifications

Exercise due diligence to prevent, contain, and respond to spills of hazardous material, hazardous substances, hazardous waste, sewage, regulated gas, petroleum, lubrication oil, and other substances regulated in accordance with local and state regulations. Maintain spill cleanup equipment and materials at the work site. In the event of a spill, take prompt, effective action to stop, contain, curtail, or otherwise limit the amount, duration, and severity of the spill/release. In the event of any releases of oil and hazardous substances, chemicals, or gases; immediately (within 15 minutes) notify the local Fire Department.

Submit verbal and written notifications as required by the federal, state, local regulations and instructions. Provide copies of the written notification and documentation that a verbal notification was made within 20 days. Spill response must be in accordance with applicable state and local regulations. Contain and clean up these spills without cost to the Port Authority.

3.3.3.2 Clean Up

Clean up hazardous and non-hazardous waste spills immediately.

3.3.4 Mercury Materials

Clean mercury spill areas immediately.

Do not recycle a mercury spill cleanup; manage it as a hazardous waste for disposal.

3.3.5 Wastewater

3.3.5.1 Disposal of Wastewater

Disposal of wastewater must be as specified below.

3.3.5.1.1 Treatment

Do not allow wastewater from construction activities, such as onsite material processing, concrete curing, foundation and concrete clean-up, water used in concrete trucks, and forms to enter water ways or to be discharged prior to being treated to remove pollutants. Dispose of the

construction-related waste water off Port Authority property in accordance with state, regional, and local laws and regulations.

3.3.5.1.2 Surface Discharge

For discharge of ground water, surface discharge in accordance with federal, state, and local laws and regulations.

3.3.5.1.3 Land Application

Water generated from the flushing of lines after disinfection or disinfection in conjunction with hydrostatic testing must be land- applied in accordance with federal, state, and local laws and regulations for land application.

3.4 HAZARDOUS MATERIAL MANAGEMENT

Include hazardous material control procedures in the Contractor's Work Plan. Address procedures and proper handling of hazardous materials, including the appropriate transportation requirements. Do not bring hazardous material onto Port Authority property that does not directly relate to requirements for the performance of this contract. Use hazardous materials in a manner that minimizes the amount of hazardous waste generated. Containers of hazardous materials must have National Fire Protection Association labels or their equivalent. Certify that hazardous materials removed from the site are hazardous materials and do not meet the definition of hazardous waste, in accordance with local and state requirements.

3.5 PREVIOUSLY USED EQUIPMENT

Clean previously used construction equipment prior to bringing it onto the project site. Equipment must be free from soil residuals, egg deposits from plant pests, noxious weeds, and plant seeds. Consult with the U.S. Department of Agriculture jurisdictional office for additional cleaning requirements.

3.6 POST CONSTRUCTION CLEANUP

Clean up areas used for construction in accordance with Contract Clause: "Cleaning Up". Remove traces of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other vestiges of construction prior to final acceptance of the work. Grade parking area and similar temporarily used areas to conform with surrounding contours.

-- End of Section --



Missouri Department of Natural Resources

CLEAN WATER ACT SECTION 401 WATER QUALITY CERTIFICATION 2021 GENERAL AND SPECIFIC CONDITIONS

Water Protection Program

10/2021

Division of Environmental Quality

PUB2947

Consistent with Section 401 of the Clean Water Act (CWA), 33 U.S.C. § 1341, the Missouri Department of Natural Resources (Department) has designed these precertified conditions to ensure activities carried out in Missouri pursuant to Nationwide Permits (NWP) authorized by the U.S. Army Corps of Engineers (USACE) will comply with Missouri water quality requirements. Unless otherwise stated, these conditions are in addition to, not a replacement for, any federal requirements or conditions.

The conditions outlined in this programmatic WQC apply to those authorized projects where the project proponent has chosen to accept these conditions instead of pursuing an individual CWA Section 401 Water Quality Certification (WQC) for the following NWPs:

- Only General Conditions apply to projects authorized by NWPs 5, 6, 7, 13, 15, 16, 18, 19, 22, 23, 25, 27, 29, 30, 31, 36, 39, 40, 42, 43, 45, 46, 54, and 59.
- Both General and Specific Conditions apply to projects authorized by NWPs 3, 4, 12, 14, 20, 33, 41, 53, 57, and 58.

Alternatively, a project proponent may apply to the Department for individual WQC if it does not wish to accept the conditions outlined in this document.

NWPs 1, 2, 8, 9, 10, 11, 28, and 35 authorize projects pursuant to Section 10 of the Rivers and Harbors Act of 1899 only. These NWPs do not require CWA Section 401 WQC because they authorize activities which, in the opinion of the USACE, could not reasonably be expected to result in a discharge into waters of the United States. An activity needing only a Section 10 permit may require a WQC if that activity can reasonably be expected to result in any discharge either during construction or operation of the facility. Thus, if the USACE determines the activity is likely to result in a discharge during construction or operation, the Department has discretion to require a WQC for the Section 10 activity. The USACE may advise a Section 10 permit project proponent that it might need a WQC if there is a reasonable expectation that a discharge will occur either during the construction or operation of the project.

Pursuant to Section 644.037, RSMo, the Department shall certify without conditions NWPs as they apply to impacts on wetlands in Missouri. Because NWPs are minimal impact, Missouri does not have water quality standards specific to wetlands, and only the general criteria apply, discharges to wetlands from projects authorized by NWPs will comply with water quality requirements.

Pursuant to Section 644.038, RSMo, the Department shall certify without conditions all NWPs for impacts in all waters of the state for the construction of highways and bridges approved by the Missouri Highway and Transportation Commission. A Memorandum of Understanding between the Missouri Departments of Natural Resources and Transportation contains the requirements by which the Missouri Department of Transportation will design and construct such projects in order to protect the water quality of waters of the state. Therefore, as a result of this side agreement, the Department grants programmatic WQC for all NWPs without conditions for the construction of highways and bridges approved by the Missouri Highway and Transportation Commission, because any discharges from these projects will comply with water quality requirements.

GENERAL CONDITIONS

1. A stream's pattern, profile, and dimension, including but not limited to sinuosity, slope, and channel width, shall be maintained as much as practicable. Streambed gradient shall not be adversely impacted during project construction. No project shall accelerate bed or bank erosion. This will ensure compliance with the Missouri Water Quality Standards general criterion requiring waters to be free from physical, chemical, or hydrologic changes that would impair the natural biological community [10 CSR 20-7.031(4)(H)].
2. Channelization of streams is not allowed under this precertification. Channelization includes but is not limited to reducing the length of the channel, widening the channel for increased water storage or flow, and/or construction of hard structures which concentrate flow. Unless necessary for a stream crossing associated with infrastructure projects and contained within an associated right-of-way, construction easement, or permanent easement, bank stabilization activities only along one bank of a stream are permitted, including but not limited to bank sloping and riprapping. The redirection of flow by excavation of the opposite bank or a streambed is considered a channel modification and is not authorized by this WQC. This will ensure compliance with the Missouri Water Quality Standards general criterion requiring waters to be free from physical, chemical, or hydrologic changes that would impair the natural biological community [10 CSR 20-7.031(4)(H)].
3. No new or expanded wet stormwater retention basins or similar impoundment structures may be constructed unless they are located off-channel. In-channel dry stormwater detention basins are allowable if the stream channel is either temporarily or not adversely affected by the basin. This will ensure compliance with the Missouri Water Quality Standards general criterion requiring waters to be free from physical, chemical, or hydrologic changes that would impair the natural biological community [10 CSR 20-7.031(4)(H)].
4. Only clean, nonpolluting fill shall be used. The following materials are not suitable where contact with water is expected and shall not be used due to their potential to cause violations of the general criteria of Missouri's Water Quality Standards [10 CSR 20-7.031(4)]:
 - a. Earthen fill, gravel and broken concrete where the material does not meet the Suitable Material specifications stated in the "Missouri Nationwide Permit Regional Conditions" (<https://usace.contentdm.oclc.org/digital/collection/p16021coll11/id/2662/>) in locations where erosive flows are expected to occur on a regular basis, such as streambanks and/or lake shorelines.
 - b. Asphalt.
 - c. Concrete with exposed rebar.
 - d. Tires, vehicles or vehicle bodies, and construction or demolition debris are solid waste and are excluded from placement in the waters of the state. Properly sized, broken concrete without exposed rebar is allowed.
 - e. Liquid concrete, including grouted riprap, if not placed in forms as part of an engineered structure.
 - f. Any material containing chemicals that would result in violation of Missouri Water Quality Standards general criteria [10 CSR 20-7.031(4)] or specific criteria [10 CSR 20-7.031(5)].
5. Waste concrete or concrete rinsate shall be disposed of in a manner that does not result in discharge to any jurisdictional water ways. This will ensure compliance with the Missouri Water Quality Standards general criteria requiring waters be free from unsightly bottom deposits [10 CSR 20-7.031(4)(A)]; substances resulting in toxicity to human, animal, or aquatic life [10 CSR 20-7.031(4)(D)]; and physical, chemical, or hydrologic changes that would impair the natural biological community [10 CSR 20-7.031(4)(H)].
6. Missouri Water Quality Standards antidegradation requirements dictate all appropriate and reasonable Best Management Practices related to erosion and sediment control, project stabilization and prevention of water quality degradation are applied and maintained; for example, preserving vegetation, streambank stability and basic drainage [10 CSR 20-7.031(3)(D)]. Best Management Practices shall be properly installed prior to conducting authorized activities and maintained, repaired and/or replaced as needed during all phases of the project to limit the amount of discharge of water contaminants to waters of the state. The project shall not involve more than normal stormwater or incidental loading of sediment caused by project activities so as to comply with Missouri's general water quality criteria [10 CSR 20-7.031(4)]; <https://www.sos.mo.gov/cmsimages/adrules/csr/current/10csr/10c20-7a.pdf>

7. Clearing of vegetation and trees shall be the minimum necessary to accomplish the activity except for the removal of invasive or noxious species and placement of ecologically beneficial practices. This will ensure compliance with the Missouri Water Quality Standards antidegradation requirement for Best Management Practices [10 CSR 20-7.031(3)(B)].
8. Care shall be taken to keep machinery out of the water way as much as possible. If work in the water way is unavoidable, it shall be performed in a way that minimizes the duration and amount of any disturbance to banks, substrate and vegetation to prevent increases in turbidity. Fuel, oil and other petroleum products, equipment, construction materials and any solid waste shall not be stored below the ordinary high water mark at any time or in the adjacent flood-prone areas beyond normal working hours. All precautions shall be taken to avoid the release of wastes or fuel to streams and other adjacent waters as a result of this operation. This will ensure compliance with the Missouri Water Quality Standards antidegradation requirement for Best Management Practices [10 CSR 20-7.031(3)(B)] and Missouri Water Quality Standards general criteria requiring waters be free from substances preventing beneficial uses [10 CSR 20-7.031(3)(A)]; substances causing unsightly color or turbidity [10 CSR 20-7.031(4)(C)]; and physical, chemical, or hydrologic changes that would impair the natural biological community [10 CSR 20-7.031(4)(H)].
9. Petroleum products spilled into any water or on the banks where the material may enter waters of the state shall be immediately cleaned up and disposed of properly. Any such spills of petroleum shall be reported as soon as possible, but no later than 24 hours after discovery to the Department of Natural Resources' Environmental Emergency Response number at 573-634-2436 or website at <http://dnr.mo.gov/env/esp/esp-eer.htm>. This will ensure compliance with Missouri Environmental Improvement Authority to provide for the conservation of state water resources by the prevention of pollution and proper methods of disposal [Section 260.015, RSMo] and Missouri Water Quality Standards general criteria requiring waters be free from substances that prevent maintenance of beneficial uses; cause unsightly bottom deposits, color, turbidity or toxicity; and/or impair the natural biological community [10 CSR 20-7.031(4)(A), -(B), and -(H)].
10. All efforts shall be made to minimize exposure of unprotected soils. To the best of the project proponent's ability, project activity shall be conducted at times of little or no rainfall to limit the amount of overland flow and sediment disturbance caused by heavy equipment. This will ensure compliance with Missouri antidegradation requirements for Best Management Practices [10 CSR 20-7.031(3)(B)].
11. Programmatic WQC is denied for any NWP issued on a water that is listed for a sediment-related impairment, aquatic habitat alteration, channelization, or unknown impairment as listed in the most current Water Quality Report (Section 305(b) Report) at <https://dnr.mo.gov/water/what-were-doing/water-planning/quality-standards-impaired-waters-total-maximum-daily-loads/impaired-waters>. Although intended to result in minimal impacts, NWP authorizations in these waters may contribute to impairments and result in noncompliance with Missouri's general water quality criteria requiring waters be free from physical, chemical, and hydrologic changes that would impair the natural biological community [10 CSR 20-7.031(4)(H)] or exceedance of Missouri Water Quality Standards specific criteria [10 CSR 20-7.031(5)]. Since WQC General or Specific Conditions cannot be established to address all concerns from the variety of impairments and activities authorized by NWPs, individual review for WQC will be required. Requirements for individual WQC will be determined on a case-by-case basis based on the specific impairments, and additional testing, design, disposal, or BMP considerations may be required.

To determine the location of the waters noted above, the Department's geospatial data is available upon request, and all published data is available on the Missouri Spatial Data Information Services website at msdis.missouri.edu/. Additional information to identify the project location, including stream reaches with listed impairments or special water designations, may be obtained from the Department's Water Protection Program at 573-522-4502.

12. Programmatic WQC is denied for projects authorized by NWP's 17, 21, 32, 34, 37, 38, 44, 48, 49, 50, 51, 52, 55, and 56. Although intended to result in minimal impacts, these NWP's authorize activities that may contribute to impairments and result in noncompliance with Missouri's general water quality criteria [10 CSR 20-7.031(4)], including the requirement that all waters of the state shall be free from physical, chemical, and hydrologic changes that would impair the natural biological community [10 CSR 20-7.031(4)(H)], or noncompliance with Missouri's specific water quality criteria [10 CSR 20-7.031(5)]. Because programmatic WQC General or Specific Conditions cannot be established to address all concerns from the variety of impairments and activities authorized by these NWP's, the Department requires individual review for WQC for these NWP's. Requirements for individual WQC will be determined on a case-by-case basis based on the specific projects, and additional testing, design, disposal, or BMP considerations may be required.
13. Mitigation for loss of stream resources should be in conformance with the compensatory mitigation guidance currently approved for use in Missouri, including guidance provided by the Missouri Stream Mitigation Method. Stream impacts shall require compensatory mitigation with only instream or riparian corridor credits. Compensatory mitigation shall be within the state of Missouri. This will ensure compliance with the Missouri Water Quality Standards antidegradation requirement for maintenance and protection of designated uses [10 CSR 20-7.031(3)] Mitigation guidance documents can be located online at www.nwk.usace.army.mil/Missions/RegulatoryBranch/StateofMissouri.

SPECIFIC CONDITIONS

14. Nationwide Permit 3 Maintenance
- Silt, sediment, and debris removal shall be limited to a maximum of 200 LF upstream and 200 LF downstream of structures. This will ensure compliance with the Missouri Water Quality Standards antidegradation requirement for maintenance and protection of designated uses [10 CSR 20-7.031(3)].
15. Nationwide Permit 4 Fish and Wildlife Harvesting, Enhancement, and Attraction Devices and Activities
Any inorganic or extraneous debris, such as may be found on Christmas trees shall be removed to qualify as clean, nonpolluting fill. This will ensure compliance with the Missouri's Water Quality Standards general criteria that waters shall be free from unsightly bottom deposits [10 CSR 20-7.031(4)(A)] and solid waste [10 CSR 20-7.031(4)(I)].
16. Nationwide Permit 12 Oil and Natural Gas Pipeline Activities,
Nationwide Permit 57 Electric Utility Line and Telecommunications Activities, and
Nationwide Permit 58 Utility Line Activities for Water and Other Substances
- For project crossings that must disturb a water body, work shall be conducted in such a manner as to seal off the work area from flow and minimize sediment transport. Material resulting from the activity shall not be sidecast into waters of the state for more than one month. This will ensure compliance with the Missouri Water Quality Standards antidegradation requirement for Best Management Practices [10 CSR 20-7.031(3)(B)] and general criteria requiring waters be free from substances that prevent maintenance of beneficial uses; cause unsightly color, turbidity, or toxicity; and/or impair the natural biological community [10 CSR 20-7.031(4)(B), -(C), and -(H)].
 - If Horizontal Directional Drilling is used, drilling mud and/or other materials shall not be discharged into waters of the state. Best Management Practices shall be implemented to prevent possible discharges from reaching waters of the state. In the event materials are inadvertently discharged to waters of the state, notification to the Department of Natural Resources is required within 24 hours by calling 573-634-2436. This will ensure compliance with Missouri Water Quality Standards antidegradation requirement for Best Management Practices [10 CSR 20-7.031(3)(B)] and Missouri Environmental Improvement Authority [Section 260.015, RSMo] to provide for the conservation of state air, land and water resources by the prevention of pollution and proper methods of disposal.
 - Project crossings shall be placed as close to perpendicular as possible and shall be limited to a maximum crossing length of no more than one and one-half times the width of the stream. This will ensure compliance with the Missouri antidegradation requirement for maintenance and protection of designated uses [10 CSR 20-7.031(3)] and Best Management Practices [10 CSR 20-7.031(3)(B)].

17. Nationwide Permit 14 Linear Transportation Projects

- a. The permittee shall propose and employ measures to mitigate the removal of impounded sediment (e.g., sand, gravel) in the unstable area upstream of a proposed project to prevent it from being transported downstream and/or construct a notched weir to slow the release of impounded sediment from upstream of the proposed project. This will ensure compliance with the Missouri Water Quality Standards general criteria requiring waters be free from substances causing unsightly color or turbidity [10 CSR 20-7.031(4)(C)] and physical chemical, or hydrologic changes that would impair the natural biological community [10 CSR 20-7.031(4)(H)]. Accumulated gravel may be allowed to naturally deposit into downstream plunge pool voids. Consultation with a hydrologist or other scientist is recommended if the amount of accumulated unconsolidated gravel exceeds the volume of plunge pool voids.
- b. Where this NWP is used to authorize bridge and culvert structures, stream channel work shall be limited to a maximum of 200 feet upstream and a maximum of 200 feet downstream of the bridge or culvert. For purposes of this condition, a channel modification is any activity that alters the width, depth, length and/or sinuosity of a water way. This will ensure compliance with the Missouri antidegradation requirement for maintenance and protection of designated uses [10 CSR 20-7.031(3)] and the Missouri Water Quality Standards general criterion requiring waters be free from physical, chemical, or hydrologic changes that would impair the natural biological community [10 CSR 20-7.031(4)(H)].

18. Nationwide Permit 20 Response Operations for Oil and Hazardous Substances

Oil and hazardous substance releases shall be reported to the Department of Natural Resources' Environmental Emergency Response number at 573-634-2436. Continue to report updates with regard to the containment and cleanup of releases. This will ensure compliance with Missouri Environmental Improvement Authority [Section 260.015, RSMo] to provide for the conservation of state water resources by the prevention of pollution and proper methods of disposal.

19. Nationwide Permit 33 Temporary Construction, Access and Dewatering

- a. The use of this NWP shall be limited to impacts of six months or less in duration. This will ensure compliance with the Missouri Water Quality Standards antidegradation requirements for maintenance and protection of designated uses [10 CSR 20-7.031(3)]
- b. Any removal of accumulated sediment (e.g., sand, gravel) upstream of a proposed project shall be limited to the quantity necessary to relieve any obstruction or to protect downstream habitat. The permittee must propose and employ measures to mitigate the removal of impounded sediment in the unstable area upstream of a proposed project to prevent it from being transported downstream and/or construct a notched weir to slow the release of impounded sediment from upstream of the proposed project. This will ensure compliance with the Missouri Water Quality Standards general criteria requiring waters be free from substances causing unsightly color or turbidity [10 CSR 20-7.031(4)(C)] and physical, chemical, or hydrologic changes that would impair the natural biological community [10 CSR 20-7.031(4)(H)].

20. Nationwide Permit 41 Reshaping Existing Drainage Ditches

In-channel disposal of excavated material not used for reshaping activities is prohibited. This will ensure compliance with the Missouri Water Quality Standards antidegradation requirement for Best Management Practices [10 CSR 20-7.031(3)(B) and general criteria requiring waters be free from substances that prevent maintenance of beneficial uses; cause unsightly color, turbidity or toxicity; and/or impair the natural biological community [10 CSR 20-7.031(4)(B), -(C), and -(H)].

21. Nationwide Permit 53 *Removal of Low-Head Dams*

- a. The permittee must propose and employ measures to mitigate the removal of impounded sediment (e.g., sand, gravel) in the unstable area upstream of a proposed project to prevent it from being transported downstream and/or construct a notched weir to slow the release of impounded sediment from upstream of the proposed project. This will ensure compliance with the Missouri Water Quality Standards general criteria requiring waters be free from substances causing unsightly color or turbidity [10 CSR 20-7.031(4)(C)] and physical chemical, or hydrologic changes that would impair the natural biological community [10 CSR 20-7.031(4)(H)]. Accumulated gravel may be allowed to naturally deposit into downstream plunge pool voids. Consultation with a hydrologist or other scientist is recommended if the amount of accumulated unconsolidated gravel exceeds the volume of plunge pool voids.
- b. Stream channel work shall be limited to a maximum of 100 feet upstream and a maximum of 100 feet downstream of the dam. This will ensure compliance with the Missouri Water Quality Standards antidegradation requirement for maintenance and protection of designated uses [10 CSR 20-7.031(3)] and the Missouri Water Quality Standards general criterion requiring waters to be free from physical, chemical, or hydrologic changes that would impair the natural biological community [10 CSR 20-7.031(4)(H)].
- c. Restoration of the stream channel to its former, natural state is authorized. Individual WQC is required for non-natural channel modifications. This will ensure compliance with the Missouri Water Quality Standards general criteria requiring waters be free from physical chemical, or hydrologic changes that would impair the natural biological community [10 CSR 20-7.031(4)(H)]. For purposes of this condition, a channel modification is any activity that alters the width, depth, length and/or sinuosity of a water way.

Unless the Department agrees to an alternative, requests for WQC should be sent electronically to wpsc401cert@dnr.mo.gov [Section 644.026.1(26), RSMo and 10 CSR 20-6.060(5)]. A request for WQC shall include all required information for a complete request for certification in compliance with 40 CFR Part 121. The Department may request additional information prior to providing a WQC decision to ensure Missouri water quality requirements are met, such as a response to comments from the Department, other resource agencies, and/or the public; planned compensatory mitigation; and/or an analysis of practicable alternatives.

An issued WQC, whether programmatically or individually issued, becomes part of and expires with the Section 404 and/or Section 10 permit unless explicitly stated in the WQC.

Acquisition of NWP and the attendant WQCs shall not be construed or interpreted to imply the requirements for other permits are replaced or superseded, including Clean Water Act Section 402 National Pollutant Discharge Elimination System Permits required under Missouri Clean Water Law [Sections 644.026.1 and 644.051, RSMo] for land disturbance or return water from material deposition. Permits or any other requirements shall remain in effect. Project proponents with questions are encouraged to contact the Department of Natural Resources' regional office in the project area. A regional office map with contact information is located at <https://dnr.mo.gov/about-us/division-environmental-quality/regional-office>.

Some localities are covered pursuant to Municipal Separate Storm Sewer System Permits with measures to control and possibly treat stormwater. If the project is located within one of these localities, project proponents must comply with all stormwater requirements of the locality's Stormwater Management Plan and any related ordinances. This ensures compliance with CWA Section 402 National Pollutant Discharge Elimination System Permit requirements and the Missouri Clean Water Law [Chapter 644, RSMo].

The Department encourages, but does not require, permittees to consider environmentally-friendly design techniques to include stormwater management strategies that maintain or restore the original site hydrology through infiltration, evaporation, or reuse of stormwater. Designs might include using porous pavement or creating vegetated swales and/or rain gardens. More information can be found at these websites: www.epa.gov/owow/NPS/lid/ and www.lid-stormwater.net/lid_techniques.htm.

The Department encourages the use of native vegetation to protect impacted areas from future water quality concerns. Native vegetation has evolved with Missouri's geology, climate, and wildlife to occur within a region as a result of natural processes rather than human intervention. For areas where direct impacts to streams are to be avoided, the Department recommends a minimum riparian buffer strip width of 50 feet as measured from top of bank.

The Department encourages the use of Horizontal Directional Drilling for stream and wetland crossings when practicable. If properly utilized, Horizontal Directional Drilling is an alternative to more traditional, open-trench methods and can result in significant minimization and/or complete avoidance of aquatic resource impacts.

The following publication provides guidance on how to protect water quality through Best Management Practices on project sites. For more information, please read: "Protecting Water Quality: A field guide to erosion, sediment and stormwater best management practices for development sites in Missouri and Kansas" dated January 2011 and located online at <https://dnr.mo.gov/document-search/protecting-water-quality-field-guide>.

To help determine if a proposed activity could encounter species or sites of conservation concern within or near a project, including those that have not been recorded, the project proponent is encouraged to visit:

- Missouri Department of Conservation's "Natural Heritage Review" website at <https://naturalheritagereview.mdc.mo.gov/>.
- U.S. Fish and Wildlife Service's "Information, Planning and Conservation" website at <http://ecos.fws.gov/ipac/>.

If the proposed project encounters and will potentially affect a species of concern, please promptly report it to the Missouri Department of Conservation and the U.S. Fish and Wildlife Service.

For more information
Missouri Department of Natural Resources
Water Protection Program
P.O. Box 176
Jefferson City, MO 65102-0176
wpsc401cert@dnr.mo.gov
800-361-4827 or 573-522-4502
<https://dnr.mo.gov/water>



DEPARTMENT OF THE ARMY
ST. LOUIS DISTRICT CORPS OF ENGINEERS
1222 SPRUCE STREET
ST. LOUIS, MISSOURI 63103-2833

REPLY TO
ATTENTION OF:

November 19, 2024

Regulatory Division
File Number: MVS-2024-534

Ms. Carolyn Wisecarver
Pike Lincoln County Port Authority
316 W Main Street
Bowling Green, MO 63334

Dear Ms. Wisecarver:

We have reviewed your application concerning the proposed dock wall maintenance repairs at the Clarksville Site Redevelopment project located near Mississippi River mile 274.4 in Pike County, Missouri. Proposed repairs include removing the existing concrete cap, installing a new sheet pile wall approximately 3 feet further into the harbor, and filling the space between the new and existing walls with crushed aggregate. Following installation, a new concrete cap may be installed adjacent to the wall, or if construction bids exceed available funding, the cap will be compacted aggregate. This letter authorizes the proposed repairs resulting in 450 linear feet of impact by the placement of 0.03-acre or 700 cubic yards of fill within the slack-water harbor adjacent to the Mississippi River. The project is located in Sections 7 & 8, Township 53 North, and Range 1 East, in Pike County, Missouri.

The Corps of Engineers has determined that this activity is authorized under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act by existing Department of the Army nationwide permit for Maintenance (NWP 3), described in the Federal Register, Reissuance of Nationwide Permits; Notice (86 FR Page 73574), Appendix A (B)(3). This verification is valid until March 14, 2026, unless the District Engineer modifies, suspends, or revokes the nationwide permit authorizations in accordance with 33 CFR 330.5(d). If you commence, or are under contract to commence, this activity before the nationwide permits expire, you will have 12 months after the date the nationwide permits expire or are modified, suspended, or revoked, to complete the activity under the present terms and conditions of these nationwide permits. **Enclosed is a copy of the nationwide permit and conditions and management practices with which you must comply.**

In accordance with General Condition number 30 of the Nationwide Permit, a compliance certification (Attachment A of this package) must be completed within 30 days of project completion or the permit issuance may be revoked and considered null and void.

The Missouri Department of Natural Resources Water Protection Program (MDNR/WPP) has conditionally issued general Section 401 Water Quality Certification for this nationwide permit, subject to special conditions (see enclosure). These conditions are part of the Corps permit. If you have any questions regarding the water quality certification conditions, you may call MDNR/WPP at 573-522-1131 or wpsc401cert@dnr.mo.gov.

This determination is applicable only to the permit program administered by the Corps of Engineers. It does not eliminate the need to obtain other federal, state or local approvals before beginning work. This permit verification does not convey property rights, nor authorize any injury to property or invasion of other rights. You are reminded that the permit is based on submitted plans. Variations from these plans shall constitute a violation of Federal law and may result in the revocation of the permit. If this nationwide permit is modified, reissued, or revoked during this period, the provisions described at 33 CFR 330.6(b) will apply.

If you have any questions, please contact Brett Burkart at (314) 320-8129. Please refer to file number **MVS-2024-534**. The St. Louis District Regulatory Branch is committed to providing quality and timely service to our customers. In an effort to improve customer service, please take a moment to go to our Customer Service Survey found on our web site at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey.

Sincerely,

A handwritten signature in cursive script that reads "Jaynie G. Doerr".

Jaynie Doerr
Missouri Branch Chief
Regulatory Division

Enclosures

Nationwide Permit 3
401 Water Quality Certification

ATTACHMENT A

COMPLETED WORK CERTIFICATION

Date of Issuance: November 19, 2024

File Number: MVS-2024-534

Name of Permittee: Pike Lincoln County Port Authority

River Basin/County/State: Upper Mississippi-Salt/Pike/Missouri

Project Manager: Brett Burkart

Upon completion of this activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to the following address:

**U.S. Army Corps of Engineers
Attn: Regulatory Division (RD)
1222 Spruce Street
St. Louis, Missouri 63103-2833**

(Please note that your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with this permit, you are subject to permit suspension, modification or revocation.)

I hereby certify that the work authorized by the above referenced permit has been completed in accordance with the terms and conditions of the said permit, and required mitigation was completed in accordance with the permit conditions.

Signature of Permittee

Date



U.S Army Corps
Of Engineers

2022 Nationwide Permit Summary

Issued: February 25, 2022

Expires: March 14, 2026

No. 3. Maintenance

(NWP Final Notice, 86 FR, 73573)

(a) The repair, rehabilitation, or replacement of any previously authorized, currently serviceable structure or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3, provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Minor deviations in the structure's configuration or filled area, including those due to changes in materials, construction techniques, requirements of other regulatory agencies, or current construction codes or safety standards that are necessary to make the repair, rehabilitation, or replacement are authorized. This NWP also authorizes the removal of previously authorized structures or fills. Any stream channel modification is limited to the minimum necessary for the repair, rehabilitation, or replacement of the structure or fill; such modifications, including the removal of material from the stream channel, must be immediately adjacent to the project. This NWP also authorizes the removal of accumulated sediment and debris within, and in the immediate vicinity of, the structure or fill. This NWP also authorizes the repair, rehabilitation, or replacement of those structures or fills destroyed or damaged by storms, floods, fire or other discrete events, provided the repair, rehabilitation, or

replacement is commenced, or is under contract to commence, within two years of the date of their destruction or damage. In cases of catastrophic events, such as hurricanes or tornadoes, this two-year limit may be waived by the district engineer, provided the permittee can demonstrate funding, contract, or other similar delays.

(b) This NWP also authorizes the removal of accumulated sediments and debris outside the immediate vicinity of existing structures (e.g., bridges, culverted road crossings, water intake structures, etc.). The removal of sediment is limited to the minimum necessary to restore the waterway in the vicinity of the structure to the approximate dimensions that existed when the structure was built, but cannot extend farther than 200 feet in any direction from the structure. This 200 foot limit does not apply to maintenance dredging to remove accumulated sediments blocking or restricting outfall and intake structures or to maintenance dredging to remove accumulated sediments from canals associated with outfall and intake structures. All dredged or excavated materials must be deposited and retained in an area that has no waters of the United States unless otherwise specifically approved by the district engineer under separate authorization.

(c) This NWP also authorizes temporary structures, fills, and work,

including the use of temporary mats, necessary to conduct the maintenance activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges of dredged or fill material, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. After conducting the maintenance activity, temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

(d) This NWP does not authorize maintenance dredging for the primary purpose of navigation. This NWP does not authorize beach restoration. This NWP does not authorize new stream channelization or stream relocation projects.

Notification: For activities authorized by paragraph (b) of this NWP, the permittee must submit a pre-construction notification to the district engineer prior to commencing the activity (see general condition 32). The pre-construction notification must include information regarding the original design capacities and configurations of the outfalls, intakes, small impoundments, and canals. (Authorities: Section 10 of the Rivers

and Harbors Act of 1899 and Section 404 of the Clean Water Act (Sections 10 and 404)).

Note: This NWP authorizes the repair, rehabilitation, or replacement of any previously authorized structure or fill that does not qualify for the Clean Water Act Section 404(f) exemption for maintenance.

C. Nationwide Permit General Conditions

(NWP Final Notice, 86 FR 2867-2874)

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. Navigation. (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his or her authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.

3. Spawning Areas. Activities in spawning areas during spawning

seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas.

Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).

7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be

maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains.

The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment

Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides.

13. Removal of Temporary Structures and Fills. Temporary structures must be removed, to the maximum extent practicable, after their use has been discontinued. Temporary fills must be

removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers. (a) No NWP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

(b) If a proposed NWP activity will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, the permittee must submit a pre-construction notification (see general condition 32). The district engineer will coordinate the PCN with the Federal agency with direct management responsibility for that

river. Permittees shall not begin the NWP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river has determined in writing that the proposed NWP activity will not adversely affect the Wild and Scenic River designation or study status.

(c) Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: <http://www.rivers.gov/>.

17. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

18. Endangered Species. (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify designated critical habitat or critical habitat proposed for such designation. No activity is authorized under any NWP which “may affect” a listed species or critical habitat, unless ESA section 7 consultation addressing the consequences of the proposed activity on listed species or critical habitat has been completed. See 50 CFR 402.02 for the definition of “effects of the action” for the purposes of ESA section 7 consultation, as well as 50 CFR 402.17, which provides further explanation under ESA section 7 regarding “activities

that are reasonably certain to occur” and “consequences caused by the proposed action.”

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA (see 33 CFR 330.4(f)(1)). If pre-construction notification is required for the proposed activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat or critical habitat proposed for such designation, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation), the pre-construction notification must include the name(s) of the endangered or threatened species (or species

proposed for listing) that might be affected by the proposed activity or that utilize the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed activity. The district engineer will determine whether the proposed activity “may affect” or will have “no effect” to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. For activities where the non-Federal applicant has identified listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have “no effect” on listed species (or species proposed for listing or designated critical habitat (or critical habitat proposed for such designation), or until ESA section 7 consultation or conference has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation or conference with the FWS or NMFS the district engineer may add species-specific permit conditions to the NWP.

(e) Authorization of an activity by an NWP does not authorize the “take” of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with “incidental

take” provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word “harm” in the definition of “take” means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) If the non-federal permittee has a valid ESA section 10(a)(1)(B) incidental take permit with an approved Habitat Conservation Plan for a project or a group of projects that includes the proposed NWP activity, the non-federal applicant should provide a copy of that ESA section 10(a)(1)(B) permit with the PCN required by paragraph (c) of this general condition. The district engineer will coordinate with the agency that issued the ESA section 10(a)(1)(B) permit to determine whether the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation conducted for the ESA section 10(a)(1)(B) permit. If that coordination results in concurrence from the agency that the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation for the ESA section 10(a)(1)(B) permit, the district engineer does not need to conduct a separate ESA section 7 consultation for the proposed NWP activity. The district engineer will notify the non-federal applicant within 45 days of receipt of a complete pre-construction notification

whether the ESA section 10(a)(1)(B) permit covers the proposed NWP activity or whether additional ESA section 7 consultation is required.

(g) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their world wide web pages at <http://www.fws.gov/> or <http://www.fws.gov/ipac> and <http://www.nmfs.noaa.gov/pr/species/esa/> respectively.

19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for ensuring that an action authorized by an NWP complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting the appropriate local office of the U.S. Fish and Wildlife Service to determine what measures, if any, are necessary or appropriate to reduce adverse effects to migratory birds or eagles, including whether “incidental take” permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

20. Historic Properties. (a) No activity is authorized under any NWP which may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)(1)). If pre-construction notification is required for the proposed NWP activity, the

Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation is not submitted, then additional consultation under section 106 may be necessary. The respective federal agency is responsible for fulfilling its obligation to comply with section 106.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the NWP activity might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties might have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties.

Assistance regarding information on the location of, or potential for, the presence of historic properties can be sought from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal representative, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good

faith effort to carry out appropriate identification efforts commensurate with potential impacts, which may include background research, consultation, oral history interviews, sample field investigation, and/or field survey. Based on the information submitted in the PCN and these identification efforts, the district engineer shall determine whether the proposed NWP activity has the potential to cause effects on the historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). Section 106 consultation is required when the district engineer determines that the activity has the potential to cause effects on historic properties. The district engineer will conduct consultation with consulting parties identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: No historic properties affected, no adverse effect, or adverse effect.

(d) Where the non-Federal applicant has identified historic properties on which the proposed NWP activity might have the potential to cause effects and has so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects to historic properties or that NHPA section 106 consultation has been completed. For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify

the non-Federal applicant that he or she cannot begin the activity until section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. Permittees that discover any previously unknown historic, cultural or archeological

remains and artifacts while accomplishing the activity authorized by an NWP, they must immediately notify the district engineer of what they have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, 52, 57 and 58 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, 38, and 54, notification is required in accordance with general condition 32,

for any activity proposed by permittees in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after she or he determines that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory

mitigation is required to ensure that the activity results in only minimal adverse environmental effects.

(d) Compensatory mitigation at a minimum one-for-one ratio will be required for all losses of stream bed that exceed 3/100-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. This compensatory mitigation requirement may be satisfied through the restoration or enhancement of riparian areas next to streams in accordance with paragraph (e) of this general condition. For losses of stream bed of 3/100-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects. Compensatory mitigation for losses of streams should be provided, if practicable, through stream rehabilitation, enhancement, or preservation, since streams are difficult-to-replace resources (see 33 CFR 332.3(e)(3)).

(e) Compensatory mitigation plans for NWP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, the restoration or maintenance/protection of riparian areas may be the only compensatory

mitigation required. If restoring riparian areas involves planting vegetation, only native species should be planted. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to restore or maintain/protect a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or maintaining/protecting a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For

the NWPs, the preferred mechanism for providing compensatory mitigation is mitigation bank credits or in-lieu fee program credits (see 33 CFR 332.3(b)(2) and (3)). However, if an appropriate number and type of mitigation bank or in-lieu credits are not available at the time the PCN is submitted to the district engineer, the district engineer may approve the use of permittee-responsible mitigation.

(2) The amount of compensatory mitigation required by the district engineer must be sufficient to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f).)

(3) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option considered for permittee-responsible mitigation.

(4) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) through (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)). If permittee-responsible mitigation is the proposed

option, and the proposed compensatory mitigation site is located on land in which another federal agency holds an easement, the district engineer will coordinate with that federal agency to determine if proposed compensatory mitigation project is compatible with the terms of the easement.

(5) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan needs to address only the baseline conditions at the impact site and the number of credits to be provided (see 33 CFR 332.4(c)(1)(ii)).

(6) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)).

(g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any NWP activity resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that an NWP activity already meeting the established acreage limits also satisfies the no more than minimal impact requirement for the NWPs.

(h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permittee-responsible mitigation.

When developing a compensatory mitigation proposal, the permittee must consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). For activities resulting in the loss of marine or estuarine resources, permittee-responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(i) Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse environmental effects of the activity to the no more than minimal level.

24. Safety of Impoundment

Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state or federal, dam safety criteria or have been designed by qualified persons. The district engineer may also require

documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality. (a) Where the certifying authority (state, authorized tribe, or EPA, as appropriate) has not previously certified compliance of an NWP with CWA section 401, a CWA section 401 water quality certification for the proposed discharge must be obtained or waived (see 33 CFR 330.4(c)). If the permittee cannot comply with all of the conditions of a water quality certification previously issued by certifying authority for the issuance of the NWP, then the permittee must obtain a water quality certification or waiver for the proposed discharge in order for the activity to be authorized by an NWP.

(b) If the NWP activity requires pre-construction notification and the certifying authority has not previously certified compliance of an NWP with CWA section 401, the proposed discharge is not authorized by an NWP until water quality certification is obtained or waived. If the certifying authority issues a water quality certification for the proposed discharge, the permittee must submit a copy of the certification to the district engineer. The discharge is not authorized by an NWP until the district engineer has notified the permittee that the water quality certification requirement has been satisfied by the issuance of a water quality certification or a waiver.

(c) The district engineer or certifying authority may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). If the permittee cannot comply with all of the conditions of a coastal zone management consistency concurrence previously issued by the state, then the permittee must obtain an individual coastal zone management consistency concurrence or presumption of concurrence in order for the activity to be authorized by an NWP. The district engineer or a state may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its CWA section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is authorized, subject to the following restrictions:

(a) If only one of the NWPs used to authorize the single and complete project has a specified acreage limit, the acreage loss of waters of the United States cannot exceed the acreage limit of the NWP with the

highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

(b) If one or more of the NWPs used to authorize the single and complete project has specified acreage limits, the acreage loss of waters of the United States authorized by those NWPs cannot exceed their respective specified acreage limits. For example, if a commercial development is constructed under NWP 39, and the single and complete project includes the filling of an upland ditch authorized by NWP 46, the maximum acreage loss of waters of the United States for the commercial development under NWP 39 cannot exceed 1/2-acre, and the total acreage loss of waters of United States due to the NWP 39 and 46 activities cannot exceed 1 acre.

29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

“When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will

continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.”

(Transferee)

(Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized activity was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the activity and mitigation.

The completed certification document must be submitted to the district engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later.

31. Activities Affecting Structures or Works Built by the United States. If an NWP activity also requires review by, or permission from, the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers (USACE) federally authorized Civil Works project (a "USACE project"), the prospective permittee must submit a pre-construction notification. See paragraph (b)(10) of general condition 32. An activity that requires section 408 permission and/or review is not authorized by an NWP until the appropriate Corps office issues the section 408 permission or completes its review to alter, occupy, or use the USACE project, and the district engineer issues a written NWP verification.

32. Pre-Construction Notification. (a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete.

The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed.

If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed activity;

(3) Identify the specific NWP or NWP(s) the prospective permittee wants to use to authorize the proposed activity;

(4) (i) A description of the proposed activity; the activity's purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity; and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army

authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or other mitigation measures.

(ii) For linear projects where one or more single and complete crossings require pre-construction notification, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other waters (including those single and complete crossings authorized by an NWP but do not require PCNs). This information will be used by the district engineer to evaluate the cumulative adverse environmental effects of the proposed linear project, and does not change those non-PCN NWP activities into NWP PCNs.

(iii) Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the activity and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(5) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial and intermittent streams, on the project

site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. Furthermore, the 45-day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(6) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands or 3/100-acre of stream bed and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(7) For non-federal permittees, if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat (or critical habitat proposed for such designation), the PCN must include the name(s) of those endangered or threatened species (or species proposed for listing) that might be affected by the proposed activity or utilize the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed activity. For NWP activities that

require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with the Endangered Species Act;

(8) For non-federal permittees, if the NWP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, the PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with section 106 of the National Historic Preservation Act;

(9) For an activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the PCN must identify the Wild and Scenic River or the "study river" (see general condition 16); and

(10) For an NWP activity that requires permission from, or review by, the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, the pre-construction notification must include a statement confirming that the project proponent has submitted a written request for section 408 permission from, or review by, the Corps office having jurisdiction over that USACE project.

(c) Form of Pre-Construction Notification: The nationwide permit pre-

construction notification form (Form ENG 6082) should be used for NWP PCNs. A letter containing the required information may also be used.

Applicants may provide electronic files of PCNs and supporting materials if the district engineer has established tools and procedures for electronic submittals.

(d) Agency Coordination: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the activity's adverse environmental effects so that they are no more than minimal.

(2) Agency coordination is required for: (i) All NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States; (ii) NWP 13 activities in excess of 500 linear feet, fills greater than one cubic yard per running foot, or involve discharges of dredged or fill material into special aquatic sites; and (iii) NWP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes.

(3) When agency coordination is required, the district engineer will immediately provide (e.g., via email, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (FWS, state natural resource or water quality agency, EPA, and, if appropriate, the NMFS). With the exception of NWP 37, these agencies

will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or email that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure that the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(4) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar

days of receipt of any Essential Fish Habitat conservation recommendations, as required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(5) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

D. District Engineer's Decision

1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. If a project proponent requests authorization by a specific NWP, the district engineer should issue the NWP verification for that activity if it meets the terms and conditions of that NWP, unless he or she determines, after considering mitigation, that the proposed activity will result in more than minimal individual and cumulative adverse effects on the aquatic environment and other aspects of the public interest and exercises discretionary authority to require an individual permit for the proposed activity. For a linear project, this determination will include an evaluation of the single and complete crossings of waters of the United States that require PCNs to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings of waters of the United States authorized by an NWP. If an applicant requests a waiver of an applicable limit, as provided for in NWPs 13, 36, or 54, the district engineer will only grant the

waiver upon a written determination that the NWP activity will result in only minimal individual and cumulative adverse environmental effects.

2. When making minimal adverse environmental effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. He or she will also consider the cumulative adverse environmental effects caused by activities authorized by an NWP and whether those cumulative adverse environmental effects are no more than minimal. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional or condition assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse environmental effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

3. If the proposed activity requires a PCN and will result in a loss of greater than 1/10-acre of wetlands or 3/100-

acre of stream bed, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for NWP activities with smaller impacts, or for impacts to other types of waters. The district engineer will consider any proposed compensatory mitigation or other mitigation measures the applicant has included in the proposal in determining whether the net adverse environmental effects of the proposed activity are no more than minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are no more than minimal, after considering mitigation, the district engineer will notify the permittee and include any activity-specific conditions in the NWP verification the district engineer deems necessary. Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan within 45 calendar

days of receiving a complete PCN and determine whether the proposed mitigation would ensure that the NWP activity results in no more than minimal adverse environmental effects. If the net adverse environmental effects of the NWP activity (after consideration of the mitigation proposal) are determined by the district engineer to be no more than minimal, the district engineer will provide a timely written response to the applicant. The response will state that the NWP activity can proceed under the terms and conditions of the NWP, including any activity-specific conditions added to the NWP authorization by the district engineer.

4. If the district engineer determines that the adverse environmental effects of the proposed activity are more than minimal, then the district engineer will notify the applicant either: (a) That the activity does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (b) that the activity is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal; or (c) that the activity is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse environmental effects, the activity will be authorized within the 45-day PCN period (unless additional time is required to comply with general conditions 18, 20, and/or 31), with activity-specific conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation plan or a requirement that the applicant

submit a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal. When compensatory mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan or has determined that prior approval of a final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation.

E. Further Information

1. District engineers have authority to determine if an activity complies with the terms and conditions of an NWP.
2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.
3. NWPs do not grant any property rights or exclusive privileges.
4. NWPs do not authorize any injury to the property or rights of others.
5. NWPs do not authorize interference with any existing or proposed Federal project (see general condition 31).

F. Definitions

Best management practices (BMPs):

Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural.

Compensatory mitigation: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in

certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

Currently serviceable: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Direct effects: Effects that are caused by the activity and occur at the same time and place.

Discharge: The term “discharge” means any discharge of dredged or fill material into waters of the United States.

Ecological reference: A model used to plan and design an aquatic habitat and riparian area restoration, enhancement, or establishment activity under NWP 27. An ecological reference may be based on the structure, functions, and dynamics of an aquatic habitat type or a riparian area type that currently exists in the region where the proposed NWP 27 activity is located. Alternatively, an ecological reference may be based on a conceptual model for the aquatic habitat type or riparian area type to be restored, enhanced, or established as a result of the proposed NWP 27 activity. An ecological reference takes into account the range of variation of the aquatic habitat type or riparian area type in the region.

Enhancement: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other

aquatic resource function(s).

Enhancement does not result in a gain in aquatic resource area.

Establishment (creation): The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

High Tide Line: The line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

Historic Property: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that

meet the National Register criteria (36 CFR part 60).

Independent utility: A test to determine what constitutes a single and complete non-linear project in the Corps Regulatory Program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

Indirect effects: Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

Loss of waters of the United States: Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. The loss of stream bed includes the acres of stream bed that are permanently adversely affected by filling or excavation because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters or wetlands for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and

services. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities that do not require Department of the Army authorization, such as activities eligible for exemptions under section 404(f) of the Clean Water Act, are not considered when calculating the loss of waters of the United States.

Navigable waters: Waters subject to section 10 of the Rivers and Harbors Act of 1899. These waters are defined at 33 CFR part 329.

Non-tidal wetland: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

Open water: For purposes of the NWPs, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of flowing or standing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of "open waters" include rivers, streams, lakes, and ponds.

Ordinary High Water Mark: The term ordinary high water mark means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial

vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Perennial stream: A perennial stream has surface water flowing continuously year-round during a typical year.

Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

Pre-construction notification: A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction notification may be voluntarily submitted in cases where pre-construction notification is not required and the project proponent wants confirmation that the activity is authorized by nationwide permit.

Preservation: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of

returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: Re-establishment and rehabilitation.

Riffle and pool complex: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a coarse substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

Riparian areas: Riparian areas are lands next to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems,

through which surface and subsurface hydrology connects riverine, lacustrine, estuarine, and marine waters with their adjacent wetlands, non-wetland waters, or uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 23.)

Shellfish seeding: The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.

Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term “single and complete project” is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the United States (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies,

and crossings of such features cannot be considered separately.

Single and complete non-linear project:

For non-linear projects, the term “single and complete project” is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete non-linear project must have independent utility (see definition of “independent utility”). Single and complete non-linear projects may not be “piecemealed” to avoid the limits in an NWP authorization.

Stormwater management: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

Stormwater management facilities:

Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

Stream bed: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

Stream channelization: The manipulation of a stream's course,

condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized jurisdictional stream remains a water of the United States.

Structure: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

Tidal wetland: A tidal wetland is a jurisdictional wetland that is inundated by tidal waters. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line.

Tribal lands: Any lands title to which is either: (1) Held in trust by the United States for the benefit of any Indian tribe or individual; or (2) held by any Indian tribe or individual subject to restrictions by the United States against alienation.

Tribal rights: Those rights legally accruing to a tribe or tribes by virtue of inherent sovereign authority, unextinguished aboriginal title, treaty, statute, judicial decisions, executive order or agreement, and that give rise to legally enforceable remedies.

Vegetated shallows: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.

Waterbody: For purposes of the NWPs, a waterbody is a “water of the United States.” If a wetland is adjacent to a waterbody determined to be a water of the United States, that waterbody and any adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)).

FLOODPLAIN DEVELOPMENT PERMIT/APPLICATION

Application No.: 2025-010 Date: 9-19-2025

TO THE ADMINISTRATOR: The undersigned hereby makes application for a permit to develop in the Special Flood Hazard Area (SFHA) or "floodplain." The work to be performed, including flood protection works, is as described below and in attachments hereto. The undersigned agrees that all such work shall be in accordance with the requirements of the Floodplain Management Ordinance and with all other applicable county/city ordinances, federal programs, and the laws and regulations of the State of Missouri.

Owner or Agent: Pike Lincoln County Port Authority Date: 9.19.25 Builder: UNKNOWN
 Address: 314 W. Main St., Bowling Green, MO Address: TBA
 Telephone Number: 523 324 4297 Telephone Number: _____

SITE DATA

1. Location: _____ 1/4; _____ 1/4; Section 748; Township 53 N; Range 1 East
 Street Address: 14561 MO-29 NEAR RIVER MILE 274.4
2. Type of Development: Filling ☒ Grading ☐ Excavation ☐ Minimum Improvement ☐
 Routine Maintenance ☐ Substantial Improvement ☐ New Construction ☒ Other ☐
3. Description of Development: See plans
4. Premises: Structure Size 450 L ft. By 3 ft. Area of Site .03-acre Sq. Ft.
 Principal Use: load + unload barrels Accessory Uses (storage, parking, etc.): _____
5. Value of Improvement (fair market): \$ 2-4mm Pre-Improvement/Assessed Value of Structure: \$ _____
6. Is the Property Located in a Designated FLOODWAY? Yes ☒ No ☐
 IF ANSWERED YES, CERTIFICATION MUST BE PROVIDED PRIOR TO THE ISSUANCE OF A PERMIT TO DEVELOP, THAT THE PROPOSED DEVELOPMENT WILL RESULT IN NO INCREASE IN THE BASE (1%) FLOOD ELEVATIONS.
7. Is the Property Located in a Designated Floodplain FRINGE or a Floodplain (SFHA) without a Designated FLOODWAY? Yes ☒ No ☐
8. Elevation of the 1% Base Flood (ID source) _____ NGVD/NAVD
9. Elevation of the Proposed Development Site _____ NGVD/NAVD
10. Community Ordinance Elevation/Floodproofing Requirement DNA NGVD/NAVD
11. NFIP Flood Insurance Rate Map Panel(s) Number(s) _____

12. Other Permits Required? Corps of Engineer 404 Permit: Yes ☐ No ☐ Provided ☒
 State Department of Natural Resources 401 Permit: Yes ☐ No ☐ Provided ☐
 Environmental Protection Agency NPDES Permit: Yes ☐ No ☐ Provided ☐
 All Provisions of Ordinance Number 60.31, the "Floodplain Management Ordinance", shall be in Compliance.

PERMIT APPROVAL/DENIAL

Plans and Specifications Approved/Denied this 23 Day of Sept, 2025
 Signature of Property Owner or Agent: Carolyn Wisecarver Authorizing Official: Richard A. Murry
 Print Name and Title: Carolyn Wisecarver, Executive Dir. Print Name and Title: Richard A. Murry

THIS PERMIT IS ISSUED WITH THE CONDITION THAT THE LOWEST FLOOR (INCLUDING BASEMENT FLOOR) OF ANY NEW OR SUBSTANTIALLY IMPROVED RESIDENTIAL BUILDING WILL BE ELEVATED X FOOT/FEET ABOVE THE BASE FLOOD ELEVATION. IF THE PROPOSED DEVELOPMENT IS A NON-RESIDENTIAL BUILDING, THIS PERMIT IS ISSUED WITH THE CONDITION THAT THE LOWEST FLOOR (INCLUDING BASEMENT) OF A NEW OR SUBSTANTIALLY IMPROVED NON-RESIDENTIAL BUILDING WILL BE ELEVATED OR FLOODPROOFED X FOOT/FEET ABOVE THE BASE FLOOD ELEVATION.

THIS PERMIT IS USED WITH THE CONDITION THAT THE DEVELOPER/OWNER WILL PROVIDE CERTIFICATION BY A REGISTERED ENGINEER, ARCHITECT, OR LAND SURVEYOR OF THE "AS-BUILT" LOWEST FLOOR (INCLUDING BASEMENT) ELEVATION OF ANY NEW OR SUBSTANTIALLY IMPROVED BUILDING COVERED BY THIS PERMIT.

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9/19/2025

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SECTION 01 74 19

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL
9/19/2025

PART 1 GENERAL

1.1 DEFINITIONS

1.1.1 Co-mingle

The practice of placing unrelated materials together in a single container, usually for benefits of convenience and speed.

1.1.2 Construction Waste

Waste generated by construction activities, such as scrap materials, damaged or spoiled materials, temporary and expendable construction materials, and other waste generated by the workforce during construction activities.

1.1.3 Demolition Debris/Waste

Waste generated from demolition activities, including minor incidental demolition waste materials generated as a result of Intentional dismantling of all or portions of a building, to include clearing of building contents that have been destroyed or damaged.

1.1.4 Disposal

Depositing waste in a solid waste disposal facility, usually a managed landfill or incinerator, regulated in the US under the Resource Conservation and Recovery Act (RCRA).

1.1.5 Recycling

The series of activities, including collection, separation, and processing, by which products or other materials are diverted from the solid waste stream for use in the form of raw materials in the manufacture of new products sold or distributed in commerce, or the reuse of such materials as substitutes for goods made of virgin materials, other than fuel.

1.1.6 Reuse

The use of a product or materials again for the same purpose, in its original form or with little enhancement or change.

1.1.7 Salvage

Usable, salable items derived from buildings undergoing demolition or deconstruction, parts from vehicles, machinery, other equipment, or other components.

1.1.8 Source Separation

The practice of administering and implementing a management strategy to

identify and segregate unrelated waste at the first opportunity.

1.2 CONSTRUCTION WASTE MANAGEMENT

Implement a Construction Waste Management Program for the project. Take a pro-active, responsible role in the management of construction debris/waste, recycling process, disposal of demolition debris/waste, and require all subcontractors, vendors, and suppliers to participate in the Construction Waste Management Program. Establish a process for clear tracking, and documentation of construction waste and demolition debris/waste.

1.2.1 Implementation of Construction Waste Management Program

Develop and document how the Construction Waste Management Program will be implemented in a Construction Waste Management Plan. Submit a Construction Waste Management Plan. Construction waste and demolition debris/waste materials include un-used construction materials not incorporated in the final work, as well as demolition debris/waste materials from demolition activities or deconstruction activities.

1.2.2 Special Instructions

Provide on-site instruction of appropriate separation, handling, recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the projects. Designation of single source separating or commingling will be clearly marked on the containers.

1.3 SUBMITTALS

Engineer approval is required for submittals with an "E" classification. Submittals not having an "E" classification are for information only.

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Construction Waste Management Plan; E

1.4 CONSTRUCTION WASTE MANAGEMENT PLAN

Submit Construction Waste Management Plan within 15 days after notice to proceed. Revise and resubmit Construction Waste Management Plan as necessary, in order for construction to begin. Execute demolition or deconstruction activities in accordance with Section 02 41 00 DEMOLITION. Manage demolition debris and waste materials in accordance with the approved construction waste management plan.

An approved Construction Waste Management Plan will not relieve the Contractor of responsibility for compliance with applicable environmental regulations. Ensure all subcontractors receive a copy of the approved Construction Waste Management Plan.

1.5 COLLECTION

Collect, store, protect, and handle reusable and recyclable materials at the site in a manner which prevents contamination, and provides protection from the elements to preserve their usefulness. Provide receptacles and

storage areas designated specifically for recyclable and reusable materials and label them clearly and appropriately to prevent contamination from other waste materials. Keep receptacles or storage areas neat and clean.

Handle hazardous waste and hazardous materials in accordance with applicable regulations and coordinate with Section 01 57 19 TEMPORARY ENVIRONMENTAL CONTROLS. Separate materials by one of the following methods described herein:

1.5.1 Source Separation Method

Separate waste products and materials that are recyclable from trash and sort as described below into appropriately marked separate containers and then transport to the respective recycling facility for further processing. Deliver materials in accordance with recycling or reuse facility requirements (e.g., free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process). Separate materials into the category types as defined in the Construction Waste Management Plan.

1.5.2 Co-Mingled Method

Place waste products and recyclable materials into a single container and then transport to an authorized recycling facility, which meets all applicable requirements to accept and dispose of recyclable materials in accordance with all applicable local, state and federal regulations. The Co-mingled materials must be sorted and processed in accordance with the approved Construction Waste Management Plan.

1.6 DISPOSAL

Control accumulation of waste materials and trash. Recycle or dispose of collected materials off-site regularly and in compliance with waste management procedures as described in the waste management plan. Except as otherwise specified in other sections of the specifications, dispose of in accordance with the following:

1.6.1 Reuse

Give first consideration to reusing construction and demolition materials as a disposition strategy. Recover for reuse materials, products, and components as described in the approved Construction Waste Management Plan.

1.6.2 Recycle

Recycle non-hazardous construction and demolition/debris materials that are not suitable for reuse.

1.6.3 Waste

Dispose by landfill or incineration only those waste materials with no practical use, economic benefit, or recycling opportunity.

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SECTION 01 78 00

CLOSEOUT SUBMITTALS
9/19/2025

PART 1 GENERAL

1.1 DEFINITIONS

1.1.1 As-Built Drawings

As-built drawings are the marked-up drawings, maintained by the Contractor on-site, that depict actual conditions and deviations from the Contract Documents. These deviations and additions may result from coordination required by, but not limited to: contract modifications; official responses to submitted Requests for Information (RFI's); direction from the Engineer; design that is the responsibility of the Contractor, and differing site conditions. Maintain the as-builts throughout construction as red-lined hard copies or PDFs on site. These files serve as the basis for the creation of the record drawings.

1.2 SUBMITTALS

Engineer approval is required for submittals with an "E" classification. Submittals not having a "E" classification are for information only.

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-11 Closeout Submittals

As-Built Drawings; E

Final Approved Shop Drawings; E

As-Built Construction Contract Specifications; E

1.3 QUALITY CONTROL

Additions and corrections to the contract drawings must be equal in quality and detail to that of the originals.

PART 2 PRODUCTS

2.1 PDF AS-BUILT FILES

Provide electronic PDF "plots" of all contract drawings sheets associated with the as-built drawing submittal. Compile and organize the PDF set to match the contract drawings.

2.2 REDLINES AND MARKUPS

Provide PDFs of the current working redlines and/or markups complying with the as-builts drawing and markup requirements contained in this specification.

PART 3 EXECUTION**3.1 AS-BUILT DRAWINGS**

Provide and maintain a minimum of two black line print copies of the PDF contract drawings for As-Built Drawings. Maintain the as-builts throughout construction as red-lined hard copies on site and red-lined PDF files. Submit As-Built Drawings for review and approval.

3.1.1 Markup Guidelines

Make comments and markup the drawings complete without reference to letters, memos, or materials that are not part of the As-Built drawing. Show what was changed, how it was changed, where item(s) were relocated and change related details. These working as-built markup prints must be neat, legible and accurate as follows:

- a. Use base colors of red, green, and blue. Color code for changes as follows:
 - (1) Special (Blue) - Items requiring special information, coordination, or special detailing or detailing notes.
 - (2) Deletions (Red) - Over-strike deleted graphic items (lines), lettering in notes and leaders.
 - (3) Additions (Green) - Added items, lettering in notes and leaders.
- b. Provide a legend if colors other than the "base" colors of red, green, and blue are used.
- c. Use frequent written explanations on markup drawings to describe changes. Do not totally rely on graphic means to convey the revision.
- d. Use legible lettering and precise and clear digital values when marking prints. Clarify ambiguities concerning the nature and application of change involved.
- e. Wherever a revision is made, also make changes to related section views, details, legend, profiles, plans and elevation views, schedules, notes and call out designations, and mark accordingly to avoid conflicting data on all other sheets.
- f. For deletions, cross out all features, data and captions that relate to that revision.
- g. For changes on small-scale drawings and in restricted areas, provide large-scale inserts, with leaders to the applicable location.
- h. Indicate one of the following when attaching a print or sketch to a markup print:
 - 1) Add an entire drawing to contract drawings
 - 2) Change the contract drawing to show changes on the drawing.
 - 3) Provided for reference only to further detail the initial design.
- i. Incorporate all shop and fabrication drawings into the markup drawings.

3.2 FINAL APPROVED SHOP DRAWINGS

Submit final approved project shop drawings.

3.3 CONSTRUCTION CONTRACT SPECIFICATIONS

Submit final PDF file record construction contract specifications, including revisions. Markup specifications as required to reflect any changes. Comply with markup requirements for as-built drawings indicated herein.

3.4 CLEANUP

Remove waste and surplus materials, rubbish and construction facilities from the site. Recycle, salvage, and return construction and demolition waste from project in accordance with Section 01 57 19 TEMPORARY ENVIRONMENTAL CONTROLS, and 01 74 19 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.

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SECTION 02 41 00

DEMOLITION
9/19/2025

PART 1 GENERAL

1.1 PAYMENT

Payment for costs associated with demolition, which includes all work identified within this section and other operations incidental thereto in order to complete the work, will be included in Bid Item 0002 - DEMOLITION. Refer to Section 01 20 00 PRICE AND PAYMENT PROCEDURES.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)

29 CFR 1910.1000

Toxic and Hazardous Substances - Air Contaminants

29 CFR 1926.55

Occupation Health and Environmental Controls - Gases, vapors, fumes, dust, and mists.

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

40 CFR 261

Identification and Listing of Hazardous Waste

1.3 PROJECT DESCRIPTION

1.3.1 Definitions

1.3.1.1 Demolition

Demolition is the process of tearing apart and removing any feature of a facility together with any related handling and disposal operations.

1.3.1.2 Demolition Plan

Demolition Plan is the planned steps and processes for managing demolition activities and identifying the required sequencing activities and disposal mechanisms.

1.3.2 Demolition/Deconstruction Plan

Prepare a [Demolition Plan](#) and submit proposed demolition and removal procedures for approval before work is started. Include in the plan procedures for careful removal and disposition of materials, coordination with other work in progress, a disconnection schedule of utility services, a detailed description of methods and equipment to be used for each operation and of the sequence of operations. Coordinate with Waste

Management Plan in accordance with Section 01 74 19 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL. Provide procedures for safe conduct of the work. Plan must be approved the Engineer prior to work beginning.

In Demolition Plan, include information that outlines the procedures planned for removing portions of the existing site features identified on the Project Plans as "to be removed", "to be partially removed", and/or "to be removed as required" to accommodate the required work. Identify specific equipment and procedures to be used for the proposed demolition operations as well as the proposed procedures for keeping debris from falling into the river/harbor.

1. Detail the planned sequence of the proposed demolition work. The proposed sequence to be followed must account for removal of the existing structure as required to allow for completion of the proposed work while ensuring both global and local stability of the existing structures to remain. If demolition work is performed concurrently with the installation of proposed work, then the Demolition Plan shall address how the Contractor plans to support and protect newly placed structural elements from undesirable loading conditions, movements, deflections, and/or settlements resulting from the ongoing demolition work. Additionally, the Demolition Plan shall detail procedures the Contractor will use to provide local and global structural stability of any newly placed structural elements which will be in place temporarily during demolition operations and prior to complete installation of the proposed structure.

2. Identify the equipment to be used to complete the demolition work.

3. Provide a detailed plan of the conduct of the proposed demolition operations including the following:

a. Implementation of any required supplemental shoring or bracing system needed to stabilize any previously installed improvements to remain while the demolition work is being performed. All temporary shoring or bracing shall be the contractor's responsibility to design and implement.

b. If the demolition activities are performed concurrently with the construction of proposed new improvements, identification of any proposed temporary shoring and/or bracing required to maintain the verticality and integrity of newly placed steel sheet piling as well as previously installed improvements in a partially constructed state that can be identified as incomplete;

c. A cross section and plan confirming the Contractor's proposed vertical and horizontal limits of the planned demolition activities based on the Contractor's interpretation of the Contract Documents;

d. A summary of the planned procedures that the Contractor will take to monitor newly placed improvements to ensure that any undesirable loading conditions, movements, deflections, and/or settlements are not occurring during performance of the demolition work.

All waste disposal must be conducted in accordance with applicable Federal, State, and Local laws and regulations.

1.3.3 General Requirements

Do not begin demolition until authorization is received from the Port Authority.

Remove rubbish and debris from the project site; do not allow accumulations of rubbish and debris on the Project Site. The work includes demolition and removal of resulting rubbish and debris. Remove rubbish and debris from Project Site periodically, unless otherwise directed. Store materials that cannot be removed daily in areas specified by the Port Authority. In the interest of occupational safety and health, perform the work in a safe manner and in accordance with the procedures outlined in the Contractor's approved Demolition Plan.

1.4 ITEMS TO REMAIN IN PLACE

Protect existing vegetation, structures, equipment, utilities, and improvements. Take necessary precautions to avoid damage to existing items to remain in place, to be reused, or to remain the property of the Port Authority. Use procedures of demolition and construction suitable for the proposed work and designed to maintain structural integrity of the existing structures to remain during all construction operations. Repair or replace damaged items as approved by the Engineer. Coordinate the work of this section with all other work indicated. Construct and maintain shoring, bracing, and supports as required. All required shoring, bracing, and support elements shall be designed and sealed by a Professional Engineer licensed in the State of Missouri and shall be approved by the Engineer prior to work beginning. Ensure that structural elements are not overloaded. Increase structural supports or add new supports as may be required as a result of any cutting, removal, deconstruction, or demolition work performed under this contract. Do not overload structural elements and surfaces to remain. Provide new supports and reinforcement for existing construction weakened by demolition, deconstruction, or removal work. Repairs, reinforcement, or structural replacement require approval by the Engineer prior to performing such work.

1.4.1 Existing Construction Limits and Protection

Do not disturb existing construction beyond the extent indicated or necessary for installation of new construction. Provide temporary shoring and bracing for support of structural components to prevent settlement or other movement. Provide protective measures to control accumulation and migration of dust and dirt in all work areas. Remove dust, dirt, and debris from work areas daily.

1.4.2 Weather Protection

For portions of the existing structures to remain, protect components from the weather at all times. The structural design of required shoring, bracing, and support elements shall consider the potential for inclement weather to occur during demolition and construction operations.

1.4.3 Utility Service

Maintain existing utilities indicated to stay in service and protect against damage during demolition and deconstruction operations. Coordinate all necessary utility disconnects and/or relocations with the City of Clarksville and the Port Authority.

1.5 BURNING

The use of burning at the project site for the disposal of refuse and debris will not be permitted.

1.6 SUBMITTALS

Engineer approval is required for submittals with an "E" classification. Submittals not having an "E" classification are for information only. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Demolition Plan; E

Existing Conditions

1.7 QUALITY ASSURANCE

Comply with federal, state, and local hauling and disposal regulations. Use of explosives will not be permitted.

1.7.1 Dust and Debris Control

Prevent the spread of dust and debris and avoid the creation of a nuisance or hazard in the surrounding area. Occupational exposures cannot exceed the requirements in 29 CFR 1910.1000 and 29 CFR 1926.55. Use of water will not be permitted when it will result in, or create, hazardous or objectionable conditions such as ice, flooding, and/or pollution.

1.8 PROTECTION

1.8.1 Traffic Control Signs

Where driver safety is endangered in the area of removal work, use traffic barricades with flashing lights. Anchor barricades in a manner to prevent displacement by wind.

1.8.2 Protection of Personnel

Before, during and after the demolition work continuously evaluate the condition of the structure being demolished and take immediate action to protect all personnel working in and around the project site. No area, section, component, or other structural element will be allowed to be left standing without sufficient bracing, shoring, or lateral support to prevent collapse or failure while workmen remove debris or perform other work in the immediate area.

1.8.3 Protection of Structures

Structural components that are designed and constructed to stand without lateral support or shoring, and are determined to be in stable condition, shall remain standing without additional bracing, shoring, or lateral support until demolished, unless directed otherwise by the Engineer. The Contractor shall ensure that no elements determined to be unstable are left unsupported and shall be responsible for placing and securing bracing, shoring, or lateral supports as required as a result of any demolition work performed under this Contract.

1.8.4 Protection of Existing Property

Before beginning any demolition work, the Contractor shall survey the site

and examine the drawings and specifications to determine the extent of the work. The Contractor shall take necessary precautions to avoid damage to existing privately owned property, items to remain in place, items to be reused, or items that are to remain the property of the Port Authority. Any damaged items shall be repaired or replaced as approved by the Port Authority. The Contractor shall coordinate the work of this section with all other work and shall construct and maintain shoring, bracing, and supports as required. The Contractor shall ensure that structural elements are not overloaded and shall be responsible for increasing structural supports or adding new supports as may be required as a result of any cutting, removal, or demolition work performed under this Contract.

1.8.5 Environmental Protection

The work shall comply with the requirements of 01 57 19 TEMPORARY ENVIRONMENTAL CONTROLS.

1.9 RELOCATIONS

Perform the removal and reinstallation of relocated items as indicated with workmen skilled in the trades involved. Repair or replace items to be relocated which are damaged by the Contractor with new undamaged items as approved by the Port Authority.

1.10 EXISTING CONDITIONS

Before beginning any demolition or deconstruction work, survey the site and examine the drawings and specifications to determine the extent of the work. Record existing conditions in the presence of the Port Authority showing the condition of structures and other facilities adjacent to areas of alteration or removal. Photographs or electronic images with a minimum resolution of 3072 x 2304 pixels, capable of a print resolution of 300 dpi, will be acceptable as a record of existing conditions. Include in the record the elevation of the top of foundation walls, slab elevations, possible conflicting electrical conduits, plumbing lines, the location and extent of existing cracks and other damage and description of surface conditions that exist prior to starting work. It is the Contractor's responsibility to verify and document all required outages which will be required during the course of work, and to note these outages on the record document. Submit survey results to the Port Authority.

1.11 USE OF EXPLOSIVES

Use of explosives will not be permitted.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 HAZARDOUS MATERIALS

Unforeseen hazardous materials may exist within or around the existing structure. Exercise extreme care when performing demolition and salvage operations to ensure unexpected hazardous materials area not inadvertently disturbed creating a potential exposure concern. If suspected hazardous materials are observed or encountered, stop work and notify the Port Authority immediately.

3.2 GENERAL

Contractor shall demolish structures in a safe, orderly manner, which includes the use of temporary rails, barricades and nets in accordance with applicable Federal, State, and Local regulations; and shall protect all adjacent structures, utilities, and services during demolition.

Precautions shall be taken to prevent damage to the existing structure which is to remain in place, to be reused, or to remain the property of Port Authority and to any proposed work constructed or installed under this Contract. Any damage to such work shall be repaired or replaced as approved by Engineers's Representative at no additional cost to Port Authority. Contractor shall ensure that structural elements are not overloaded as a result of the demolition work. Shoring, bracing, and temporary supports shall be designed, installed and maintained, as required to maintain structural integrity. All required shoring, bracing, and support elements shall be designed and sealed by a licensed Professional Engineer in the State of Missouri and shall be approved by the Engineer prior to work beginning.

Demolished materials shall be periodically disposed of off-site unless approved otherwise by the Port Authority. Demolished material must be disposed of at an approved landfill. Care shall be taken to prevent demolition material, refuse, and debris from falling into the harbor or river. Any debris or refuse which falls into the river shall be promptly removed.

3.3 EXISTING FACILITIES TO BE REMOVED

3.3.1 Structure Demolition

a. Remove existing structures indicated to be removed to the limits indicated on the Contract Drawings, as and to such additional depth where necessary to allow for the construction of the proposed structure. The actual depth of removal shall be subject to approval by the Engineer and shall be in conformance with the approved Contractor's Demolition Plan.

b. Demolish structures in a systematic manner from the top of the structure to the ground. Complete demolition work above each tier before the members on the lower level are disturbed. Demolish existing wall in small sections as required to prevent instabilities.

c. Locate demolition and deconstruction equipment throughout the structure and remove materials so as to not impose excessive loads to supporting elements.

d. Remove portions of the existing structure with caution and in a controlled manner as to avoid damage to adjacent structures that are not planned to be immediately repaired, replaced, and/or demolished under this Contract. Remove portions of the existing structure in such a manner to maintain stability of adjacent structures bordering the demolished work. If supplemental repairs and/or temporary shoring is deemed required to be installed to re-stabilize remaining portions of the existing structure that appear unstable, or are in such a condition that further deterioration of structure could affect the stability of adjacent proposed work, and/or the unstable portion is not planned to be addressed within a reasonable timeframe, repair, shore, and/or stabilize any such area at no additional cost to the Port Authority.

e. Perform existing structure removal in a responsible manner using appropriate equipment of the Contractor's choice to remove only those portions of the existing structure that is absolutely necessary to complete the proposed work without damage to adjacent structures to remain. Any removal beyond the limits shown on either the Contract Documents or the Contractor's Demolition Plan shall be approved by the Engineer prior to performing the additional removal.

3.3.1.1 Determination of Removal Limits

The approximate vertical and horizontal extents of the required demolition work are indicated on the Contract Drawings. It is understood that the actual limits of structure removal should have already been determined in advance by the Contractor and summarized within the Contractor's Demolition Plan.

The Contractor shall perform a layout of the proposed limits of existing structure removal in the field in the presence of the Engineer or Engineer's authorized representative. Do not remove portions of existing structure from the newly identified areas until the Engineer or Engineer's authorized representative provides approval to commence demolition. Upon approval of the removal limits by the Engineer or Engineer's authorized representative, and subsequent completion of existing structure removal to those previously determined limits, the Contractor shall review the newly cleared area with the Engineer or Engineer's authorized representative to determine whether additional removal is required.

3.3.1.2 Existing Structure Demolition by Mechanical Methods

Equipment shall be of the Contractor's choice to successfully complete the work without causing damage to adjacent structures or improvements to remain. The Contractor's proposed equipment for performing the work shall be included in their approved Demolition Plan. Depending upon the type of equipment used, issues relating to the generation of either noise and/or vibrations may arise during performance of the work. The Contractor is solely responsible for mitigating such issues and shall, at their own expense, retain a third-party Consultant to perform vibration monitoring services if it is eventually determined that such services will be needed to satisfy local ordinances and/or City concerns. Localized demolition near existing improvements, structures, and/or existing finished areas to remain may require hand tools and/or smaller pneumatic impact hammers to complete the required work without excess overbreak and/or damage to these adjacent structures.

3.3.1.3 Removal of Ancillary Items

Ancillary items secured to the existing structure shall be removed as required to allow for the unencumbered construction of the proposed improvements as shown on the Contract Drawings. These ancillary items shall be retained on site in order to determine ownership and to determine whether these items will be properly disposed of by the Contractor. Existing utilities located in proximity to the proposed demolition work shall be protected as required by the Contractor during removal of the existing structure. Do not interrupt, disconnect or otherwise alter existing, active utilities without the written consent of the Port Authority.

3.3.2 Utilities and Related Equipment

3.3.2.1 General Requirements

Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by the Port Authority. Do not interrupt existing utilities serving facilities occupied and used by the Port Authority except when approved in writing and then only after temporary utility services have been approved and provided. Do not begin demolition or deconstruction work until all utility disconnections have been made. Shut off and cap utilities for future use, as indicated.

3.3.2.2 Disconnecting and Relocating Existing Utilities

Coordinate all utility disconnections and/or relocations with the Port Authority and the City of Clarksville. Relocate existing utilities and terminate in a manner conforming to the nationally recognized code covering the specific utility and approved by the Port Authority. When utility lines are encountered but are not indicated on the drawings, notify the Port Authority prior to further work in that area. Remove meters and related equipment and deliver to a location in accordance with instructions of the Port Authority.

3.3.3 Paving and Slabs

Remove concrete paving and slabs as indicated. Move, grind and store pavement and slabs designated to be recycled and utilized in this project as directed by the Engineer. Remove pavement and slabs not to be used in this project from the project site at Contractor's expense.

3.3.4 Concrete

Saw concrete along straight lines to a depth of a minimum 2 inch. Make each cut in walls perpendicular to the face and in alignment with the cut in the opposite face. Break out the remainder of the concrete provided that the broken area is concealed in the finished work, and the remaining concrete is sound. At locations where the broken face cannot be concealed, grind smooth or saw cut entirely through the concrete.

3.3.5 Structural Steel

Dismantle structural steel at field connections and in a manner that will prevent bending or damage. Salvage for recycle structural steel, steel joists, girders, angles, plates, columns and shapes. Flame-cutting torches are permitted when other methods of dismantling are not practical. Transport structural steel to a designated disposal or recycling facility.

3.3.6 Miscellaneous Metal

Recycle scrap metal as part of demolition operations. Provide separate containers to collect scrap metal and transport to a scrap metal collection or recycling facility, in accordance with the 01 74 19 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.

3.4 CONCURRENT EARTH-MOVING OPERATIONS

Do not begin excavation, filling, and other earth-moving operations that are sequential to demolition work in areas occupied by structures to be demolished until all demolition in the area has been completed and debris

removed. Fill holes and other hazardous openings.

3.5 DISPOSITION OF MATERIAL

3.5.1 Hazardous Materials

If any debris and rubbish is suspected to be hazardous waste, characterize it in accordance with 40 CFR 261. If the debris and rubbish is determined to be hazardous materials notify the Port Authority.

3.5.2 Title to Materials

Except for salvaged items specified in related Sections, and for materials or equipment scheduled for salvage, all materials and equipment removed and not reused or salvaged, become the property of the Contractor and must be removed from Port Authority property. Materials approved for storage by the Port Authority must be removed before completion of the Contract. Title to materials resulting from demolition, and materials and equipment to be removed, is vested in the Contractor upon approval by the Port Authority. The Port Authority will not be responsible for the condition or loss of, or damage to, such property after contract award. Showing for sale or selling materials and equipment on site is prohibited.

3.5.3 Reuse of Materials and Equipment

Remove and store materials and equipment indicated to be reused or relocated to prevent damage, and reinstall as the work progresses. Coordinate the re-use of materials and equipment with the re-use requirements in accordance with Section 01 74 19 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.

3.5.4 Salvaged Materials and Equipment

Remove materials and equipment that are indicated to be removed by the Contractor and that are to remain the property of the Port Authority, and deliver to a storage site, as directed.

a. Salvage items and material to the maximum extent possible.

b. Store all materials salvaged for the Contractor as approved by the Port Authority and remove from Port Authority property before completion of the Contract. Coordinate the salvaged materials with tracking requirements in accordance with Section 01 74 19 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.

c. Remove salvaged items to remain the property of the Port Authority in a manner to prevent damage, and packed or crated to protect the items from damage while in storage or during shipment. Items damaged during removal or storage must be repaired or replaced to match existing items. Properly identify the contents of containers. Deliver the items reserved as property of the Port Authority to the designated areas.

3.5.5 Historical Items

Historical items shall not be removed unless authorized by Port Authority. Historical items authorized to be removed shall be removed in a manner to prevent damage. The following historical items shall be delivered to the Port Authority for disposition: Corner stones, contents of corner stones, and document boxes wherever located on the site.

3.5.6 Unsalvageable and Non-Recyclable Material

Dispose of unsalvageable and non-recyclable noncombustible material in an appropriate disposal area.

3.6 CLEANUP

Remove debris and rubbish from project site and similar excavations. Remove and transport the debris in a manner that prevents spillage on streets or adjacent areas. Apply local regulations regarding hauling and disposal.

3.7 DISPOSAL OF REMOVED MATERIALS

3.7.1 Regulation of Removed Materials

Dispose of debris, rubbish, scrap, and other nonsalvageable materials resulting from removal operations with all applicable federal, state and local regulations as contractually specified. Storage of removed materials on the project site is prohibited.

3.7.2 Burning on Port Authority Property

Burning of materials removed from demolished and deconstructed structures will not be permitted on Port Authority property.

3.7.3 Removal from Port Authority Property

Transport waste materials removed from demolished and deconstructed structures, except waste soil, from Port Authority property for legal disposal. Dispose of waste soil per Section 01 57 19 TEMPORARY ENVIRONMENTAL CONTROLS.

3.8 REUSE OF SALVAGED ITEMS

Recondition salvaged materials and equipment designated for reuse before installation. Replace items damaged during removal and salvage operations or restore them as necessary to usable condition.

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SECTION 03 30 00

CAST-IN-PLACE CONCRETE
9/19/2025

PART 1 GENERAL

1.1 PAYMENT

1.1.1 Base Bid

Payment for costs associated with Base Bid cast-in-place concrete, which includes all work and materials identified within this section and other operations incidental thereto in order to complete the work, will be included in Bid Item 0008 - Cast-in-Place Reinforced Concrete Pile Cap with Anchor Block and Bid Item 0009 - Reinforcing Steel (Epoxy Coated) for Pile Cap with Anchor Block. Refer to Section 01 20 00 PRICE AND PAYMENT PROCEDURES.

1.1.2 Bid Option 1

Payment for costs associated with Bid Option 1 cast-in-place concrete, which includes all work and materials identified within this section and other operations incidental thereto in order to complete the work, will be included in Bid Item 0008A - Cast-in-Place Reinforced Concrete Slab-on-Grade and Bid Item 0009A - Reinforcing Steel (Epoxy Coated) for Slab-on-Grade. Refer to Section 01 20 00 PRICE AND PAYMENT PROCEDURES.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN CONCRETE INSTITUTE (ACI)

ACI 117	(2010; Errata 2011) Specifications for Tolerances for Concrete Construction and Materials and Commentary
ACI 121R	(2008) Guide for Concrete Construction Quality Systems in Conformance with ISO 9001
ACI 301	(2016) Specifications for Structural Concrete
ACI 304R	(2000; R 2009) Guide for Measuring, Mixing, Transporting, and Placing Concrete
ACI 305.1	(2014) Specification for Hot Weather Concreting
ACI 305R	(2020) Guide to Hot Weather Concreting
ACI 306.1	(1990; R 2002) Standard Specification for Cold Weather Concreting

ACI 306R	(2016) Guide to Cold Weather Concreting
ACI 308.1	(2011) Specification for Curing Concrete
ACI SP-2	(2007; Abstract: 10th Edition) ACI Manual of Concrete Inspection
ACI SP-15	(2011) Field Reference Manual: Standard Specifications for Structural Concrete ACI 301-05 with Selected ACI References

AMERICAN HARDBOARD ASSOCIATION (AHA)

AHA A135.4	(2012) Basic Hardboard
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ASTM INTERNATIONAL (ASTM)

ASTM A615	(2022) Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
ASTM A775	(2022) Standard Specification for Epoxy-Coated Steel Reinforcing Bars
ASTM A884	(2019; Errata 1) Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement
ASTM A934	(2019) Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars
ASTM C31	(2023) Standard Practice for Making and Curing Concrete Test Specimens in the Field
ASTM C33	(2023) Standard Specification for Concrete Aggregates
ASTM C39	(2021) Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
ASTM C42	(2020) Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
ASTM C78	(2022) Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading)
ASTM C94	(2023) Standard Specification for Ready-Mixed Concrete
ASTM C136	(2019) Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM C138	(2023) Standard Test Method for Density (Unit Weight), Yield, and Air Content

	(Gravimetric) of Concrete
ASTM C143	(2020) Standard Test Method for Slump of Hydraulic-Cement Concrete
ASTM C150	(2022) Standard Specification for Portland Cement
ASTM C172	(2017) Standard Practice for Sampling Freshly Mixed Concrete
ASTM C173	(2016) Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method
ASTM C231	(2022) Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C260	(2010a; R 2016) Standard Specification for Air-Entraining Admixtures for Concrete
ASTM C311	(2022) Standard Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use in Portland-Cement Concrete
ASTM C494	(2019; E 2022) Standard Specification for Chemical Admixtures for Concrete
ASTM C595	(2021) Standard Specification for Blended Hydraulic Cements
ASTM C618	(2023; E 2023) Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
ASTM C900	(2015) Standard Test Method for Pullout Strength of Hardened Concrete
ASTM C1012	(2018b) Standard Test Method for Length Change of Hydraulic-Cement Mortars Exposed to a Sulfate Solution
ASTM C1017	(2013; E 2015) Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete
ASTM C1074	(2019) Standard Practice for Estimating Concrete Strength by the Maturity Method
ASTM C1077	(2024) Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation
ASTM C1107	(2020) Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
ASTM C1157	(2023) Standard Performance Specification

for Hydraulic Cement

ASTM C1218	(2020c) Standard Test Method for Water-Soluble Chloride in Mortar and Concrete
ASTM C1240	(2020) Standard Specification for Silica Fume Used in Cementitious Mixtures
ASTM C1260	(2021) Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)
ASTM C1293	(2008; R 2015) Standard Test Method for Determination of Length Change of Concrete Due to Alkali-Silica Reaction
ASTM C1567	(2023) Standard Test Method for Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials and Aggregate (Accelerated Mortar-Bar Method)
ASTM C1602	(2022) Standard Specification for Mixing Water Used in Production of Hydraulic Cement Concrete
ASTM D412	(2021) Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension
ASTM D1751	(2018) Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
ASTM D5759	(2012; R 2020) Characterization of Coal Fly Ash and Clean Coal Combustion Fly Ash for Potential Uses
ASTM E329	(2023) Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection

CONCRETE REINFORCING STEEL INSTITUTE (CRSI)

CRSI 10MSP	(2018) Manual of Standard Practice
CRSI RB4.1	(2016) Supports for Reinforcement Used in Concrete

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST)

NIST PS 1	(2019) Structural Plywood
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U.S. ARMY CORPS OF ENGINEERS (USACE)

COE CRD-C 104	(1980) Method of Calculation of the Fineness Modulus of Aggregate
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COE CRD-C 572

(1974) Corps of Engineers Specifications
for Polyvinylchloride Waterstops

1.3 DEFINITIONS

- a. "Cementitious material" as used herein must include all portland cement, pozzolan, fly ash, slag cement, and silica fume.
- b. "Exposed to view" means situated so that it can be readily seen above grade after completion of the structure.
- c. "Chemical admixtures" are materials in the form of powder or fluids that are added to the concrete to give it certain characteristics not obtainable with plain concrete mixes.
- d. "Supplementary cementing materials" (SCM) include coal fly ash, silica fume, slag cement, natural or calcined pozzolans, and ultra-fine coal ash when used in such proportions to replace the portland cement that result in improvement to sustainability and durability and reduced cost.
- e. "Design strength" (f'c) is the specified compressive strength of concrete at time(s) specified in this section to meet structural design criteria.
- f. "Mass Concrete" is any concrete system that approaches a maximum temperature of 158 degrees F within the first 72 hours of placement. In addition, it includes all concrete elements with a section thickness of 3 feet or more regardless of temperature.
- g. "Mixture proportioning" is the process of designing concrete mixture proportions to enable it to meet the strength, service life and constructability requirements of the project while minimizing the initial and life-cycle cost.
- h. "Mixture proportions" are the masses or volumes of individual ingredients used to make a unit measure (cubic meter or cubic yard) of concrete.
- i. "Pozzolan" is a siliceous or siliceous and aluminous material, which in itself possesses little or no cementitious value but will, in finely divided form and in the presence of moisture, chemically react with calcium hydroxide at ordinary temperatures to form compounds possessing cementitious properties.
- j. "Workability (or consistence)" is the ability of a fresh (plastic) concrete mix to fill the form/mould properly with the desired work (vibration) and without reducing the concrete's quality. Workability depends on water content, chemical admixtures, aggregate (shape and size distribution), cementitious content and age (level of hydration).

1.4 SUBMITTALS

Engineer approval is required for submittals with an "E" classification. Submittals not having an "E" classification are for information only. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Concrete Curing Plan; E
 Mass Concrete Temperature Control Plan; E
 Quality Control Plan; E
 Quality Control Organizational Chart; E
 Quality Control Personnel Certifications; E
 Form Removal Schedule; E
 Laboratory Accreditation; E

SD-02 Shop Drawings

Reinforcing Steel; E
 Joints; E

SD-03 Product Data

Joint Filler; E
 Formwork Materials; E
 Cementitious Materials; E
 Concrete Curing Materials; E
 Reinforcement; E
 Admixtures; E
 Waterstops; E
 Finishing Plan; E
 Batching and Mixing Equipment; E
 Conveying and Placing; E
 Nonshrink Grout; E

SD-05 Design Data

Concrete Mix Design; E

SD-06 Test Reports

Concrete Mix Design; E
 Fly Ash; E
 Pozzolan; E
 Aggregates; E

Compressive Strength Tests; E

Flexural Strength Tests for Slab Concrete; E

Unit Weight of Structural Concrete; E

Chloride Ion Concentration; E

Air Content; E

Slump Tests; E

Water; E

Maturity Method Data; E

SD-07 Certificates

Reinforcing Bars; E

Safety Data Sheets; E

Field Testing Technician and Testing Agency; E

1.5 MODIFICATION OF REFERENCES

Accomplish work in accordance with ACI publications except as modified herein. Consider the advisory or recommended provisions to be mandatory. Interpret reference to the "Building Official," the "Structural Engineer," and the "Architect/Engineer" to mean the Engineer or Engineer's representative.

1.6 DELIVERY, STORAGE, AND HANDLING

Follow [ACI 301](#), [ACI 304R](#) and [ASTM A934](#) requirements and recommendations. Do not deliver concrete until forms, reinforcement, embedded items, and chamfer strips are in place and ready for concrete placement. Do not store concrete curing compounds or sealers with materials that have a high capacity to adsorb volatile organic compound (VOC) emissions. Do not store concrete curing compounds or sealers in occupied spaces.

1.6.1 Reinforcement

Store reinforcement of different sizes and shapes in separate piles or racks raised above the ground to avoid excessive rusting. Protect from contaminants such as grease, oil, and dirt. Ensure bar sizes can be accurately identified after bundles are broken and tags removed.

1.6.1.1 Epoxy Coated Reinforcing Steel

Record coating lot on each shipping notice and carefully identify and re-tag bar bundles from bending plant. Provide systems for handling coated bars which have padded contact areas such as, nylon slings, all free of dirt and grit. Lift bundled coated bars with strong back, multiple supports, or platform bridge to prevent sagging and abrasion. Pad bundling bands where in contact with bars. Do not drop or drag bars or bundles. Store coated bars both in shop and in field, aboveground, on wooden or padded cribbing. Space the dunnage close enough to prevent

excessive sags. Stack large quantities of straight bars with adequate protective blocking between layers. Schedule deliveries of epoxy coated bars to the job site to avoid the need for long term storage. Protect from direct sunlight and weather. Cover bars to be stored longer than 12 hours at the job site with opaque polyethylene sheeting or other suitable equivalent protective material.

1.7 QUALITY ASSURANCE

1.7.1 Design Data

1.7.1.1 Concrete Mix Design

Sixty days minimum prior to concrete placement, submit a mix design for each strength and type of concrete. Submit all documentation required in **ACI 301** Section 4 and as specified in this section. Submit a complete list of materials including type; brand; source and amount of cement, supplementary cementitious materials, and admixtures; and applicable reference specifications. Submit mill test and all other test for cement, supplementary cementitious materials, aggregates, and admixtures. Provide documentation of maximum nominal aggregate size, gradation analysis, percentage retained and passing sieve, and a graph of percentage retained verses sieve size. Provide mix proportion data using at least three different water-cementitious material ratios for each type of mixture, which produce a range of strength encompassing those required for each type of concrete required. If source material changes, resubmit mix proportion data using revised source material. Provide only materials that have been proven by trial mix studies to meet the requirements of this specification, unless otherwise approved in writing by the Engineer. Indicate clearly in the submittal where each mix design is used when more than one mix design is submitted. Resubmit data on concrete components if the qualities or source of components changes. Required average strength can be documented by field experience if field strength test data are available and represent a single group of at least 10 consecutive strength tests for one mixture, using materials and conditions similar to those expected for work, and encompassing a period of not less than 45 days. The average of field strength tests shall equal or exceed the specified minimum compressive strength. Changes in materials, conditions, and proportions within the test record shall not have been more closely restricted than those for the proposed work. Test records shall not be more than 24 months old. Obtain mix design approval from the Engineer prior to concrete placement.

1.7.2 Shop Drawings

1.7.2.1 Formwork Materials

Drawings showing details of formwork including, but not limited to; joints, supports, studding and shoring, and sequence of form and shoring removal. Indicate placement schedule, construction, location and method of forming control joints. Include locations of inserts, conduit, sleeves and other embedded items. Reproductions of contract drawings are unacceptable. Submit **form removal schedule** indicating element and minimum length of time for form removal.

Design, fabricate, erect, support, brace, and maintain formwork so that it is able to support, without failure, all vertical and lateral loads that may reasonably be anticipated to be applied to the formwork.

1.7.2.2 Reinforcing Steel

Indicate bending diagrams, assembly diagrams, splicing and laps of bars, shapes, dimensions, and details of bar reinforcing, accessories, and concrete cover. Do not scale dimensions from structural drawings to determine lengths of reinforcing bars. Reproductions of contract drawings are unacceptable.

1.7.2.3 Joints

a. Submit a detailed Concrete Jointing Plan outlining the proposed layout of all jointing for the proposed structure for review and comment. Refer to the Contract Drawings for further information regarding joint types and details. The plan to be submitted by the Contractor shall provide sufficient information including joint spacing and layout, joint depth, tooling characteristics, etc. The jointing plan shall indicate to the Engineer that the proposed joint plan and layout meets the requirements of the Contract Documents and the intent of the design.

b. Submit certificates of compliance stating that the joint filler and bond breaker materials to be utilized by the Contractor conform to the requirements specified within this Specification and within the Contract Drawings.

1.7.3 Control Submittals

1.7.3.1 Concrete Curing Plan

Submit proposed materials, methods and duration for curing concrete elements in accordance with [ACI 308.1](#).

1.7.3.2 Finishing Plan

Submit proposed material and procedures to be used in obtaining the required finish for the proposed concrete elements.

1.7.3.3 Safety Data Sheets

Submit Safety Data Sheets (SDS) for all materials that are regulated for hazardous health effects. SDS must be readily accessible during each work shift to employees when they are at the construction site.

1.7.4 Test Reports

1.7.4.1 Fly Ash and Pozzolan

Submit test results in accordance with [ASTM C618](#) for fly ash and pozzolan. Submit test results performed within 6 months of submittal date.

1.7.4.2 Aggregates

Submit test results in accordance with [ASTM C33](#), and [ASTM C1293](#) or [ASTM C1567](#) as required in the paragraph titled ALKALI-AGGREGATE REACTION.

1.7.5 Finishing Plan

1.7.5.1 Finishing Plan

Include concrete finish information as part of shop drawing submittals.

1.7.6 Quality Control Plan

Develop and submit for approval a concrete quality control program in accordance with the guidelines of **ACI 121R** and as specified herein. The plan must include approved laboratories. Provide direct oversight for the concrete qualification program inclusive of associated sampling and testing. All quality control reports must be provided to the Engineer, Quality Manager and Concrete Supplier. Maintain a copy of **ACI SP-15** and **CRSI 10MSP** at project site.

1.7.7 Quality Control Personnel Certifications

The Contractor must submit for approval the responsibilities of the various quality control personnel, including the names and qualifications of the individuals in those positions and a **quality control organizational chart** defining the quality control hierarchy and the responsibility of the various positions. Quality control personnel must be employed by the Contractor.

Submit American Concrete Institute certification for the following:

- a. CQC personnel responsible for inspection of concrete operations.
- b. Lead Foreman or Journeyman of the Concrete Placing, Finishing, and Curing Crews.
- c. Field Testing Technicians: ACI Concrete Field Testing Technician, Grade I.

1.7.7.1 Field Testing Technician and Testing Agency

Submit data on qualifications of proposed testing agency and technicians for approval by the Engineer prior to performing testing on concrete.

- a. Work on concrete under this contract must be performed by an ACI Concrete Field Testing Technician Grade 1 qualified in accordance with **ACI SP-2** or equivalent. Equivalent certification programs must include requirements for written and performance examinations as stipulated in **ACI SP-2**.
- b. Testing agencies that perform testing services on reinforcing steel must meet the requirements of **ASTM E329**.
- c. Testing agencies that perform testing services on concrete materials must meet the requirements of **ASTM C1077**.

1.7.8 Laboratory Qualifications for Concrete Qualification Testing

The concrete testing laboratory must have the necessary equipment and experience to accomplish required testing. The laboratory must meet the requirements of **ASTM C1077** and be Cement and Concrete Reference Laboratory (CCRL) inspected.

1.7.9 Laboratory Accreditation

Laboratory and testing facilities must be provided by and at the expense of the Contractor. The laboratories performing the tests must be accredited in accordance with ASTM C1077, including ASTM C78 and ASTM C1260. The accreditation must be current and must include the required test methods, as specified. Furthermore, the testing must comply with the following requirements:

- a. Aggregate Testing and Mix Proportioning: Aggregate testing and mixture proportioning studies must be performed by an accredited laboratory and under the direction of a registered professional engineer in a U.S. state competent in concrete materials who is competent in concrete materials and must sign all reports and designs.
- b. Acceptance Testing: Furnish all materials, labor, and facilities required for molding, curing, testing, and protecting test specimens at the site and in the laboratory. Furnish and maintain boxes or other facilities suitable for storing and curing the specimens at the site while in the mold within the temperature range stipulated by ASTM C31.
- c. Contractor Quality Control: All sampling and testing must be performed by an approved, onsite, independent, accredited laboratory.

PART 2 PRODUCTS

2.1 FORMWORK MATERIALS

- a. Form-facing material in contact with concrete must be lumber, plywood, tempered concrete-form-grade hardboard, metal, plastic, or treated paper that creates specified appearance and texture of concrete surface. Submit product information on proposed form-facing materials if different from that specified herein.
- b. Design formwork, shores, reshores, and backshores to support loads transmitted to them and to comply with applicable building code requirements.
- c. Design formwork to withstand pressure resulting from placement and vibration of concrete and to maintain specified tolerances.
- d. Design formwork to accommodate waterstop materials in joints at locations indicated in Contract Documents.
- e. Provide temporary openings in formwork if needed to facilitate cleaning and inspection.
- f. Design formwork joints to inhibit leakage of mortar.
- g. Limit deflection of facing materials for concrete surfaces exposed to view to 1/240 of center-to-center spacing of facing supports.
- h. Do not use earth cuts as forms for vertical or sloping surfaces.
- i. Submit product information on proposed form-facing materials if different from that specified herein.
- j. Submit manufacturer's product data on form liner proposed for use with

each formed surface.

2.1.1 Wood Forms

Use lumber as follows. Provide lumber that is square edged or tongue-and-groove boards, free of raised grain, knotholes, or other surface defects. Provide plywood that complies with NIST PS 1, B-B concrete form panels or better or AHA A135.4, hardboard for smooth form lining.

2.1.1.1 Concrete Form Plywood (Standard Rough)

Provide plywood that conforms to NIST PS 1, B-B, concrete form, not less than 5/8-inch thick.

2.1.1.2 Overlaid Concrete Form Plywood (Standard Smooth)

Provide plywood that conforms to NIST PS 1, B-B, high density form overlay, not less than 5/8-inch thick.

2.1.2 Steel Forms

Provide steel form surfaces that do not contain irregularities, dents, or sags.

2.2 FORMWORK ACCESSORIES

- a. Use commercially manufactured formwork accessories, including ties and hangers.
- b. Form ties and accessories must not reduce the effective cover of the reinforcement.

2.2.1 Form Ties

- a. Use form ties with ends or end fasteners that can be removed without damage to concrete.
- b. Where indicated in Contract Documents, use form ties with integral water barrier plates or other acceptable positive water barriers in walls.
- c. The breakback distance for ferrous ties must be at least 2 in. for Surface Finish-2.0 or Surface Finish-3.0, as defined in ACI 301.
- d. If the breakback distance is less than 3/4 in., use coated or corrosion-resistant ties.
- e. Submit manufacturer's data sheet on form ties.

2.2.2 Waterstops

Submit manufacturer's data sheet on waterstop materials and splices.

2.2.2.1 PVC Waterstop

Polyvinylchloride waterstops must conform to COE CRD-C 572.

2.2.2.2 Hydrophilic Waterstop

Swellable strip type compound of polymer modified chloroprene rubber that swells upon contact with water must conform to the following requirements when tested in accordance to **ASTM D412**: Tensile strength **350 psi** minimum; ultimate elongation **600 percent** minimum. Hardness must be **50** minimum on the type A durometer and the volumetric expansion ratio in distilled water at **70 degrees F** must be **3 to 1** minimum.

2.2.3 Chamfer Materials

Use lumber materials with dimensions of **3/4 x 3/4 in.**

2.2.4 Construction and movement joints

- a. Submit details and locations of construction joints in accordance with the requirements herein.
- b. Locate construction joints in walls at tops of footings.
- c. Make construction joints perpendicular to main reinforcement.
- d. Provide movement joints where indicated in Contract Documents or in accepted alternate locations.
- e. Submit location and detail of movement joints if different from those indicated in Contract Documents.
- f. Submit manufacturer's data sheet on expansion joint materials.
- g. Provide keyways where indicated in Contract Documents. Longitudinal keyways indicated in Contract Documents must be at least **1-1/2 in.** deep, measured perpendicular to the plane of the joint.

2.2.5 Other Embedded items

Use sleeves, inserts, anchors, and other embedded items of material and design indicated in Contract Documents.

2.3 CONCRETE MATERIALS

2.3.1 Cementitious Materials

2.3.1.1 Portland Cement

- a. Unless otherwise specified, provide cement that conforms to **ASTM C150** Type II(MH) for the pile cap concrete. A revised mix variation may be considered. Contractor to submit equivalent performance and mix must meet ASTM standards.

Unless otherwise specified, provide cement that conforms to **ASTM C150** Type I, IA, II, or V for the slab concrete. A revised mix variation may be considered. Contractor to submit equivalent performance and mix must meet ASTM standards.

- b. Use one brand/supplier of cement for all concrete.
- c. Submit information along with evidence demonstrating compliance with referenced standards. Submittals must include types of cementitious

materials, manufacturing locations, shipping locations, and certificates showing compliance.

- d. Cementitious materials must be stored and kept dry and free from contaminants.

2.3.1.2 Fly Ash

- a. **ASTM C618**, Class F or Class C, except that the maximum allowable loss on ignition must not exceed 6 percent.
- b. If fly ash is used it shall range from 15 to 30 percent by weight of cementitious material, provided the fly ash does not reduce the amount of cement in the concrete mix below the minimum requirements of local building codes. Where the use of fly ash cannot meet the minimum level, it shall not be used. Report the chemical analysis of the fly ash in accordance with **ASTM C311**. Evaluate and classify fly ash in accordance with **ASTM D5759**.

2.3.1.3 Silica Fume

Silica fume must conform to **ASTM C1240**, including the optional limits on reactivity with cement alkalis. Silica fume may be furnished as a dry, densified material or as slurry. Proper mixing is essential to accomplish proper distribution of the silica fume and avoid agglomerated silica fume which can react with the alkali in the cement resulting in premature and extensive concrete damage. Supervision at the batch plant, finishing, and curing is essential. Provide at the Contractor's expense the services of a manufacturer's technical representative, experienced in mixing, proportioning, placement procedures, and curing of concrete containing silica fume. This representative must be present on the project prior to and during at least the first 4 days of concrete production and placement using silica fume. A High Range Water Reducing admixture (HRWRA) must be used with silica fume.

2.3.1.4 Other Supplementary Cementitious Materials

Natural pozzolan must be raw or calcined and conform to **ASTM C618**, Class N, including the optional requirement for uniformity.

Ultra Fine Fly Ash (UFFA) and Ultra Fine Pozzolan (UFP) must conform to **ASTM C618**, Class F or N, and the following additional requirements:

- a. The strength activity index at 28 days of age must be at least 95 percent of the control specimens.
- b. The average particle size must not exceed 6 microns.
- c. The sum of SiO₂ plus Al₂O₃ plus Fe₂O₃ must be greater than 77 percent.

2.3.2 Water

- a. Water or ice must comply with the requirements of **ASTM C1602**.
- b. Minimize the amount of water in the mix. Improve workability by adjusting the grading of the aggregate and using admixture rather than by adding water.
- c. Water must be potable; free from injurious amounts of oils, acids,

alkalis, salts, organic materials, or other substances deleterious to concrete.

- d. Protect mixing water and ice from contamination during storage and delivery.
- e. Submit test report showing water complies with [ASTM C1602](#).

2.3.3 Aggregate

2.3.3.1 Normal-Weight Aggregate

- a. Aggregates must conform to [ASTM C33](#).
- b. Aggregates used in concrete must be obtained from the same sources and have the same size range as aggregates used in concrete represented by submitted field test records or used in trial mixtures.
- c. Provide sand that is at least 50 percent natural sand.
- d. Store and handle aggregate in a manner that will avoid segregation and prevents contamination by other materials or other sizes of aggregates. Store aggregates in locations that will permit them to drain freely. Do not use aggregates that contain frozen lumps.
- e. Submit types, pit or quarry locations, producers' names, aggregate supplier statement of compliance with [ASTM C33](#), and [ASTM C1293](#) expansion data not more than 18 months old.

2.3.4 Admixtures

- a. Chemical admixtures must conform to [ASTM C494](#).
- b. Air-entraining admixtures must conform to [ASTM C260](#).
- c. Chemical admixtures for use in producing flowing concrete must conform to [ASTM C1017](#), Type I or II. These admixtures shall only be used when approved in writing. Such approval shall be contingent upon particular mix control as described in the Contractor's Quality Control Plan and upon performance of separate mixture design studies.
- d. Accelerating admixtures shall conform to ASTM C494, Type C or E, except that calcium chloride or admixtures containing calcium chloride shall not be used.
- e. Water-Reducing or Retarding admixtures shall conform to ASTM C494, Type A, B, or D. These admixtures shall only be used when approved in writing by the Engineer. Such approval shall be contingent upon particular mix control as described in the Contractor's Quality Control Plan and upon performance of separate mixture design studies.
- f. High-Range Water Reducing admixtures shall conform to ASTM C494, Type F or G. These admixtures shall only be used when approved in writing by the Engineer. Such approval shall be contingent upon particular mix control as described in the Contractor's Quality Control Plan and upon performance of separate mixture design studies.
- g. Do not use calcium chloride admixtures.

- h. Admixtures used in concrete must be the same as those used in the concrete represented by submitted field test records or used in trial mixtures.
- i. Protect stored admixtures against contamination, evaporation, or damage.
- j. To ensure uniform distribution of constituents, provide agitating equipment for admixtures used in the form of suspensions or unstable solutions. Protect liquid admixtures from freezing and from temperature changes that would adversely affect their characteristics.
- k. Submit types, brand names, producers' names, manufacturer's technical data sheets, and certificates showing compliance with standards required herein.

2.4 MISCELLANEOUS MATERIALS

2.4.1 Concrete Curing Materials

Provide concrete curing material in accordance with **ACI 301** Section 5 and **ACI 308.1** Section 2. Submit product data for concrete curing compounds. Submit manufactures instructions for placement of curing compound.

2.4.2 Nonshrink Grout

Nonshrink, nonmetallic grout in accordance with **ASTM C1107**.

2.4.3 Expansion Joint Filler

ASTM D1751 Type I or Type II. Material must be **3/4 inch** thick, unless otherwise indicated.

2.5 CONCRETE MIX DESIGN

2.5.1 Properties and Requirements

- a. Use materials and material combinations listed in this section and the contract documents.
- b. Cementitious material content must be adequate for concrete to satisfy the specified requirements for strength, w/cm, durability, and finishability described in this section and the contract documents.

The minimum cementitious material content for concrete must meet the following requirements:

Nominal maximum size of aggregate, in.	Minimum cementitious material content, pounds per cubic yard
3/4	540

- c. Selected target slump must meet the requirements this section, the contract documents, and must not exceed **9 in.** Concrete must not show visible signs of segregation.
- d. The target slump must be enforced for the duration of the project.

Determine the slump by **ASTM C143**. Slump tolerances must meet the requirements of **ACI 117**.

- e. The nominal maximum size of coarse aggregate for a mixture must not exceed three-fourths of the minimum clear spacing between reinforcement, one-fifth of the narrowest dimension between sides of forms, or one-third of the thickness of slabs or toppings.
- f. Concrete must be air entrained for members assigned to Exposure Class F1, F2, or F3. The total air content must be in accordance with the requirements of the paragraph titled DURABILITY.
- g. Measure air content at the point of delivery in accordance with **ASTM C173** or **ASTM C231**.
- h. Concrete properties and requirements for each portion of the structure are specified in the table below. Refer to the paragraph titled DURABILITY for more details on exposure categories and their requirements.

Type	Minimum f'_c psi	Exposure Categories^	Miscellaneous Requirements
Pile Cap Concrete	5000 psi at 28 days	S1; C2; W1; F3	Max. slump: 6 in. Nominal maximum aggregate size must be 3/4 in.
Slab Concrete	5000 psi at 28 days	S1; C2; W1; F3	Max. slump: 6 in. Nominal maximum aggregate size must be 3/4 in. Minimum 28-day Flexural Strength must be 650 psi

- i. Concrete made with a high-early strength cement shall have a 7-day strength equal to the specified 28-day strength for concrete made with Type I or II Portland Cement.

2.5.2 Durability

2.5.2.1 Alkali-Aggregate Reaction

Do not use any aggregate susceptible to alkali-carbonate reaction (ACR). Use one of the three options below for qualifying concrete mixtures to reduce the potential of alkali-silica reaction (ASR):

- a. For each aggregate used in concrete, the expansion result determined in accordance with **ASTM C1293** must not exceed 0.04 percent at one year.
- b. For each aggregate used in concrete, the expansion result of the aggregate and cementitious materials combination determined in accordance with **ASTM C1567** must not exceed 0.10 percent at an age of 16 days.

2.5.2.2 Freezing and Thawing Resistance

- a. Provide concrete meeting the following requirements based on exposure class assigned to members for freezing-and-thawing exposure in Contract Documents:

Exposure class	Maximum w/cm^*	Minimum $f'c$, psi	Air content	Additional Requirements
F3	0.40	5000	Depends on aggregate size	See limits on maximum cementitious material by mass. Comply with ACI 318-14 requirements for exposure category indicated.

*The maximum w/cm limits do not apply to lightweight concrete.

- b. Concrete must be air entrained for members assigned to Exposure Class F1, F2, or F3. The total air content must meet the requirements of the following table:

Nominal maximum aggregate size, in.	Total air content, percent ^{*^}	
	Exposure Class F2 and F3	Exposure Class F1
3/4	6.0	5.0

*Tolerance on air content as delivered must be plus/minus 1.5 percent.

[^]For $f'c$ greater than 5000 psi, reducing air content by 1.0 percentage point is acceptable.

- c. Submit documentation verifying compliance with specified requirements.

2.5.2.3 Corrosion and Chloride Content

- a. Provide concrete meeting the requirements of the following table based on the exposure class assigned to members requiring protection against reinforcement corrosion in Contract Documents.
- b. Submit documentation verifying compliance with specified requirements.
- c. Water-soluble chloride ion content contributed from constituents including water, aggregates, cementitious materials, and admixtures must be determined for the concrete mixture by **ASTM C1218** at age between 28 and 42 days.
- d. The maximum water-soluble chloride ion (Cl-) content in concrete, percent by mass of cement is as follows:

Exposure class	Maximum w/cm*	Minimum f'c, psi	Maximum water-soluble chloride ion (CL-) content in concrete, percent by mass of cement
Reinforced concrete			
C2	0.40	5000	0.15

*The maximum w/cm limits do not apply to lightweight concrete.

2.5.2.4 Sulfate Resistance

- a. Provide concrete meeting the requirements of the following table based on the exposure class assigned to members for sulfate exposure.

Exposure class	Maximum w/cm	Minimum f'c, psi	Required cementitious materials-types			Calcium chloride admixture
			ASTM C150	ASTM C595	ASTM C1157	
S1	0.50	4000	II*^	Types with (MS) designation	MS	No restrictions

* For seawater exposure, other types of portland cements with tricalcium aluminate (C3A) contents up to 10 percent are acceptable if the w/cm does not exceed 0.40.

** The amount of the specific source of the pozzolan or slag cement to be used shall be at least the amount determined by test or service record to improve sulfate resistance when used in concrete containing Type V cement. Alternatively, the amount of the specific source of the pozzolan or slag used shall not be less than the amount tested in accordance with ASTM C1012 and meeting the requirements maximum expansion requirements listed herein.

*** If Type V cement is used as the sole cementitious material, the optional sulfate requirement of 0.040 percent maximum expansion in ASTM C150 shall be required.

^ Other available types of cement, such as Type III or Type I, are acceptable in exposure classes S1 or S2 if the C3A contents are less than 8 or 5 percent, respectively.

- b. The maximum w/cm limits for sulfate exposure do not apply to lightweight concrete.
- c. Alternative combinations of cementitious materials of those listed in this paragraph are acceptable if they meet the maximum expansion requirements listed in the following table:

Exposure class	Maximum expansion when tested using ASTM C1012		
	At 6 months	At 12 months	At 18 months
S1	0.10 percent	N/A	N/A

^The 12-month expansion limit applies only when the measured expansion exceeds the 6-month maximum expansion limit.

2.5.2.5 Concrete Temperature

The temperature of concrete as delivered must not exceed **95°F**.

2.5.2.6 Concrete permeability

- a. Provide concrete meeting the requirements of the following table based on exposure class assigned to members requiring low permeability in the Contract Documents.

Exposure class	Maximum w/cm^*	Minimum $f'c$, psi	Additional minimum requirements
W1	0.50	4000	None

*The maximum w/cm limits do not apply to lightweight concrete.

- b. Submit documentation verifying compliance with specified requirements.

2.5.3 Trial Mixtures

Trial mixtures must be in accordance to **ACI 301**.

2.5.4 Ready-Mix Concrete

Provide concrete that meets the requirements of **ASTM C94**.

Ready-mixed concrete manufacturer must provide duplicate delivery tickets with each load of concrete delivered. Provide delivery tickets with the following information in addition to that required by **ASTM C94**:

- a. Type and brand cement
- b. Cement and supplementary cementitious materials content in **94-pound** bags per cubic **yard** of concrete
- c. Maximum size of aggregate
- d. Amount and brand name of admixtures
- e. Total water content expressed by water cementitious material ratio

2.6 **REINFORCEMENT**

- a. Bend reinforcement cold. Fabricate reinforcement in accordance with fabricating tolerances of **ACI 117**.

- b. Submit manufacturer's certified test report for reinforcement.
- c. Submit placing drawings showing fabrication dimensions and placement locations of reinforcement and reinforcement supports. Placing drawings must indicate locations of splices, lengths of lap splices, and details of mechanical and welded splices.
- d. Submit request with locations and details of splices not indicated in Contract Documents.
- e. Submit request and procedure to field-bend or straighten reinforcing bars partially embedded in concrete at locations not indicated in Contract Documents. Field bending or straightening of reinforcing bars is permitted where indicated in the Contract Documents.
- f. Submit request for field cutting, including location and type of bar to be cut and reason field cutting is required.

2.6.1 Reinforcing Bars

- a. Reinforcing bars must be deformed, except spirals, load-transfer dowels, and welded wire reinforcement, which may be plain.
- b. **ASTM A615** with the bars marked S, Grade **60**
- c. Submit mill certificates for reinforcing bars.

2.6.1.1 Epoxy-Coated Reinforcing Bars

- a. Provide epoxy-coated reinforcing bars that conform to **ASTM A775**, Grade 60.
- b. Coatings must be applied in plants that are certified in accordance with Concrete Reinforcing Steel Institute (CRSI) Epoxy Coating Plant Certification Program or an equivalent program acceptable to the Engineer.
- c. Coating damage incurred during shipment, storage, handling, and placing of epoxy-coated reinforcing bars must be repaired. Repair damaged coating areas with patching material conforming to **ASTM A775** as applicable and in accordance with material manufacturer's written recommendations. Damaged coating area must not exceed 2 percent of surface area in each linear foot of each bar or bar must not be used. The 2 percent limit on damaged coating area must include repaired areas damaged before shipment as required by **ASTM A775** as applicable. Fading of coating color shall not be cause for rejection of epoxy-coated reinforcing bars.
- d. Submit concrete Reinforcing Steel Institute (CRSI) Epoxy Coating Plant Certification inspection and quality-control program of plant applying epoxy coating if proposed plant is not certified in accordance with CRSI Epoxy Coating Plant Certification Program.
- e. Epoxy coated reinforcing bars shall be handled and stored in accordance with **ASTM A775**. If the manufacturer stores bars outdoors for more than 2 months, cover coated reinforcement with opaque protective material.

2.6.2 Reinforcing Bar Supports

- a. Provide reinforcement support types within structure as required by Contract Documents. Reinforcement supports must conform to **CRSI RB4.1**. Submit description of reinforcement supports and materials for fastening coated reinforcement if not in conformance with **CRSI RB4.1**.
- b. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar support.
- c. Legs of supports in contact with formwork must be hot-dip galvanized, or plastic coated after fabrication, or stainless-steel bar supports.

PART 3 EXECUTION

3.1 EXAMINATION

- a. Do not begin installation until substrates have been properly constructed; verify that substrates are level.
- b. If substrate preparation is the responsibility of another installer, notify Engineer of unsatisfactory preparation before processing.
- c. Check field dimensions before beginning installation. If dimensions vary too much from design dimensions for proper installation, notify Engineer and wait for instructions before beginning installation.

3.2 PREPARATION

Determine quantity of concrete needed and minimize the production of excess concrete. Designate locations or uses for potential excess concrete before the concrete is poured.

3.2.1 General

- a. Surfaces against which concrete is to be placed must be free of debris, loose material, standing water, snow, ice, and other deleterious substances before start of concrete placing.
- b. Remove standing water without washing over freshly deposited concrete. Divert flow of water through side drains provided for such purpose.

3.2.2 Subgrade Under Foundations and Footings

- a. When subgrade material is semi-porous and dry, sprinkle subgrade surface with water as required to eliminate suction at the time concrete is deposited, or seal subgrade surface by covering surface with specified vapor retarder.
- b. When subgrade material is porous, seal subgrade surface by covering surface with specified vapor retarder.

3.2.3 Reinforcement and Other Embedded Items

- a. Secure reinforcement, joint materials, and other embedded materials in position, inspected, and approved before start of concrete placing.
- b. When concrete is placed, reinforcement must be free of materials deleterious to bond. Reinforcement with rust, mill scale, or a

combination of both will be considered satisfactory, provided minimum nominal dimensions, nominal weight, and minimum average height of deformations of a hand-wire-brushed test specimen are not less than applicable ASTM specification requirements.

3.3 FORMS

- a. Provide forms, shoring, and scaffolding for concrete placement. Set forms mortar-tight and true to line and grade.
- b. Chamfer above grade exposed joints, edges, and external corners of concrete 0.75 inch. Place chamfer strips in corners of formwork to produce beveled edges on permanently exposed surfaces. Do not bevel reentrant corners or edges of formed joints of concrete.
- c. Provide formwork with clean-out openings to permit inspection and removal of debris.
- d. Inspect formwork and remove foreign material before concrete is placed.
- e. At construction joints, lap form-facing materials over the concrete of previous placement. Ensure formwork is placed against hardened concrete so offsets at construction joints conform to specified tolerances.
- f. Provide positive means of adjustment (such as wedges or jacks) of shores and struts. Do not make adjustments in formwork after concrete has reached initial setting. Brace formwork to resist lateral deflection and lateral instability.
- g. Fasten form wedges in place after final adjustment of forms and before concrete placement.
- h. Provide anchoring and bracing to control upward and lateral movement of formwork system.
- i. Construct formwork for openings to facilitate removal and to produce opening dimensions as specified and within tolerances.
- j. Provide runways for moving equipment. Support runways directly on formwork or structural members. Do not support runways on reinforcement. Loading applied by runways must not exceed capacity of formwork or structural members.
- k. Position and support expansion joint materials, waterstops, and other embedded items to prevent displacement. Fill voids in sleeves, inserts, and anchor slots temporarily with removable material to prevent concrete entry into voids.
- l. Clean surfaces of formwork and embedded materials of mortar, grout, and foreign materials before concrete placement.

3.3.1 Coating

- a. Cover formwork surfaces with an acceptable material that inhibits bond with concrete.
- b. If formwork release agent is used, apply to formwork surfaces in accordance with manufacturer's recommendations before placing

reinforcement. Remove excess release agent on formwork prior to concrete placement.

- c. Do not allow formwork release agent to contact reinforcement or hardened concrete against which fresh concrete is to be placed.

3.3.2 Reuse

- a. Reuse forms providing the structural integrity of concrete and the aesthetics of exposed concrete are not compromised.
- b. Wood forms must not be clogged with paste and must be capable of absorbing high water-cementitious material ratio paste.
- c. Remove leaked mortar from formwork joints before reuse.

3.3.3 Forms for Standard Rough Form Finish

Provide formwork in accordance with [ACI 301](#) Section 5 with a surface finish, SF-1.0, for formed surfaces that are to be concealed by other construction.

3.3.4 Forms for Standard Smooth Form Finish

Provide formwork in accordance with [ACI 301](#) Section 5 with a surface finish, SF-3.0, for formed surfaces that are exposed to view.

3.3.5 Form Ties

- a. For post-tensioned structures, do not remove formwork supports until stressing records have been accepted by the Engineer.
- b. After ends or end fasteners of form ties have been removed, repair tie holes in accordance with [ACI 301](#) Section 5 requirements.

3.3.6 Tolerances for Form Construction

- a. Construct formwork so concrete surfaces conform to tolerances in [ACI 117](#).
- b. Position and secure sleeves, inserts, anchors, and other embedded items such that embedded items are positioned within [ACI 117](#) tolerances.
- c. To maintain specified elevation and thickness within tolerances, install formwork to compensate for deflection and anticipated settlement in formwork during concrete placement. Set formwork and intermediate screed strips for slabs to produce designated elevation, camber, and contour of finished surface before formwork removal. If specified finish requires use of vibrating screeds or roller pipe screeds, ensure that edge forms and screed strips are strong enough to support such equipment.

3.3.7 Removal of Forms and Supports

- a. If vertical formed surfaces require finishing, remove forms as soon as removal operations will not damage concrete.
- b. Remove top forms on sloping surfaces of concrete as soon as removal

will not allow concrete to sag. Perform repairs and finishing operations required. If forms are removed before end of specified curing period, provide curing and protection.

- c. Do not damage concrete during removal of vertical formwork for columns, walls, and sides of beams. Perform needed repair and finishing operations required on vertical surfaces. If forms are removed before end of specified curing period, provide curing and protection.

3.3.8 Strength of Concrete Required for Removal of Formwork

If removal of formwork, reshoring, or backshoring is based on concrete reaching a specified in-place strength, mold and field-cure cylinders in accordance with [ASTM C31](#). Test cylinders in accordance with [ASTM C39](#). Alternatively, use one or more of the methods listed herein to evaluate in-place concrete strength for formwork removal.

- a. Pullout strength in accordance with [ASTM C900](#).
- b. Maturity method in accordance with [ASTM C1074](#). Submit [Maturity Method Data](#) using project materials and concrete mix proportions used on the project to demonstrate the correlation between maturity and compressive strength of laboratory cured test specimens to the Engineer.

3.4 WATERSTOP INSTALLATION AND SPLICES

- a. Provide waterstops in joints as indicated.
- b. Install formwork to accommodate waterstop materials. Locate waterstops in joints where indicated in Contract Documents. Minimize number of splices in waterstop. Splice waterstops in accordance with manufacturer's written instructions. Install factory-manufactured premolded mitered corners.
- c. Install waterstops to form a continuous diaphragm in each joint. Make adequate provisions to support and protect waterstops during progress of work. Protect waterstops protruding from joints from damage.

3.4.1 PVC Waterstop

Make splices by heat sealing the adjacent waterstop edges together using a thermoplastic splicing iron utilizing a non-stick surface specifically designed for waterstop welding. Reform waterstops at splices with a remolding iron with ribs or corrugations to match the pattern of the waterstop. The spliced area, when cooled, must show no signs of separation, holes, or other imperfections when bent by hand in as sharp an angle as possible.

3.4.2 Hydrophilic Waterstop

Miter cut ends to be joined with sharp knife or shears. The ends must be adhered with adhesive.

3.5 PLACING REINFORCEMENT AND MISCELLANEOUS MATERIALS

- a. Unless otherwise specified, placing reinforcement and miscellaneous materials must be in accordance to [ACI 301](#). Provide bars, welded wire

reinforcement, wire ties, supports, and other devices necessary to install and secure reinforcement.

- b. Reinforcement must not have rust, scale, oil, grease, clay, or foreign substances that would reduce the bond. Rusting of reinforcement is a basis of rejection if the effective cross-sectional area or the nominal weight per unit length has been reduced. Remove loose rust prior to placing steel. Tack welding is prohibited.
- c. Nonprestressed cast-in-place concrete members must have concrete cover for reinforcement as indicated in the Construction Documents.

3.5.1 General

Provide details of reinforcement that are in accordance with the Contract Documents.

3.5.2 Reinforcement Supports

Provide reinforcement support in accordance with [CRSI RB4.1](#) and [ACI 301](#) Section 3 requirements. Supports for coated or galvanized bars must also be coated with electrically compatible material for a distance of at least [2 inches](#) beyond the point of contact with the bars.

3.5.3 Epoxy Coated Reinforcing

Epoxy Coated Reinforcing must meet the requirements of "Guidelines for Job Site Practices" except as otherwise specified herein.

3.5.3.1 Epoxy Coated Reinforcing Steel Placement and Coating Repair

Carefully handle and install bars to minimize job site patching. Use the same precautions as described in the paragraph titled EPOXY-COATED REINFORCING BARS. Do not drag bars over other bars or over abrasive surfaces. Keep bar free of dirt and grit. When possible, assemble reinforcement as tied cages prior to final placement into the forms. Support assembled cages on padded supports. It is not expected that coated bars, when in final position ready for concrete placement, are completely free of damaged areas; however, excessive nicks and scrapes which expose steel is cause for rejection. Criteria for defects which require repair and for those that do not require repair are as indicated. Inspect for defects and provide required repairs prior to assembly. After assembly, reinspect and provide final repairs.

- a. Immediately prior to application of the patching material, manually remove any rust and debonded coating from the reinforcement by suitable techniques employing devices such as wire brushes and emery paper. Exercise care during this surface preparation so that the damaged areas are not enlarged more than necessary to accomplish the repair. Clean damaged areas of dirt, debris, oil, and similar materials prior to application of the patching material.
- b. Do repair and patching in accordance with the patching material manufacturer's recommendations. These recommendations, including cure times, must be available at the job site at all times.
- c. Allow adequate time for the patching materials to cure in accordance with the manufacturer's recommendation prior to concrete placement.

- d. Rinse placed reinforcing bars with fresh water to remove chloride contamination prior to placing concrete.

3.5.4 Splicing

As indicated in the Contract Documents. For splices not indicated follow **ACI 301**. Do not splice at points of maximum stress.

3.5.5 Setting Miscellaneous Material

Place and secure anchors and bolts, pipe sleeves, conduits, and other such items in position before concrete placement and support against displacement. Plumb anchor bolts and check location and elevation. Temporarily fill voids in sleeves with readily removable material to prevent the entry of concrete.

3.5.6 Fabrication

Shop fabricate reinforcing bars to conform to shapes and dimensions indicated for reinforcement, and as follows:

- a. Provide fabrication tolerances that are in accordance with **ACI 117**.
- b. Provide hooks and bends that are in accordance with the Contract Documents.

Reinforcement must be bent cold to shapes as indicated. Bending must be done in the shop. Rebending of a reinforcing bar that has been bent incorrectly is not be permitted. Bending must be in accordance with standard approved practice and by approved machine methods.

Deliver reinforcing bars bundled, tagged, and marked. Tags must be metal with bar size, length, mark, and other information pressed in by machine. Marks must correspond with those used on the placing drawings.

Do not use reinforcement that has any of the following defects:

- a. Bar lengths, depths, and bends beyond specified fabrication tolerances
- b. Bends or kinks not indicated on drawings or approved shop drawings
- c. Bars with reduced cross-section due to rusting or other cause

Replace defective reinforcement with new reinforcement having required shape, form, and cross-section area.

3.5.7 Placing Reinforcement

Place reinforcement in accordance with **ACI 301**.

For slabs on grade (over earth or over capillary water barrier) and for footing reinforcement, support bars or welded wire reinforcement on precast concrete blocks, spaced at intervals required by size of reinforcement, to keep reinforcement the minimum height specified above the underside of slab or footing.

For slabs other than on grade, supports for which any portion is less than **1 inch** from concrete surfaces that are exposed to view or to be painted must be of precast concrete units, plastic-coated steel, or stainless

steel protected bar supports. Precast concrete units must be wedge shaped, not larger than 3-1/2 by 3-1/2 inches, and of thickness equal to that indicated for concrete protection of reinforcement. Provide precast units that have cast-in galvanized tie wire hooked for anchorage and blend with concrete surfaces after finishing is completed.

Provide reinforcement that is supported and secured together to prevent displacement by construction loads or by placing of wet concrete, and as follows:

- a. Provide supports for reinforcing bars that are sufficient in number and have sufficient strength to carry the reinforcement they support, and in accordance with ACI 301 and CRSI 10MSP. Do not use supports to support runways for concrete conveying equipment and similar construction loads.
- b. Equip supports on ground and similar surfaces with sand-plates.
- c. Support welded wire reinforcement as required for reinforcing bars.
- d. Secure reinforcements to supports by means of tie wire. Wire must be epoxy-coated, soft iron wire, not less than 16 gage. Epoxy-coated wire must conform to ASTM A884.
- e. Reinforcement must be accurately placed, securely tied at intersections, and held in position during placing of concrete by spacers, chairs, or other approved supports. Point wire-tie ends away from the form. Unless otherwise indicated, numbers, type, and spacing of supports must conform to the Contract Documents.
- f. Bending of reinforcing bars partially embedded in concrete is permitted only as specified in the Contract Documents.

3.5.8 Spacing of Reinforcing Bars

- a. Spacing must be as indicated in the Contract Documents.
- b. Reinforcing bars may be relocated to avoid interference with other reinforcement, or with conduit, pipe, or other embedded items. If any reinforcing bar is moved a distance exceeding one bar diameter or specified placing tolerance, resulting rearrangement of reinforcement is subject to preapproval by the Engineer.

3.5.9 Concrete Protection for Reinforcement

Additional concrete protection must be in accordance with the Contract Documents.

3.6 BATCHING, MEASURING, MIXING, AND TRANSPORTING CONCRETE

In accordance with ASTM C94, ACI 301, and ACI 304R, except as modified herein. Batching equipment must be such that the concrete ingredients are consistently measured within the following tolerances: 1 percent for cement and water, 2 percent for aggregate, and 3 percent for admixtures. Furnish mandatory batch ticket information for each load of ready mix concrete. Submit [Batching and Mixing Equipment](#) for review and approval.

3.6.1 Measuring

Make measurements at intervals as specified in paragraphs SAMPLING and TESTING.

3.6.2 Mixing

- a. Mix concrete in accordance with ASTM C94, ACI 301 and ACI 304R.
- b. Machine mix concrete. Begin mixing within 30 minutes after the cement has been added to the aggregates. Place concrete within 90 minutes of either addition of mixing water to cement and aggregates or addition of cement to aggregates. A retarder shall be used to facilitate placing and finishing when concrete temperature is 85 degrees F or greater.
- c. If the entrained air content falls below the specified limit, add a sufficient quantity of admixture, within the manufacturer's recommended dosage, to bring the entrained air content within the specified limits. Dissolve admixtures in the mixing water and mix in the drum to uniformly distribute the admixture throughout the batch. Do not reconstitute concrete that has begun to solidify.
- d. When fibers are used, add fibers together with the aggregates and never as the first component in the mixer. Fibers must be dispensed into the mixing system using appropriate dispensing equipment and procedure as recommended by the manufacturer.

3.6.3 Transporting

Transport concrete from the mixer to the forms as rapidly as practicable. Prevent segregation or loss of ingredients. Clean transporting equipment thoroughly before each batch. Do not use aluminum pipe or chutes. Remove concrete which has segregated in transporting and dispose of as directed.

3.7 PLACING CONCRETE

Place concrete in accordance with ACI 301 Section 5. Concrete shall be placed within 15 minutes of discharge into non-agitating equipment. Submit plan for Conveying and Placing concrete.

3.7.1 Pre-placement Conference

Prior to any concrete placement, the Contractor shall arrange to have a pre-placement conference with those personnel who are charged with the placement procedure as well as the Engineer's representative that will be reviewing the placement in the field. The primary purpose of the conference is to discuss and assess whether the Contractor's plan to complete that portion of the concrete work under consideration can be completed successfully based on both the field and environmental conditions being experienced at the time of the conference. Note that the term "completion" not only covers concrete placement, but shall also cover proper protection and curing procedures that will be required to be maintained by the Contractor in accordance with the appropriate ACI specification in effect at the time of the placement.

Other items to be discussed include (but are not limited to), placement of reinforcement and embedments, weather conditions, the use of admixtures, the maximum permitted water-cement ratios for each concrete mix to be used

on site, the use of slump adjustments in the field as well as the determination of an authorized representative from the Contractor's placement team who will be given the responsibility to authorize slump adjustments during placement.

Concrete placement shall not be permitted when, in the opinion of the Engineer's on-site Representative, field and/or weather conditions prevent proper placement and consolidation as well as proper protection and subsequent curing of newly placed concrete per the applicable ACI requirements in effect at the time the placement was performed. Environmental conditions that would prevent proper placement, consolidation and protection shall include, but are not limited to; wave action or weather conditions causing unsafe working conditions, environmental conditions which are likely to prevent the Contractor from completing the planned work in a timely manner, falling temperatures and/or periods of below-freezing temperatures which, in the opinion of the Engineer's on-site representative would make the newly-placed improvement susceptible to freezing and/or the installation winter protection measures ineffective. Concrete observed to be affected by freezing will require replacement. However, this replacement may be required to be deferred to a later date once more favorable temperatures/working conditions are experienced and a proper cure period can be achieved.

3.7.2 Cold Weather

Cold weather concrete must meet the requirements of [ACI 301](#) and [ACI 306.1](#) unless otherwise specified. Do not allow concrete temperature to decrease below [50 degrees F](#). Obtain approval prior to placing concrete when the ambient temperature is below [40 degrees F](#) or when concrete is likely to be subjected to freezing temperatures within 24 hours. Cover concrete and provide sufficient heat to maintain [50 degrees F](#) minimum adjacent to both the formwork and the structure while curing. Limit the rate of cooling to [37 degrees F](#) in any one hour and [50 degrees F](#) per 24 hours after heat application.

3.7.3 Hot Weather

Hot weather concrete must meet the requirements of [ACI 301](#) and [ACI 305.1](#) unless otherwise specified. Maintain required concrete temperature using Figure 4.2 in [ACI 305R](#) to prevent the evaporation rate from exceeding [0.2 pound of water per square foot](#) of exposed concrete per hour. Cool ingredients before mixing or use other suitable means to control concrete temperature and prevent rapid drying of newly placed concrete. Shade the fresh concrete as soon as possible after placing. Start curing when the surface of the fresh concrete is sufficiently hard to permit curing without damage. Provide water hoses, pipes, spraying equipment, and water hauling equipment, where job site is remote to water source, to maintain a moist concrete surface throughout the curing period. Provide burlap cover or other suitable, permeable material with fog spray or continuous wetting of the concrete when weather conditions prevent the use of either liquid membrane curing compound or impervious sheets. For vertical surfaces, protect forms from direct sunlight and add water to top of structure once concrete is set.

3.7.4 Mass Concrete Temperature Control Plan

The pile cap with anchor block shall be considered mass concrete.

The Contractor shall submit a mass concrete temperature control plan that

includes monitoring concrete temperature and corrective action procedures. Contractor must submit the mass concrete temperature control plan three weeks prior to the placement of mass concrete for review. At a minimum, the mass concrete temperature control plan must ensure that:

1. The maximum temperature in mass concrete after placement shall not exceed 160 °F; and the maximum temperature difference between center and surface of placement shall not exceed 35 °F.
2. Concrete sensors are utilized to verify both internal and external temperatures. Products must be specifically designed for the purpose of monitoring concrete temperatures and must have a history of accurate and precise results. Products must not interfere with concrete reinforcement and must be small enough to not effect the overall design and durability requirements of the reinforced concrete components. Submit concrete sensor products for review by the Client and Engineer; along with placement plan layouts for review.

3.7.5 Bonding

Surfaces of set concrete at joints, must be roughened and cleaned of laitance, coatings, loose particles, and foreign matter. Roughen surfaces in a manner that exposes the aggregate uniformly and does not leave laitance, loosened particles of aggregate, nor damaged concrete at the surface.

Obtain bonding of fresh concrete that has set as follows:

- a. At joints between footings and walls or columns, between walls or columns and the beams or slabs they support, and elsewhere unless otherwise specified; roughened and cleaned surface of set concrete must be dampened, but not saturated, immediately prior to placing of fresh concrete.
- b. At joints in exposed-to-view work; at vertical joints in walls; at joints near midpoint of span in girders, beams, supported slabs, other structural members; in work designed to contain liquids; the roughened and cleaned surface of set concrete must be dampened but not saturated and covered with a cement grout coating.
- c. Provide cement grout that consists of equal parts of portland cement and fine aggregate by weight with not more than 6 gallons of water per sack of cement. Apply cement grout with a stiff broom or brush to a minimum thickness of 1/16 inch. Deposit fresh concrete before cement grout has attained its initial set.

3.8 WASTE MANAGEMENT

Coordinate with Waste Management Plan in accordance with Section 01 74 19 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL and as follows.

3.8.1 Mixing Equipment

Before concrete pours, designate Contractor-owned site meeting environmental standards for cleaning out concrete mixing trucks. Minimize water used to wash equipment.

3.8.2 Reinforcing Steel

Collect reinforcing steel and place in designated area for recycling.

3.8.3 Other Waste

Identify concrete manufacturer's or supplier's policy for collection or return of construction waste, unused material, deconstruction waste, and/or packaging material.

3.9 SURFACE FINISHES

3.9.1 Defects

Repair surface defects in accordance with [ACI 301](#) Section 5.

3.9.2 Not Against Forms (Top of Elements and Slabs)

Place, consolidate, and immediately strike off concrete to obtain proper contour, grade, and elevation before bleedwater appears. Permit concrete to attain a set sufficient for floating and supporting the weight of the finisher and equipment. If bleedwater is present prior to floating the surface, drag the excess water off or remove by absorption with porous materials. Do not use dry cement to absorb bleedwater. Grate tampers ("jitterbugs") shall not be used.

Provide a broomed finish on top surfaces of all elements and slabs, unless otherwise indicated. Finish concrete in accordance with [ACI 301](#) Section 5 for a broomed finish.

3.9.3 Formed Surfaces

3.9.3.1 Tolerances

Tolerances in accordance with [ACI 117](#) and as indicated.

3.9.3.2 As-Cast Rough Form

Provide for surfaces not exposed to view a surface finish SF-1.0. Patch holes and defects in accordance with [ACI 301](#).

3.9.3.3 Standard Smooth Finish

Provide for surfaces exposed to view a surface finish SF-3.0. Patch holes and defects in accordance with [ACI 301](#).

3.10 JOINTS

Joints shall be installed at locations indicated on the Contractor's previously approved Concrete Jointing Plan. Joints shall be placed perpendicular to, and parallel to, the centerline of the structure, and as authorized by Engineer's on-site representative. Information regarding jointing is also included in the Contract Drawings.

3.10.1 Expansion Joints

Premolded joint filler shall be used in expansion joints in structural elements. The filler shall extend the full depth, unless otherwise indicated. The edges of the joint shall be neatly finished with an edging

tool of 1/8-inch radius or as specified on the Contract Drawings. All joints are to receive a sealant, therefore, the filler strips shall be installed at the proper level below the finished grade with a slightly tapered, dressed-and-oiled wood strip temporarily secured to the top thereof to form a recess as indicated on Contract Drawings to be filled with sealant. The wood strip shall be removed after the concrete has set. In lieu of the wood strip, a removable expansion filler cap designed and fabricated for this purpose may be used.

3.10.2 Construction Joints

Construction joints shall be constructed where placement is terminated for a period of time and shall only be located in the locations of required expansion joints or required control joints. If a construction joint is placed at the location of a required expansion joint, it shall be constructed as an expansion joint. Construction joints may also be placed at the location of required control joints in accordance with the Section "Control Joints". Construction joints may also be placed where approved by the Engineer's on-site representative.

3.10.3 Control Joints

Control joints shall be constructed utilizing one of the following methods:

a. Hardboard Joint:

Hardboard joint strips shall extend one (1) inch into slab as detailed on the Contract Drawings. The hardboard shall extend at least one-half (1/2) inch above finished surface of concrete so it can be removed after concrete has set. The hardboard strips shall be slightly tapered, dressed-and-oiled for easy removal. All control joints shall then receive a sealant after removal of hardboard strips.

b. Tooled Joint:

Tooled joints shall be formed to a depth of 1" below the adjacent concrete surface. The joint shall be "V" shaped, not to exceed 3/8-inch wide at the top of the joint.

3.10.4 Joint Sealant

All joints in the concrete slabs shall be filled with joint sealant. Types and locations of sealants shall be as indicated on the Contract Drawings as well as the approved Contractor's Jointing Plan. Joint surfaces shall be clean, dry, and free of oil or other foreign material which would adversely affect the bond between sealant and concrete. Joint sealant shall be applied in accordance by the manufacturer of the sealant.

3.11 CURING AND PROTECTION

Curing and protection in accordance with **ACI 301** Section 5, unless otherwise specified. Begin curing immediately following form removal. Avoid damage to concrete from vibration created by blasting, pile driving, movement of equipment in the vicinity, disturbance of formwork or protruding reinforcement, and any other activity resulting in ground vibrations. Protect concrete from injurious action by sun, rain, flowing water, frost, mechanical injury, tire marks, and oil stains. Do not allow concrete to dry out from time of placement until the expiration of the

specified curing period. Do not use membrane-forming compound on surfaces where appearance would be objectionable, on any surface to be painted, where coverings are to be bonded to the concrete, or on concrete to which other concrete is to be bonded. If forms are removed prior to the expiration of the curing period, provide another curing procedure specified herein for the remaining portion of the curing period. Provide moist curing for those areas receiving liquid chemical sealer, hardener, or epoxy coating. Allow curing compound/sealer installations to cure prior to the installation of materials that adsorb VOCs.

3.11.1 Requirements for Type III, High-Early-Strength Portland Cement

The curing periods are required to be not less than one-fourth of those specified for portland cement, but in no case less than 72 hours.

3.11.2 Curing Periods

ACI 301 Section 5, except 10 days for retaining walls, pavement or chimneys. Begin curing immediately after placement. Protect concrete from premature drying, excessively hot temperatures, and mechanical injury; and maintain minimal moisture loss at a relatively constant temperature for the period necessary for hydration of the cement and hardening of the concrete. The materials and methods of curing are subject to approval by the Engineer.

3.11.3 Curing Formed Surfaces

Accomplish curing of formed surfaces, including undersurfaces of girders, beams, supported slabs, and other similar surfaces by moist curing with forms in place for full curing period or until forms are removed. If forms are removed before end of curing period, accomplish final curing of formed surfaces by any of the curing methods specified above, as applicable.

3.11.4 Curing Unformed Surfaces

- a. Accomplish initial curing of unformed surfaces, such as monolithic slabs, floor topping, and other flat surfaces, by membrane curing.
- b. Accomplish final curing of unformed surfaces by any of curing methods specified, as applicable.

3.11.5 Temperature of Concrete During Curing

When temperature of atmosphere is **41 degrees F** and below, maintain temperature of concrete at not less than **55 degrees F** throughout concrete curing period or **45 degrees F** when the curing period is measured by maturity. When necessary, make arrangements before start of concrete placing for heating, covering, insulation, or housing as required to maintain specified temperature and moisture conditions for concrete during curing period.

When the temperature of atmosphere is **80 degrees F** and above or during other climatic conditions which cause too rapid drying of concrete, make arrangements before start of concrete placing for installation of wind breaks, of shading, and for fog spraying, wet sprinkling, or moisture-retaining covering of light color as required to protect concrete during curing period.

Changes in temperature of concrete must be uniform and not exceed 37 degrees F in any one hour nor 80 degrees F in any 24-hour period.

3.11.6 Protection from Mechanical Injury

During curing period, protect concrete from damaging mechanical disturbances, particularly load stresses, heavy shock, and excessive vibration and from damage caused by rain or running water.

3.11.7 Protection After Curing

Protect finished concrete surfaces from damage by construction operations.

3.12 FIELD QUALITY CONTROL

3.12.1 Aggregate Testing

3.12.1.1 Fine Aggregate

At least once during each shift when the concrete plant is operating, there shall be one sieve analysis and fineness modulus determination in accordance with ASTM C136 and COE CRD-C 104 for the fine aggregate or for each fine aggregate if it is batched in more than one size or classification. The location at which samples are taken may be selected by the Contractor as the most advantageous for control. However, the Contractor is responsible for delivering fine aggregate to the mixer within specification limits. When the amount passing on any sieve is outside the specification limits, the fine aggregate shall be immediately resampled and retested. If there is another failure on any sieve, the fact shall be immediately reported to the Engineer, concreting shall be stopped, and immediate steps taken to correct the grading.

3.12.1.2 Coarse Aggregate

At least once during each shift in which the concrete plant is operating, there shall be a sieve analysis in accordance with ASTM C136 for each size of coarse aggregate. The location at which samples are taken may be selected by the Contractor as the most advantageous for production control. However, the Contractor shall be responsible for delivering the aggregate to the mixer within specification limits. A test record of samples of aggregate taken at the same locations shall show the results of the current test as well as the average results of the five most recent tests including the current test. The Contractor may adopt limits for control coarser than the specification limits for samples taken other than as delivered to the mixer to allow for degradation during handling. When the amount passing any sieve is outside the specification limits, the coarse aggregate shall be immediately resampled and retested. If the second sample fails on any sieve, that fact shall be reported to the Engineer. Where two consecutive averages of 5 tests are outside specification limits, the operation shall be considered out of control and reported to the Engineer. Concreting shall be stopped and immediate steps shall be taken to correct the grading.

3.12.2 Concrete Sampling

ASTM C172. Collect samples of fresh concrete to perform tests specified. ASTM C31 for making test specimens.

3.12.3 Concrete Testing

3.12.3.1 Slump Tests

ASTM C143. Take concrete samples during concrete placement/discharge. The maximum slump may be increased as specified with the addition of an approved admixture provided that the water-cementitious material ratio is not exceeded. Perform tests at commencement of concrete placement, when test cylinders are made, and for each batch (minimum) or for each 20 cubic yards (maximum) of concrete.

3.12.3.2 Temperature Tests

Test the concrete delivered and the concrete in the forms. Perform tests in hot or cold weather conditions (below 50 degrees F and above 80 degrees F) for each batch (minimum) or every 20 cubic yards (maximum) of concrete, until the specified temperature is obtained, and whenever test cylinders and slump tests are made.

3.12.3.3 Compressive Strength Tests

ASTM C39. Make six 6 inch by 12 inch test cylinders for each set of tests in accordance with **ASTM C31**, **ASTM C172** and applicable requirements of **ACI 305R** and **ACI 306R**. Take precautions to prevent evaporation and loss of water from the specimen. Test two cylinders at 7 days, two cylinders at 28 days, and hold two cylinders in reserve. Take samples for strength tests of each mix design of concrete placed each day not less than once a day, nor less than once for each 100 cubic yards of concrete for the first 500 cubic yards, then every 500 cubic yards thereafter, nor less than once for each 5400 square feet of surface area for slabs or walls. For the entire project, take no less than five sets of samples and perform strength tests for each mix design of concrete placed. Each strength test result must be the average of two cylinders from the same concrete sample tested at 28 days. Concrete compressive tests must meet the requirements of this section, the Contract Documents, and ACI 301. Retest locations represented by erratic core strengths. Where retest does not meet concrete compressive strength requirements submit a mitigation or remediation plan for review and approval by the Engineer. Repair core holes with nonshrink grout or patching mortar. Match color and finish of adjacent concrete.

3.12.3.4 Flexural Strength Tests for Slab Concrete

ASTM C78. Make six test specimen for each set of tests in accordance with the applicable requirements of **ASTM C31**, **ASTM C42**, and **ASTM C172**. Take precautions to prevent evaporation and loss of water from the test specimen. Test two specimen at 7 days, two specimen at 28 days, and hold two specimen in reserve. Take samples for strength tests of each mix design of concrete placed each day not less than once a day, nor less than once for each 100 cubic yards of concrete for the first 500 cubic yards, then every 500 cubic yards thereafter, nor less than once for each 5400 square feet of surface area for slabs. Each strength test result must be the average of two specimen from the same concrete sample tested at 28 days. Concrete flexural strength tests must meet the requirements of this section, the Contract Documents, and **ACI 301**. Retest locations represented by erratic flexural strengths. Where retest does not meet concrete flexural strength requirements submit a mitigation or remediation plan for review and approval by the Engineer. Repair holes with nonshrink grout or patching mortar. Match color and finish of adjacent concrete.

3.12.3.5 Air Content

ASTM C173 or ASTM C231 for normal weight concrete. Test air-entrained concrete for air content at the same frequency as specified for slump tests.

3.12.3.6 Unit Weight of Structural Concrete

ASTM C138. Determine unit weight of normal weight concrete. Perform test for every 20 cubic yards maximum.

3.12.3.7 Chloride Ion Concentration

Chloride ion concentration must meet the requirements of the paragraph titled CORROSION AND CHLORIDE CONTENT. Determine water soluble ion concentration in accordance with ASTM C1218. Perform test once for each mix design.

3.12.3.8 Strength of Concrete Structure

The strength of the concrete structure will be considered to be deficient if any of the following conditions are identified:

- a. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor to evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
- b. Failure to meet compressive strength tests as evaluated for all concrete or failure to meet flexural strength tests as evaluated for slab-on-grade concrete.
- c. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests of standard cured cylinders equals or exceeds specified compressive strength, and no compressive-strength test value falls below specified compressive strength by more than 500 psi if specified compressive strength is 5000 psi, or no compressive strength test value is less than 10 percent of specified compressive strength if specified compressive strength is greater than 5000 psi.

A compressive-strength test to be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.

- d. Reinforcement not conforming to requirements specified.
- e. Concrete which differs from required dimensions or location in such a manner as to reduce strength.
- f. Concrete curing and protection of concrete against extremes of temperature during curing, not conforming to requirements specified.
- g. Concrete subjected to damaging mechanical disturbances, particularly load stresses, heavy shock, and excessive vibration.
- h. Poor workmanship likely to result in deficient strength.

Where the strength of the concrete structure is considered deficient

submit a mitigation or remediation plan for review and approval by the Engineer.

3.12.3.9 Non-Conforming Materials

Factors that indicate that there are non-conforming materials include (but not limited to) excessive compressive strength, inadequate compressive strength, inadequate flexural strength, excessive slump, excessive voids and honeycombing, concrete delivery records that indicate excessive time between mixing and placement, or excessive water was added to the mixture during delivery and placement. Any of these indicators alone are sufficient reason for the Engineer to request additional sampling and testing.

Investigations into non-conforming materials must be conducted at the Contractor's expense. The Contractor must be responsible for the investigation and must make written recommendations to adequately mitigate or remediate the non-conforming material. The Engineer may accept, accept with reduced payment, require mitigation, or require removal and replacement of non-conforming material at no additional cost to the Port Authority.

3.12.3.10 Testing Concrete Structure for Compressive Strength

When there is evidence that strength of concrete structure in place does not meet specification requirements or there are non-conforming materials, additional testing and inspecting, at Contractor's expense, shall be performed to determine compliance of replaced or additional work with specified requirements. Make cores drilled from hardened concrete for compressive strength determination in accordance with [ASTM C42](#), and as follows:

- a. Take at least three representative cores from each member or area of concrete-in-place that is considered potentially deficient. Location of cores will be determined by the Engineer.

Acceptance criteria for concrete strength to be in accordance with all applicable provisions of [ACI 301](#).

- b. Test cores after moisture conditioning in accordance with [ASTM C42](#) if concrete they represent is more than superficially wet under service.
- c. Air dry cores, ([60 to 80 degrees F](#) with relative humidity less than 60 percent) for 7 days before test and test dry if concrete they represent is dry under service conditions.
- d. Strength of cores from each member or area are considered satisfactory if their average compressive strength is equal to or greater than 85 percent of the design compressive strength, and if no single core strength is less than 75 percent of the design compressive strength. Additional testing of cores extracted from locations represented by erratic core strength results will be permitted only when approved by the Engineer.
- e. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Engineer but will not be used as sole basis for approval or rejection of concrete.

Fill core holes solid with patching mortar and finished to match adjacent

concrete surfaces.

Correct concrete work that is found inadequate by core tests in a manner approved by the Engineer.

3.12.3.11 Testing Slab Concrete for Flexural Strength

When there is evidence that strength of concrete slab in place does not meet specification requirements or there are non-conforming materials, additional testing and inspecting, at Contractor's expense, shall be performed to determine compliance of replaced or additional work with specified requirements. Make sawed beams from hardened concrete for flexural strength determination in accordance with **ASTM C42**, and as follows:

- a. Take at least three representative samples from each member or area of concrete-in-place that is considered potentially deficient. Location of samples will be determined by the Engineer.

Acceptance criteria for concrete strength to be in accordance with all applicable provisions of **ACI 301**.

- b. Test samples after moisture conditioning in accordance with **ASTM C42** if concrete they represent is more than superficially wet under service.
- c. Air dry samples, (**60 to 80 degrees F** with relative humidity less than 60 percent) for 7 days before test and test dry if concrete they represent is dry under service conditions.
- d. Strength of samples from each member or area are considered satisfactory if their average flexural strength is equal to or greater than 85 percent of the design flexural strength, and if no single core strength is less than 75 percent of the design flexural strength. Additional testing of cores extracted from locations represented by erratic flexural strength results will be permitted only when approved by the Engineer.

Fill holes solid with patching mortar and finished to match adjacent concrete surfaces.

Correct concrete work that is found inadequate by tests in a manner approved by the Engineer.

3.13 REPAIR, REHABILITATION AND REMOVAL

Before the Engineer accepts the structure the Contractor must inspect the structure for cracks, damage and substandard concrete placements that may adversely affect the service life of the structure. A report documenting these defects must be prepared which includes recommendations for repair, removal or remediation must be submitted to the Engineer for approval before any corrective work is accomplished.

3.13.1 Crack Repair

Prior to final acceptance, all cracks in excess of **0.02 inches** wide must be documented and repaired. The proposed method and materials to repair the cracks must be submitted to the Engineer for approval. The proposal must address the amount of movement expected in the crack due to

temperature changes and loading.

3.13.2 Repair of Weak Surfaces

Weak surfaces are defined as mortar-rich, rain-damaged, uncured, or containing exposed voids or deleterious materials. Concrete surfaces with weak surfaces less than $\frac{1}{4}$ inch thick must be diamond ground to remove the weak surface. Surfaces containing weak surfaces greater than $\frac{1}{4}$ inch thick must be removed and replaced or mitigated in a manner acceptable to the Engineer.

3.13.3 Failure of Quality Assurance Test Results

Proposed mitigation efforts by the Contractor must be approved by the Engineer prior to proceeding.

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SECTION 05 12 00

STRUCTURAL STEEL
9/19/2025

PART 1 GENERAL

1.1 RELATED ITEMS

For information regarding tie rods and dock cleats, refer to Section 05 50 14 STRUCTURAL METAL FABRICATIONS.

For information regarding metal ladders, refer to Section 05 51 33 METAL LADDERS.

For information regarding steel sheet piling, refer to Section 31 41 16 METAL SHEET PILING.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

AISC 207	(2016; R 2017) Certification Standard for Steel Fabrication and Erection, and Manufacturing of Metal Components
AISC 303	(2016) Code of Standard Practice for Steel Buildings and Bridges
AISC 325	(2017) Steel Construction Manual
AISC 326	(2009) Detailing for Steel Construction
AISC 360	(2016) Specification for Structural Steel Buildings

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME B46.1	(2020) Surface Texture, Surface Roughness, Waviness and Lay
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AMERICAN WELDING SOCIETY (AWS)

AWS A2.4	(2012) Standard Symbols for Welding, Brazing and Nondestructive Examination
AWS D1.1	(2020; Errata 1 2021) Structural Welding Code - Steel
AWS QC1	(2016) Specification for AWS Certification of Welding Inspectors

ASTM INTERNATIONAL (ASTM)

ASTM A6	(2024) Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling
ASTM A563	(2021; E 2022a) Standard Specification for Carbon and Alloy Steel Nuts
ASTM A572	(2021; E 2021) Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel
ASTM E94	(2017) Standard Guide for Radiographic Examination Using Industrial Radiographic Film
ASTM E164	(2019) Standard Practice for Contact Ultrasonic Testing of Weldments
ASTM E165	(2023) Standard Practice for Liquid Penetrant Testing for General Industry
ASTM E709	(2021) Standard Guide for Magnetic Particle Testing
ASTM F436	(2019) Standard Specification for Hardened Steel Washers Inch and Metric Dimensions
ASTM F3125	(2019) Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR Part 1926, Subpart R Steel Erection

AISC - RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS (RCSC)

AISC - RCSC (2020) Specification for Structural Joints Using High-Strength Bolts

1.3 SUBMITTALS

Engineer approval is required for submittals with an "E" classification. Submittals not having an "E" classification are for information only. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Erection and Erection Bracing Drawings; E

Welding Repair Plan; E

SD-02 Shop Drawings

Fabrication And Connection Drawings; E

SD-03 Product Data

Welding Electrodes and Rods; E

SD-05 Design Data

Shoring And Temporary Bracing; E

Design Data and Computations; E

SD-06 Test Reports

Bolts, Nuts, and Washers; E

Bolt Testing Reports; E

Weld Testing Reports; E

SD-07 Certificates

Steel; E

Bolts, Nuts, and Washers; ; E

AISC Structural Steel Fabricator Quality Certification; E

AISC Structural Steel Erector Quality Certification; E

Welding Procedures and Qualifications; E

Welding Electrodes and Rods; E

Certified Welding Inspector; E

Welding Procedure Specifications (WPS); E

1.4 AISC QUALITY CERTIFICATION

Work must be fabricated by an AISC Certified Structural Steel Fabricator, in accordance with **AISC 207**, Category BU. Submit **AISC Structural Steel Fabricator quality certification**.

Work must be erected by an AISC Structural Steel Certified Erector, in accordance with **AISC 207**, Category CSE. Submit **AISC Structural Steel erector quality certification**. As an alternative, work may be erected by a qualified steel erector who has been involved in a minimum of three successful structural steel erection projects similar in size and scope to this project for at least five years. Submit project information including project name, project scope, contractor's scope of work, dollar value, date of completion, and point-of-contact for the representative projects. The projects shall demonstrate the required experience and history of success in tied back sheet pile wall structural steel erection or similar. Submit all applicable qualifications and experience for review and approval by the Engineer.

1.5 QUALITY ASSURANCE

1.5.1 Preconstruction Submittals

1.5.1.1 Erection and Erection Bracing Drawings

Submit for review and record purposes. Indicate the sequence of erection, temporary shoring and bracing. The erection drawings must conform to **AISC 303**. Erection drawings must be reviewed, stamped and sealed by a registered professional engineer licensed in the State of Missouri. Contractor is fully responsible for all bracing during construction.

1.5.2 Fabrication Drawing Requirements

Submit **Fabrication And Connection Drawings** for approval prior to fabrication. Prepare in accordance with **AISC 303**, **AISC 325** and **AISC 326**. Fabrication (shop) drawings must not be reproductions of contract drawings. Sign and seal fabrication (shop) drawings by a registered professional engineer licensed in the State of Missouri. Include complete information for the fabrication and erection of the structure's components, including the location, type, and size of bolts, welds, member sizes and lengths, connection details, blocks, copes, and cuts. Use **AWS A2.4** standard welding symbols. **Shoring and Temporary Bracing** must be designed and sealed by a registered professional engineer licensed in the State of Missouri and submitted for record purposes, with **Design Data and Computations**, as part of the drawings. Clearly highlight any deviations from the details shown on the Contract Drawings highlighted on the fabrication (shop) drawings. Explain the reasons for any deviations from the Contract Drawings.

Fabrication (shop) drawings shall indicate material thickness, type, grade, and class; dimensions; and construction details. Fabrication (shop) drawings shall include catalog cuts, erection details, manufacturer's descriptive data and installation instructions, and templates. Fabrication (shop) drawings for all structural steel work shall be submitted including (but not limited to) the following: Beams, gusset plates, walers, anchor and fixing plates, shelf angles, shear studs, wale-channel spacers, splice plates, bearing plates, pile drive shoes and cap plates, anchor pockets, and tie-rods.

The fabrication (shop) drawings shall indicate a proposed Waler Splice Layout Plan. The Waler Splice Layout Plan shall indicate the proposed location of all waler splices and shall confirm that these splice locations meet the waler splice location criteria provided on the Contract Drawings. The Waler Splice Layout Plan and all fabrication drawings shall be approved by the Engineer prior to commencement of fabrication.

1.5.3 Certifications

1.5.3.1 Welding Procedures and Qualifications

Prior to welding, submit certification for each welder stating the type of welding and positions qualified for, the code and procedure qualified under, date qualified, and the firm and individual certifying the qualification tests. If the qualification date of the welder or welding operator is more than 6 months old, the welding operator's qualification certificate must be accompanied by a current certificate by the welder attesting to the fact that he has been engaged in welding since the date of certification, with no break in welding service greater than 6 months.

Conform to all requirements specified in [AWS D1.1](#).

1.6 STORING AND HANDLING MATERIALS

All materials which are delivered in advance of use shall be given protected storage off the ground. All materials which are damaged during storage and are not approved for use by the Engineer shall be replaced with new materials.

PART 2 PRODUCTS

2.1 SYSTEM DESCRIPTION

Provide the structural steel system complete and ready for use. Provide structural steel systems including design, materials, installation, workmanship, fabrication, assembly, erection, inspection, quality control, and testing in accordance with [AISC 303](#) and [AISC 360](#) except as modified in this contract.

2.2 STEEL

2.2.1 Structural Steel

Structural Steel includes all rolled structural shapes including but not limited to wide-flanges, channels, angles, and other miscellaneous shapes. Structural steel also includes all plates including but not limited to gusset plates, stiffener plates, cover plates, anchor plates, fixing plates, and shim plates.

All Structural Steel included in the Contract shall conform to [ASTM A572](#), Gr. 50. Specified minimum yield strength equal to 50 ksi.

2.3 BOLTS, NUTS, AND WASHERS

Submit the certified manufacturer's mill reports which clearly show the applicable ASTM mechanical and chemical requirements together with the actual test results for the supplied fasteners.

2.3.1 High-Strength Bolts

High strength bolts and nuts must be shipped together in the same shipping container. The supplier shall supply nuts that have been lubricated and tested with the supplied bolts.

2.3.1.1 Typical Bolts (Unless Noted Otherwise)

[ASTM F3125](#), Grade A325, Type 3 Heavy Hex Head Style, plain finish.

2.3.1.1.1 Waler Splice Bolts

[ASTM F3125](#), Grade A490, Type 3 Heavy Hex Head Style, plain finish.

2.3.1.2 Nuts

[ASTM A563](#), Grade and Style as specified in the applicable ASTM bolt standard.

2.3.1.3 Washers

ASTM F436, Type 3.

2.4 STRUCTURAL STEEL ACCESSORIES

2.4.1 Welding Electrodes and Rods

AWS D1.1. Submit product data for welding electrodes and rods.

2.5 FABRICATION

Fabrication must be in accordance with the applicable provisions of AISC 325. Fabrication and assembly must be done in the shop to the greatest extent possible. Punch, subpunch and ream, or drill bolt holes perpendicular to the surface of the member.

Compression joints depending on contact bearing must have a surface roughness not in excess of 500 micro inch as determined by ASME B46.1, and ends must be square within the tolerances for milled ends specified in ASTM A6.

Shop splices of members between field splices will be permitted only where indicated on the Contract Drawings. Splices not indicated require the approval of the Engineer.

2.5.1 Markings

Prior to erection, identify members by a painted erection mark. Connecting parts assembled in the shop for reaming holes in field connections must be match marked with scratch and notch marks. Do not locate erection markings on areas to be welded. Do not locate match markings in areas that will decrease member strength or cause stress concentrations.

PART 3 EXECUTION

3.1 ERECTION

Erection of structural steel must be in accordance with the applicable provisions of AISC 325, AISC 303 and 29 CFR Part 1926, Subpart R.

3.1.1 STORAGE

Store the material out of contact with the ground in such manner and location as to minimize deterioration.

3.2 CONNECTIONS

3.2.1 General

Bolts, nuts, and washers must be clean of dirt and rust, and lubricated immediately prior to installation.

All bolts shall be installed at the proper location and set straight and square with connecting members. Plain washers shall be provided under nuts of bolts except where beveled washers are required or as noted on the drawings. Nuts on bolts shall be drawn up snug tight, bringing the connected plies into firm contact, and the bolts tensioned to the minimum

required pretension load in accordance with AISC - Research Council on Structural Connections (AISC - RCSC) - Specification for Structural Joints Using High Strength Bolts - latest revision date of 11 June 2020. Once tensioned and verified, threads of bolts shall be peened. Spacers shall be installed as required to prevent distortion of bolted members and prevention of excessive elongation of bolts. Until final acceptance of the complete work, the Contractor will be required to check, straighten and tighten bolts in any part of the structures.

3.2.2 Bolt Holes

Bolting and bolt hole fabrication shall be in accordance with AISC - Research Council on Structural Connections (AISC - RCSC) - Specification for Structural Joints Using High Strength Bolts - latest revision date of 11 June 2020. Standard holes are permitted to be used in all bolted joints for this project. Construction of bolt holes via flame cutting is acceptable provided the hole is finished to its design diameter via reaming as to avoid the creation of Heat Affected Zones (HAZ) and to prevent the accidental oversizing of holes. Bolt holes shall be sized as outlined in RCSC Table 3.1 - NOMINAL BOLT HOLE DIMENSIONS (excerpt of table provided below):

RCSC TABLE 3.1 - NOMINAL BOLT HOLE DIMENSIONS	
Nominal Bolt Diameter, db, (in.)	Standard Nominal Bolt Hole Diameter (in.)
3/4	13/16
7/8	15/16
1	1 1/16
$\geq 1 \frac{1}{8}$	db + 1/16
The upper tolerance on the tabulated nominal dimensions shall not exceed 1/32 in.	
The slightly conical hole that naturally results from punching operations with properly matched punches and dies is acceptable.	

3.2.3 Bolt Installation

All bolts shall be installed in accordance with Section 8 of the AISC - Research Council on Structural Connections (AISC - RCSC) - Specification for Structural Joints Using High Strength Bolts - latest revision date of 11 June 2020. There are two (2) pretensioning methods that can be used for this project: Turn-of-Nut Pretensioning (A), and, Calibrated Wrench Pretensioning (B).

3.3 GAS CUTTING

Use of gas-cutting torch in the field for correcting fabrication errors is not permitted on any major member in the structural framing. Use of a gas cutting torch will be permitted on minor members not under stress only after approval has been obtained from the Engineer.

3.4 WELDING

Welding must be in accordance with [AWS D1.1](#). Grind exposed welds smooth as indicated. Provide [AWS D1.1](#) qualified welders, welding operators, and tackers. All welds shall be of the type, size, and length indicated on the Contract Drawings and on the fabrication (shop) drawings.

Develop and submit the [Welding Procedure Specifications \(WPS\)](#) for all welding, including welding done using prequalified procedures. Submit for approval all WPS, whether prequalified or qualified by testing.

Submit [Welding Repair Plan](#) and procedures for repairing welds which do not pass inspection. Repair defective welds in accordance with [AWS D1.1](#), Fabrication Clause. Remove defective weld metal to sound metal by use of air carbon-arc or oxygen gouging. Thoroughly clean surfaces before welding. Retest welds that have been repaired by the same methods used in the original inspection. Except for the repair of members cut to remove test coupons and found to have acceptable welds costs of repairs and retesting will be borne by the Contractor. Submit welding repair plans for steel, prior to making repairs.

3.5 TACK WELDS

In completing the structural assemblies, unless otherwise shown on drawings, tack welds may be used to maintain alignment prior to tightening. After final tightening, all bolts and nuts shall be tack welded to the underlying washer or structural element. Tack welds to any part of a tie-rod or bolt threads are strictly prohibited.

3.6 DISSIMILAR METALS

Where dissimilar metals are in contact, protect surfaces with a coating in accordance with MPI 79 to prevent galvanic or corrosive action.

3.7 FIELD QUALITY CONTROL

Perform field tests, and provide labor, equipment, and incidentals required for testing. Notify the Engineer in writing of defective welds, bolts, nuts, and washers within 7 working days of the date of the inspection.

3.7.1 Welds

3.7.1.1 Visual Inspection

[AWS D1.1](#). Furnish the services of AWS-certified welding inspectors for fabrication and erection inspection and testing, and verification inspections. A [Certified Welding Inspector](#) must perform visual inspection on 100 percent of all welds. Document this inspection in the Visual Weld Inspection Log. Submit certificates indicating that certified welding inspectors meet the requirements of [AWS QC1](#).

Inspect proper preparation, size, gaging location, and acceptability of all welds; identification marking; operation and current characteristics of welding sets in use.

3.7.1.2 Field Weld Testing and Inspection

In addition to visual inspection, structural field welds shall be tested

and inspected according to AWS D1.1. Furnish the services of AWS-certified welding inspectors for field weld inspection and testing, and verification inspections. Field weld testing shall be completed using one or more of the following inspection procedures, at structural weld inspection agency's option:

- a. Liquid Penetrant Inspection: ASTM E165;
- b. Magnetic Particle Inspection: ASTM E709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
- c. Ultrasonic Inspection: ASTM E164;
- d. Radiographic Inspection: ASTM E94;

Submit Weld Testing Reports.

3.7.2 High-Strength Bolts

3.7.2.1 Testing Bolt, Nut, and Washer Assemblies

Test a minimum of 3 bolt, nut, and washer assemblies from each mill certificate batch in a tension measuring device at the job site prior to the beginning of bolting start-up. Demonstrate that the bolts and nuts, when used together, can develop tension not less than the provisions specified in AISC 360 for the strength and grade specified. The bolt tension must be developed by one of the methods prescribed in Section 3.2.3 of this specification and per AISC - Research Council on Structural Connections (AISC - RCSC) - Specification for Structural Joints Using High Strength Bolts - latest revision date of 11 June 2020. A representative of the manufacturer or supplier must be present to ensure that the fasteners are properly used, and to demonstrate that the fastener assemblies supplied satisfy the specified requirements. Submit Bolt Testing Reports.

3.7.2.2 Inspection

Inspection procedures must be in accordance with AISC 360. Confirm and report to the Engineer that the materials meet the project specification and that they are properly stored. Observe the specified job site testing and calibration, and confirm that the procedure to be used provides the required tension. Monitor the work to ensure the testing procedures are routinely followed on joints that are specified to be fully tensioned.

Inspect calibration of torque wrenches for high-strength bolts.

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-- End of Section Table of Contents --

SECTION 05 50 14

STRUCTURAL METAL FABRICATIONS
9/19/2025

PART 1 GENERAL

1.1 SUMMARY

This Section includes information regarding tie rods, dock cleats, anchor bolts, and mooring rings.

1.2 RELATED ITEMS

For information regarding structural steel including rolled shapes, plates, welds, and bolts refer to Section 05 12 00 STRUCTURAL STEEL.

For information regarding Metal Ladders refer to Section 05 51 33 METAL LADDERS.

For information regarding steel sheet piling, refer to Section 31 41 16 METAL SHEET PILING.

For information regarding cast-in-place concrete, refer to Section 03 30 00 CAST-IN-PLACE CONCRETE.

1.3 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

AISC 303 (2016) Code of Standard Practice for Steel Buildings and Bridges

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1 (2020; Errata 1 2021) Structural Welding Code - Steel

AWS QC1 (2016) Specification for AWS Certification of Welding Inspectors

ASTM INTERNATIONAL (ASTM)

ASTM A536 (1984; R 2019; E 2019) Standard Specification for Ductile Iron Castings

ASTM A615 (2022) Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement

ASTM F1554 (2020) Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength

1.4 SUBMITTALS

Engineer approval is required for submittals with an "E" classification. Submittals not having an "E" classification are for information only. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Fabrication Drawings; E

Installation Drawings; E

Welding Repair Plan; E

SD-03 Product Data

Tie Rods And Accessories; E

Cast-In Anchor Bolts And Accessories; E

Dock Cleats and Accessories; E

Mooring Rings and Accessories; E

Welding Electrodes and Rods; E

Filler Metal;

SD-05 Design Data

Design Data and Computations; E

SD-06 Test Reports

Mill Test Reports; E

SD-07 Certificates

Welding Procedures and Qualifications; E

Welding Electrodes and Rods; E

Certified Welding Inspector; E

Welding Procedure Specifications (WPS); E

Weld Inspection Log; E

1.5 DELIVERY, STORAGE, AND PROTECTION

Protect all items from corrosion, deformation, and other types of damage. Store items in an enclosed area free from contact with soil and weather. All materials which are delivered in advance of use shall be given protected storage off the ground. All materials which are damaged during storage and are not approved for use by the Engineer shall be replaced with new materials.

1.6 QUALITY ASSURANCE

1.6.1 Fabrication Drawings

Submit fabrication drawings for all items showing layout(s), connections to structural system, and anchoring details as specified in [AISC 303](#). Include within the fabrication drawings catalog cuts, templates, fabrication assembly details and type, grade and class of materials. Indicate methods of protecting the work during shipping, storage, field assembly, and installation.

1.6.2 Installation Drawings

Submit templates, erection, and installation drawings for all items indicating thickness, type, grade, class of metal, and dimensions. Show construction and installation details in relation to the sheet pile construction. Include required field welds or field connections as applicable.

1.6.3 Design Data and Computations

Connections of structural fabrications to proposed structural elements including connections to sheet piling and cast-in-place concrete must be designed and sealed by a registered professional engineer licensed in the State of Missouri and submitted for record purposes, with Design Data and Computations, as part of the fabrication and installation drawings. Clearly highlight any deviations from the details shown on the Contract Drawings highlighted on the fabrication (shop) drawings. Explain the reasons for any deviations from the Contract Drawings.

Submit design data and computations for permanent attachment of dock cleats and mooring rings to the proposed construction.

1.6.4 Welding Procedures and Qualifications

Prior to welding, submit certification for each welder stating the type of welding and positions qualified for, the code and procedure qualified under, date qualified, and the firm and individual certifying the qualification tests. If the qualification date of the welder or welding operator is more than 6 months old, accompany the welding operator's qualification certificate with a current certificate by the welder attesting to the fact that he has been engaged in welding since the date of certification, with no break in welding service greater than 6 months.

Conform to all requirements specified in [AWS D1.1](#).

PART 2 PRODUCTS

2.1 GENERAL

Provide fastenings of compatible materials (avoid contact of dissimilar metals). Submit the manufacturer's [Mill Test Reports](#) which clearly show the applicable ASTM or AISI mechanical and chemical requirements together with the actual test results for the supplied materials.

2.2 TIE-RODS AND ASSOCIATED ACCESSORIES

Tie Rods shall be sized as shown on the Contract Drawings and shall conform to [ASTM A615](#), Gr. 100. Specified yield strength, F_y , equal to 100

ksi. Tie Rods shall be fully threaded bars.

Associated accessories used in the securing of Tie-Rods to the permanent construction including, but not limited to, hex nuts, hardened/beveled washers, couplers, and turn-buckles shall be of the same manufacturer of the tie rod to provide proper strength compatibility and proper fitment.

Submit [Tie Rods and Accessories](#) product data to the Engineer for approval prior to commencement of construction.

2.3 CAST-IN ANCHOR BOLTS AND ASSOCIATED ACCESSORIES

Cast-in anchor bolts shall be sized as shown on the Contract Drawings and/or per manufacturer's design and standards, as applicable. Cast-in anchor bolts shall conform to [ASTM F1554](#), Gr. 105, hot-dip galvanized.

Associated accessories used in the securing of anchor bolts to the permanent construction including, but not limited to, hex nuts and hardened/beveled washers shall be of the same manufacturer of the anchor bolts to provide proper strength compatibility and proper fitment.

Submit [Cast-In Anchor Bolts and Accessories](#) product data to the Engineer for approval prior to commencement of construction.

2.4 DOCK CLEATS AND ASSOCIATED ACCESSORIES

Dock Cleats shall be provided to meet the capacity demands indicated on the Contract Drawings. Dock cleats shall be ductile cast iron conforming to the requirements of [ASTM A536](#), Gr. 65-45-12. Dock Cleats shall be provided with the manufacturer's standard protective coating.

Dock cleats shall be manufactured by:

SCHOELLHORN-ALBRECHT
ST. LOUIS, MO
PHONE: (314-965-3339)

OR

ESC MARINE SYSTEMS
CORNELIUS, NC
PHONE: (980-689-4338)

OR

APPROVED EQUIVALENT

Associated accessories used in the securing of dock cleats to the permanent construction shall be of the same manufacturer of the dock cleats or shall be the dock cleat manufacturer's standard to provide proper strength compatibility and proper fitment. Anchorage of the dock cleats to the cast-in-place concrete construction shall be per the manufacturer's standards and recommendations.

Submit [Dock Cleats and Accessories](#) product data to the Engineer for approval prior to commencement of construction.

2.5 MOORING RINGS AND ASSOCIATED ACCESSORIES

Mooring rings shall be sized as indicated on the Contract Drawings. Mooring rings shall be cast steel conforming to the requirements of AISI 8635. Specified tensile strength, Ft, equal to 150 ksi. Specified yield strength, Fy, equal to 125 ksi. Mooring rings shall be provided with the manufacturer's standard protective coating.

Mooring rings shall be manufactured by:

DURABOND STEEL
EXPORT, PA
PHONE: (724-327-0280)

OR

APPROVED EQUIVALENT

Associated accessories used in the securing of mooring rings to the permanent construction shall be of the same manufacturer of the mooring rings or shall be the mooring rings manufacturer's standard, or design, to provide proper strength compatibility and proper fitment. Attachment of the mooring rings to the sheet pile construction shall be per the manufacturer's standards and recommendations.

Submit [Mooring Rings and Accessories](#) product data to the Engineer for approval prior to commencement of construction.

2.6 FABRICATION

2.6.1 Welding

Submit [Welding Electrodes and Rods](#) used for all welding activities.

2.6.1.1 Welding of Structural Steel

2.6.1.1.1 [Welding Procedure Specifications \(WPS\)](#) for Structural Steel

Use prequalified welding procedures for structural steel as described in [AWS D1.1](#), Prequalification of WPSs Clause or qualify by tests as prescribed in [AWS D1.1](#), Qualification Clause. For welding procedures qualified by tests, the coupon welding and specimen testing will be witnessed and the test report document signed by the Engineer or Engineer's representative. Approval of any welding procedure does not relieve the Contractor of the responsibility for producing a finished structure meeting all requirements of these specifications. The Contractor will be directed or authorized to make any changes in previously approved welding procedures that are deemed necessary or desirable by the Engineer.

- a. Submit a complete schedule of welding procedures for each steel structure to be welded prior to commencing fabrication. Provide the schedule in conformance with the requirements specified in the provisions of [AWS D1.1](#).
- b. Provide within the schedule detailed procedure specifications and tables or diagrams showing the procedures to be used for each required joint. Include in the welding procedures filler metal, preheat, interpass temperature and stress-relief heat treatment requirements.

Clearly identify each welding procedure as being prequalified or required to be qualified by tests.

- c. Show types and locations of welds designated or in the specifications to receive nondestructive testing in the welding procedures.

2.6.1.1.2 Welding Process

Perform welding of structural steel by an electric arc welding process using a method which excludes the atmosphere from the molten metal and conforms to the applicable provisions of AWS D1.1. Minimize residual stresses, distortion and shrinkage from welding.

2.6.1.1.3 Welding Technique

2.6.1.1.3.1 Filler Metal

Provide the electrode, electrode-flux combination and grade of filler metal conforming to the appropriate AWS specification for the base metal and welding process being used or be as shown where a specific choice of AWS specification allowables is required. Submit filler metal product data. Include the AWS designation of the electrodes to be used in the schedule of welding procedures. Use only low hydrogen electrodes for manual shielded metal-arc welding regardless of the thickness of the steel. Use a controlled temperature storage oven at the job site as prescribed by AWS D1.1, Fabrication Clause to maintain low moisture of low hydrogen electrodes.

2.6.1.1.3.2 Preheat and Interpass Temperature

Perform preheating as required by AWS D1.1, Fabrication Clause or as otherwise specified except that the temperature of the base metal must be at least 70 degrees F. Slowly and uniformly preheat the joint area by approved means to the prescribed temperature, held at that temperature until the welding is completed and then permitted to cool slowly in still air.

2.6.1.1.3.3 Stress-Relief Heat Treatment

Where stress relief heat treatment is specified or shown, perform in accordance with the requirements of AWS D1.1, Fabrication Clause unless otherwise authorized or directed.

2.6.1.1.4 Workmanship

Perform welding workmanship in accordance with AWS D1.1, Fabrication Clause and other applicable requirements of these specifications.

2.6.1.1.4.1 Preparation of Base Metal

Prior to welding inspect surfaces to be welded to ensure compliance with AWS D1.1, Fabrication Clause.

2.6.1.1.4.2 Temporary Welds

Make temporary welds, required for fabrication and erection, under the controlled conditions prescribed for permanent work. Make temporary welds using low-hydrogen welding electrodes and by welders qualified for permanent work as specified in these specifications. Conduct preheating

for temporary welds as required by AWS D1.1 for permanent welds except that the minimum temperature must be 120 degrees F in any case. In making temporary welds, do not strike arcs in other than weld locations. Remove each temporary weld and grind flush with adjacent surfaces after serving its purpose.

2.6.1.1.4.3 Tack Welds

Tack welds that are to be incorporated into the permanent work are to exhibit the same quality requirements as the permanent welds; clean and thoroughly fuse them with permanent welds. Perform preheating as specified above for temporary welds. Provide cascaded ends on multiple-pass tack welds. Remove defective tack welds before permanent welding.

2.7 TESTS, INSPECTIONS, AND VERIFICATIONS

2.7.1 Inspection of Structural Steel Welding

Visual inspection of welds will be required. Supplemental examination of any joint or coupon cut from any location in any joint may also be required.

2.7.1.1 Visual Examination

All visual inspection will be conducted in accordance with AWS D1.1, by a Certified Welding Inspector. Document this inspection in the Visual Weld Inspection Log. Submit certificates indicating that certified welding inspectors meet the requirements of AWS QC1.

2.7.1.2 Supplemental Examination

When the soundness of any weld is suspected of being deficient due to faulty welding the Engineer reserves the right to perform nondestructive supplemental examinations before final acceptance. The cost of such inspection will be borne by the Port Authority.

2.7.2 Welding Repair Plan

Repair defective welds in accordance with AWS D1.1, Fabrication Clause. Remove defective weld metal to sound metal by use of air carbon-arc or oxygen gouging. Thoroughly clean surfaces before welding. Retest welds that have been repaired by the same methods used in the original inspection. Except for the repair of members cut to remove test coupons and found to have acceptable welds costs of repairs and retesting will be borne by the Contractor. Submit welding repair plans for steel, prior to making repairs.

PART 3 EXECUTION

3.1 INSTALLATION

3.1.1 GENERAL

Thoroughly clean all parts to be installed. Remove packing compounds, rust, dirt, grit and other foreign matter. Clean holes and grooves for lubrication. Examine enclosed chambers or passages to make sure that they are free from damaging materials. Where units or items are shipped as assemblies they will be inspected prior to installation. Disassembly,

cleaning and lubrication will not be required except where necessary to place the assembly in a clean and properly lubricated condition. Do not use pipe wrenches, cold chisels or other tools likely to cause damage to the surfaces of rods, nuts or other parts used for assembling and tightening parts. Tighten bolts and screws firmly and uniformly but take care not to overstress the threads. When a half nut is used for locking a full nut place the half nut first followed by the full nut. Lubricate threads of all bolts except high strength bolts, nuts and screws with an appropriate lubricant before assembly. Coat threads of corrosion-resisting steel bolts and nuts with an approved antigalling compound. Driving and drifting bolts or keys will not be permitted.

3.1.2 GENERAL WORKMANSHIP

Provide tie rod alignments that are true and accurate in shape, size, and profile. Make angles and lines continuous and straight.

For cast-in anchor bolts, use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded. Install anchor bolts, accurately located, to elevations required and complying with tolerances in Section 7.5 of [AISC 303](#).

Install dock cleats to the locations indicated on the Contract Drawings. Dock cleat locations may be adjusted in the field as required to facilitate constructability subject to the approval of the Engineer or Engineers's Representative.

Install mooring rings to the locations indicated on the Contract Drawings. Mooring ring locations may be adjusted in the field as required to facilitate constructability subject to the approval of the Engineer or Engineers's Representative.

3.1.3 TIE-ROD INSTALLATION

Provide anchorage as necessary, whether indicated or not, for fastening tie-rods securely in place during installation and tightening operations. Provide fastenings of compatible materials (avoid contact of dissimilar metals). Provide all fasteners flush with the surfaces they fasten, unless indicated otherwise.

Provide intermediate blocking and/or wedges during tie rod installation for support of the tie rods and to eliminate sag in the rods. Maintain blocking and/or wedges during backfill placement. The Contractor shall be responsible for maintaining proper tie rod alignment during tie rod installation and backfilling operations.

The Contractor shall ensure that the dock wall and anchor wall steel sheet piling alignment is maintained throughout the structure during performance of the work. The tie-rods shall be tensioned gradually throughout the performance of the work, particularly during the backfilling operations to maintain proper alignment of the steel sheet piling. Prior to installation of the reinforced concrete cap, all tie-rods shall be secured via a single tack weld on the base of the nut and bearing washer assembly. For information regarding tack weld procedures, refer to Section 05 12 00 STRUCTURAL STEEL.

3.1.4 DOCK CLEAT INSTALLATION

Install dock cleats per the manufacturer's standard, the manufacturer's

design, and per the Contract Drawings. Use setting diagrams, templates, diagrams, instructions, and directions furnished with the items to be embedded. If the manufacturer's design or standard deviates from the information shown on the Contract Drawings, notify the Engineer.

3.1.5 MOORING RING INSTALLATION

Install mooring rings per the manufacturer's standard, the manufacturer's design, and per the Contract Drawings. Use setting diagrams, templates, diagrams, instructions, and directions furnished with the items to be installed. If the manufacturer's design or standard deviates from the information shown on the Contract Drawings, notify the Engineer.

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SECTION 05 51 33

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SECTION 05 51 33

METAL LADDERS
9/19/2025

PART 1 GENERAL

1.1 RELATED ITEMS

For information regarding steel sheet piling, refer to Section 31 41 16
METAL SHEET PILING.

For information regarding structural steel, refer to Section 05 12 00
STRUCTURAL STEEL.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN WELDING SOCIETY (AWS)

AWS A5.1 (2012) Specification for Carbon Steel
Electrodes for Shielded Metal Arc Welding

AWS D1.1 (2020; Errata 1 2021) Structural Welding
Code - Steel

ASTM INTERNATIONAL (ASTM)

ASTM A36 (2019) Standard Specification for Carbon
Structural Steel

ASTM A53 (2022) Standard Specification for Pipe,
Steel, Black and Hot-Dipped, Zinc-Coated,
Welded and Seamless

MASTER PAINTERS INSTITUTE (MPI)

MPI 79 (2016) Primer, Alkyd, Anti-Corrosive for
Metal

SOCIETY FOR PROTECTIVE COATINGS (SSPC)

SSPC Paint 36 (2020) Two-Component Weatherable Aliphatic
Polyurethane Topcoat, Performance Based

SSPC Paint 40 (2019) Zinc-Rich Moisture-Cure
Polyurethane Primer, Performance-Based

SSPC SP 1 (2016) Solvent Cleaning

SSPC SP 6/NACE No.3 (2007) Commercial Blast Cleaning

SSPC PA-1 (2016) Shop, Field and Maintenance
Painting of Steel

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910.23

(Nov 2016) Ladders

1.3 SUBMITTALS

Engineer approval is required for submittals with an "E" classification. Submittals not having an "E" classification are for information only. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Ladder Detail Drawings; E

SD-03 Product Data

Paint Manufacturer's Product Data Sheets; E

Ladder Materials; E

SD-07 Certificates

Fabricator Certification For Ladder Assembly; E

Qualification Of Welders; E

1.4 FABRICATION

The ladders shall be fabricated by a firm or shop skilled and experienced in the fabrication of metal work. Workmanship shall be of the highest quality. Rounded corners of ladder rungs or grab bars shall be made by either with the use of fittings or by bending. To the maximum extent practicable, ladders shall be shop fabricated. Rigid joints shall be a flush-finished welded assembly. Bends in ladder rungs and grab bars shall be smooth and made in such a manner that will not deform the ladder. All welds shall be ground smooth and finished surfaces of ladder rungs and grab bars shall be smooth and free of burrs and sharp corners and edges.

Ladders shall be fabricated in accordance with the structural details included in the Contract Drawings and shall conform to all requirements included herein.

Ladder Detail Drawings shall include all sizes, materials, dimensions, connections, and any other information necessary to fully fabricate the ladders. The Ladder Detail Drawings shall be submitted to the Engineer for approval prior to commencement of ladder fabrication operations.

1.5 CERTIFICATES

Provide fabricator certification for ladder assembly stating that the ladder and associated components have been fabricated according to the requirements of 29 CFR 1910.23.

Provide paint manufacturer's paint compatibility certificates.

1.6 QUALIFICATION OF WELDERS

Qualify welders in accordance with [AWS D1.1](#). Use procedures, materials, and equipment of the type required for the work.

1.7 DELIVERY, STORAGE, AND PROTECTION

Protect from corrosion, deformation, and other types of damage. Store items in an enclosed area free from contact with soil and weather. Remove and replace damaged items with new items.

PART 2 PRODUCTS

2.1 LADDER MATERIALS

2.1.1 Steel Bar (Ladder Rungs and Grab Bars)

Steel bar shall conform to [ASTM A36](#), of any type and class, and shall be carbon-steel. The sizes of the steel bars shall be as shown on the Contract Drawings.

Provide nonslip surfaces on top of each rung and grab bar, either by coating bar with aluminum-oxide granules set in epoxy-resin adhesive or by coating with abrasive material metallurgically bonded to bar. Obtain nonslip surfaces from a single source from a single manufacturer.

2.1.2 Steel Pipe

Steel pipe shall conform to [ASTM A53](#), Gr. B. Steel pipe shall be 8 inch diameter, schedule 80.

2.1.3 Miscellaneous Steel, Plates and Shapes

All miscellaneous steel plates and shapes shall conform to [ASTM A36](#). The sizes of miscellaneous plates and shapes shall be as shown on the Contract Drawings and in the approved Ladder Detail Drawings.

2.2 WELDING ELECTRODES

Welding electrodes shall conform to the requirements of [AWS A5.1](#), class E70.

2.3 FABRICATION FINISHES

2.3.1 Paint

All materials shall be procured from the same coating manufacturer. The individual paints comprising the system shall have been tested and passed all the requirements of the applicable SSPC standards. Submit [Paint Manufacturer's Product Data Sheets](#) and include the manufacturer's recommended application instructions for each type of paint used. Paint shall conform to the following requirements:

a. Primer Coat:

Primer shall be a moisture cure zinc-rich urethane coating conforming to [SSPC Paint 40](#), Type II. The primer may be packaged as a single component paint containing the zinc or a two component material where the zinc must be incorporated into the liquid paint.

b. Finish Coats:

The paint to be used for the required finish coats shall be a two-component aliphatic polyurethane conforming to **SSPC Paint 36** that is qualified to Accelerated Weathering Level 3. Finish coats shall be federal standard 13591 OSHA Safety Yellow.

c. Paint system shall not adversely affect the nonslip surface provided on each rung or grab rail.

PART 3 EXECUTION**3.1 GENERAL INSTALLATION REQUIREMENTS**

Install items at locations indicated, according to manufacturer's and fabricator's instructions. Verify all measurements and take all field measurements necessary before fabrication. Provide exposed fastenings of compatible materials, generally matching in color and finish, and harmonize with the material to which fastenings are applied. Include materials and parts necessary to complete each item, even if such work is not definitively shown or specified.

3.2 WORKMANSHIP

Metalwork must be well formed to shape and size, with sharp lines and angles and true curves. Continuously weld along the entire area of contact. Do not tack weld exposed connections of work in place. Grind smooth exposed welds. Provide smooth finish on exposed surfaces of work in place, unless otherwise approved. Where tight fits are required, mill joints. Cope or miter corner joints, well formed, and in true alignment. Install in accordance with manufacturer's installation instructions and approved drawings, cuts, and details.

3.3 LADDER INSTALLATION

All work specified herein shall be installed plumb and in alignment as shown on the Contract Drawings and in accordance with approved Ladder Detail Drawings.

Structural welds as shown on the plans shall be applied where required as noted on the Contract Drawings and the approved Ladder Detail Drawings to secure the ladder assembly to the steel sheet piling.

3.4 PAINTING

Ladder wells, rungs, and grab rails shall be painted with one coat of primer and two coats of finish paint. Painting shall be in accordance with the applicable requirements of **SSPC PA-1**. Application shall be by spray in accordance with the manufacturer's written instructions. Limited use of brush and roller application is permitted provided the specified film thicknesses are achieved. Steel which is to be bonded to or placed within concrete shall not be painted. Metal surfaces shall be solvent-cleaned to remove oil and grease in accordance with **SSPC SP 1**. Surfaces shall be cleaned by means of dry blasting to a commercial grade conforming to the requirements of **SSPC SP 6/NACE No.3**.

The prime coat of paint specified shall be applied as soon as possible after cleaning of surfaces and in all cases prior to contamination or

deterioration of the prepared surfaces. Cleaning and priming shall be done in the shop unless otherwise directed or permitted. Prior to applying the two (2) finish coats of paint on shop primed surfaces, all damaged areas of the coating shall be wire brushed and solvent-cleaned and touched up with the same type of paint used for the prime coat. The two (2) finish coats may be shop or field applied. If shop applied, any damage to the finish coat shall be repainted in the field with one prime coat and two matching finish coats. All paint coats shall be applied in such manner as to produce an even, continuous film of uniform thickness. Edges, corners, crevices, seams, joints, welds, and other surface irregularities shall receive special attention to ensure that they receive an adequate thickness of paint. The manufacturer's recommendations for minimum and maximum dry time between coats shall be met. At the time of application, paint shall show no signs of hard settling, excessive skimming, leveraging or other deterioration. Paint shall be thoroughly stirred, strained, and kept at a uniform consistency during application. Coating material that has exceeded the manufacturer's shelf life shall not be applied. Materials that have thickened appreciably shall not be applied. Paints of different manufacturers shall not be mixed together. Where necessary to suit conditions of surface, temperature, weather, and method of application, paint may be thinned in accordance with manufacturer's directions. The three (3) coat paint system specified shall be applied so that the dry film thickness of the three (3) coat system at any point shall be not less than 4.0 mils with the primer having a minimum dry film thickness of 1.5 mils. Dry film thickness per coat shall be that recommended by the manufacturer. Application of the system in less than three coats shall not be accepted. Areas of bubbling noted upon curing of any individual coat shall be removed by sanding or screening. The edges of the repaired areas shall be feathered and the coat reapplied to the repaired areas before a subsequent coat is applied. Materials which require painting but will be submerged shall be completely painted prior to submergence.

Paint shall be applied to ladder wells and rungs down elevation 442.00.

3.4.1 Touch Up Painting

Touch up painting shall be performed as required to correct any paint system deficiencies prior to acceptance of the work. All deficiencies shall be corrected as required to achieve a properly painted surface as described in 3.4 above.

Touch up painting shall be performed in accordance with the applicable recommendations, procedures, and specifications of the Society for Protective Coatings (SSPC).

3.5 DISSIMILAR METALS

Where dissimilar metals are in contact, protect surfaces with a coating in accordance with [MPI 79](#) to prevent galvanic or corrosive action.

3.6 FIELD QUALITY CONTROL

The Contractor shall establish and maintain a quality control system for all operations performed under this Section to assure compliance with the Contract Documents. The Contractor shall maintain records of its quality control for all operations performed including, but not limited to, the following:

- a. Quality of Materials;

- b. Assembly and fabrication of ladder components;
- c. Alignment and plumbness of installation;
- d. Welding;
- e. Painting;
- f. Observance of safety regulations.

The Contractor is responsible for coordinating the submittals for all items related to ladder fabrication and installation.

-- End of Section --

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EARTHWORK

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SECTION 31 00 00

EARTHWORK
9/19/2025

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

The work required under this section includes furnishing all materials and equipment, and performing operations along the existing and proposed dock walls, but not limited to, excavation of the steel sheet pile drivelines to remove existing material and debris as required in preparation for pile placement, placing fill material between the existing and proposed dock wall, placing compacted select fill material below the proposed pile cap and around the proposed tie rods, and final grading of site in order to blend the new work into existing site grades.

For Base Bid: The work required shall also include construction of an aggregate drive behind the proposed dock wall pile cap.

For Bid Option 1: The work omits construction of the aggregate drive, but shall include the construction of an aggregate base for the reinforced concrete slab-on-grade behind the proposed dock wall pile cap.

All work shall be conducted in a manner to prevent damage and settlement to any existing structures which are to remain, and to blend final site grades into existing site grades. All work and materials shall be in accordance with the requirements specified herein and shown on the Contract Drawings. Final grading shall be performed in such a manner as to leave the project site in a neat and workmanlike manner. Refer to Section 31 41 16 METAL SHEET PILING regarding the Contractor's responsibility of clearing of the steel sheet pile drivelines in advance of the steel sheet pile installation.

1.2 MEASUREMENT PROCEDURES

1.2.1 Excavation

The unit of measurement for excavation will be the cubic yard, computed by the average end area method from cross sections taken before and after the excavation operations, including the excavation for ditches, gutters, and channel changes, when the material is acceptably utilized or disposed of as herein specified. The measurements will include authorized excavation of unsatisfactory subgrade soil, and the volume of loose, scattered rocks and boulders collected within the limits of the work; allowance will be made on the same basis for selected backfill ordered as replacement. The measurement will not include the volume of subgrade material or other material that is scarified or plowed and reused in-place, and will not include the volume excavated without authorization or the volume of any material used for purposes other than directed. The measurement will not include the volume of any excavation performed prior to the taking of elevations and measurements of the undisturbed grade.

1.2.2 Select Backfill Material

Measure select backfill material in place as the actual cubic yards placed

within the limits shown on the Contract Drawings. Provide unit prices which include furnishing and placing the select backfill material and other incidentals necessary to complete the work.

1.3 PAYMENT PROCEDURES

Refer to Specification Section 01 20 00 PRICE AND PAYMENT PROCEDURES.

1.4 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM C117	(2023) Standard Test Method for Materials Finer than 75-um (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C136	(2019) Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM D698	(2012; E 2014; E 2015) Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/cu. ft. (600 kN-m/cu. m.))
ASTM D1140	(2017) Standard Test Methods for Determining the Amount of Material Finer than 75-µm (No. 200) Sieve in Soils by Washing
ASTM D2487	(2017; E 2020) Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D4318	(2017; E 2018) Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

1.5 DEFINITIONS

1.5.1 Select Backfill

Also called "Select Fill". Select granular soil backfill material placed and compacted behind the proposed dock wall to the limits indicated on the Contract Drawings.

1.5.2 Fill Stone

Free-draining, coarse crushed aggregate material placed between the existing and proposed dock walls as indicated on the Contract Drawings.

1.5.3 Satisfactory Materials

Satisfactory materials for fill, backfill, and/or any in-situ soils to remain in place comprise any materials as approved by the Engineer from

the existing site and coordinated with the geotechnical recommendations to be reused in place as shown in contract documents. Satisfactory materials shall consist of materials classified in accordance with ASTM D2487 as CL, CL-ML, ML, SC, SP, SW SP-SC, SW-SC, SP-SM, and SW-SM, free from roots and other organic matter, contamination from hazardous, toxic, or radiological substances, trash, debris, frozen materials, and stones not larger than three (3) inches in any dimension. Materials classified as sand must contain at least 50% by weight finer than a No. 40 sieve. Satisfactory materials may also be called acceptable materials in these specifications. Satisfactory materials obtained from any given borrow source shall meet the environmental requirements in paragraph "Environmental Testing of Borrow Materials."

1.5.4 Unsatisfactory Materials

Materials which do not comply with the requirements for satisfactory materials are unsatisfactory. Unsatisfactory materials also include man-made fills; trash; refuse; backfills from previous construction; rubbish; vegetation; construction debris; highly organic soils; contaminated soils; roots and other organic matter or frozen material. Notify the Engineer when encountering any contaminated materials. Material from any given borrow site that does not satisfy all the requirements set forth in paragraph "Environmental Testing of Borrow Materials" shall be deemed unsatisfactory and shall not be used for this contract.

1.5.5 Cohesionless Materials

Cohesionless materials include materials classified in ASTM D2487 as GW, GP, SW, and SP. Materials classified as GM and SM will be identified as cohesionless only when the fines are nonplastic. Perform testing, required for classifying materials, in accordance with ASTM D4318, ASTM C117, ASTM C136 and ASTM D1140.

1.5.6 Cohesive Materials

Cohesive materials include materials classified as GC, SC, ML, CL, MH, and CH. Materials classified as GM and SM will be identified as cohesive only when the fines are plastic. Perform testing, required for classifying materials, in accordance with ASTM D4318, ASTM C117, ASTM C136 and ASTM D1140.

1.5.7 Hard/Unyielding Materials

Hard/Unyielding materials comprise weathered rock, dense consolidated deposits, or conglomerate materials which are not included in the definition of "rock" with stones greater than 4 inch in any dimension. These materials usually require the use of heavy excavation equipment, ripper teeth, or jack hammers for removal.

1.5.8 Unstable Material

Unstable materials are too weak to adequately support the appurtenant structure. Satisfactory material may become unstable due to ineffective drainage, dewatering, becoming frozen, excessive loading.

1.5.9 Rock

Solid homogeneous interlocking crystalline material with firmly cemented, laminated, or foliated masses or conglomerate deposits, neither of which

can be removed without systematic drilling, drilling and the use of expansion jacks or feather wedges, or the use of backhoe-mounted pneumatic hole punchers or rock breakers; also large boulders, buried masonry, or concrete other than pavement exceeding 1/2 cubic yard in volume. Removal of hard material will not be considered rock excavation because of intermittent drilling that is performed merely to increase production.

1.5.10 Degree of Compaction (Proctor)

Degree of compaction required is expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D698 abbreviated as a percent of laboratory maximum density.

1.5.11 Borrow

Soil brought to the project site from an external location for the purposes of project construction.

1.5.12 Subgrade

Earth materials directly below foundations and directly below granular base materials in building slab and pavement areas including shoulders.

1.5.13 Aggregate Drive

Permanent access drive constructed of surface aggregate meeting the properties and requirements indicated in this specification and the Contract Drawings.

1.6 SUBSURFACE DATA

Subsurface soil boring logs are shown in Contract Drawings. These data represent available subsurface information; however, variations may exist between boring locations.

1.7 CRITERIA FOR BIDDING

Base bids on the following criteria:

- a. Surface elevations are as indicated in the Contract Drawings.
- b. Pipes or other artificial obstructions may be encountered.
- c. Ground water elevations indicated by the boring log were those existing at the time subsurface investigations were made and do not necessarily represent ground water elevation at the time of construction.
- d. Hard materials may be encountered during sheet pile installation.

1.8 SUBMITTALS

Engineer approval is required for submittals with an "E" classification. Submittals not having an "E" classification are for information only. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Contractor's Work Plan; E

Construction Equipment; E

Disposition of Surplus Material; E

Drawings and Calculations; E

SD-03 Product Data

Utilization of Excavated Materials; E

Select Fill; E

Fill Stone; E

Surface Aggregate; E

Aggregate Base for Slab; E

Soil Sampling Plan for Borrow Source; E

Commercial Borrow Source; E

SD-06 Test Reports

Testing; E

Environmental Soil Sampling Report for Borrow Source; E

1.9 CONSTRUCTION EQUIPMENT

Prior to beginning the work required by this specification, a list of all equipment, tools and machines, including their sizes, capacities and operating speeds, to be used in the performance of the work, shall be submitted to the Engineer for approval. The Engineer must provide approval for all equipment to be used prior to commencing construction operations. All equipment shall be maintained in satisfactory working condition at all times.

1.10 CONTRACTOR'S WORK PLAN

At least ten (15) calendar days prior to proceeding with the work at the project site, submit a work plan for the work required under this Section. The plan shall include a description of the procedures and sequence in which the required work will be performed. The protective measures which will be taken to prevent damaging, disturbing, undermining the existing structures. The proposed locations of temporary stockpiles of excavated material shall be described in detail. The locations of staging areas, equipment storage, docking of floating plant, mooring areas, vehicle parking, office trailers and other Contractor facilities shall be described in writing and shall be shown on an overall site plan. The Contractor's Work Plan must be approved by the Engineer and the Port Authority prior to commencing construction operations.

1.11 QUALITY CONTROL

1.11.1 Geotechnical Engineer

Provide at the Contractor's expense a Professional Geotechnical Engineer licensed in the State of Missouri to provide inspection of excavations and soil/groundwater conditions throughout construction. The Contractor's Geotechnical Engineer is responsible for performing pre-construction and periodic site visits throughout construction to assess site conditions. The Contractor's Geotechnical Engineer is responsible for preparing and updating the [Contractor's Work Plan](#) as construction progresses to reflect changing conditions and submit an updated plan if necessary. The Contractor is responsible for arranging meetings with the Contractor's Geotechnical Engineer and Engineer or Engineer's on-site representative throughout the contract duration.

1.11.2 Preconstruction Meeting

Conduct a preconstruction meeting at the jobsite at least (10) business days prior to the start of earthwork operations on the project. The preconstruction meeting is to be arranged by the Contractor and is to follow the written agenda submitted prior to the meeting. The purpose of this meeting is to review the requirements of this specification and the associated plans. The following individuals must be in attendance at this meeting: Contractor's Project Manager and Project Superintendent, earthwork subcontractor's Project Manager and Site Foreman, Contractor's Geotechnical Engineer, Engineer's on-site representative, and Port Authority's designated representative.

The minutes of this meeting are to be recorded by the Contractor and published via email within 48 hours to all attendees. The minutes must be re-published within 48 hours via email pending any subsequent comments from the attendees.

PART 2 PRODUCTS

2.1 SOIL MATERIALS

2.1.1 [Fill Stone](#)

Fill stone to be placed between the existing and proposed dock walls shall consist of a clean well graded crushed aggregate meeting the requirements of AASHTO No. 1 coarse crushed aggregate. The aggregate shall have a gradation ranging from 3/8 inch to 3.5 inches, be free of fines and contain no more than five percent (5 percent) of aggregate particles smaller than 3/8 inch nor larger than 3.5 inches in any dimension.

In lieu of AASHTO No. 1 aggregate, an alternative coarse crushed aggregate gradation may be substituted. The substituted fill material is required to meet the following gradation criteria:

Sieve Size	Percent Passing
4-inch	100%
3 1/2-inch	95-100%

Sieve Size	Percent Passing
2 1/2-inch	25-60%
1 1/2-inch	0-15%
3/4-inch	0-5%

2.1.2 Select Fill

Select Fill shall consist of virgin materials consisting of either sand-sized particles or sand-sized particles mixed with gravel, crushed gravel, or crushed stone. Do not use crushed concrete or reclaimed asphalt. Ensure that the material provided has a liquid limit less than or equal to 25 and a plasticity index less than or equal to 6.

Furnish granular fill material with a gradation conforming to the following:

- For the entire sample, conform to the following gradation limits:

Sieve Size	Percent Passing by Weight
3-inch	100%
No. 4	25%-100%

- For the portion of the sample passing the No. 4 sieve, conform to the following gradation limits:

Sieve Size	Percent Passing by Weight
No. 4	100%
No. 40	0-75%
No. 100	0-15%
No. 200	0-8.0%

2.1.3 Surface Aggregate

Surface aggregate for aggregate drive shall conform to the requirements of the 2025 Missouri Standard Specifications for Highway Construction Section 1006 AGGREGATE FOR SURFACING, material Gravel (A).

2.1.4 Aggregate Base for Slab

Material for aggregate base for slab shall conform to the requirements of the 2025 Missouri Standard Specifications for Highway Construction Section 1007 AGGREGATE FOR BASE, material Type 5 Aggregate.

2.2 BURIED WARNING AND IDENTIFICATION MARKERS

Provide polyethylene plastic or metallic core or metallic-faced, acid- and alkali-resistant, polyethylene plastic warning tape manufactured specifically for warning and identification of buried utility lines. Provide tape on rolls, 3 inches minimum width, color coded as specified below for the intended utility with warning and identification imprinted in bold black letters continuously over the entire tape length. Warning and identification to read, "CAUTION, BURIED (intended service) LINE BELOW" or similar wording. Provide permanent color and printing, unaffected by moisture or soil.

Warning Tape Color Codes	
Red	Electric
Yellow	Gas, Oil; Dangerous Materials
Orange	Telephone and Other Communications
Blue	Water Systems
Green	Sewer Systems
White	Steam Systems
Gray	Compressed Air

2.2.1 Warning Tape for Metallic Piping

Provide acid and alkali-resistant polyethylene plastic tape conforming to the width, color, and printing requirements specified above, with a minimum thickness of **0.003 inch** and a minimum strength of **1500 psi** lengthwise, and **1250 psi** crosswise, with a maximum 350 percent elongation.

2.2.2 Detectable Warning Tape for Non-Metallic Piping

Provide polyethylene plastic tape conforming to the width, color, and printing requirements specified above, with a minimum thickness of **0.004 inch**, and a minimum strength of **1500 psi** lengthwise and **1250 psi** crosswise. Manufacture tape with integral wires, foil backing, or other means of enabling detection by a metal detector when tape is buried up to **3 feet** deep. Encase metallic element of the tape in a protective jacket or provide with other means of corrosion protection.

2.2.3 Detection Wire for Non-Metallic Piping

Insulate a single strand, solid copper detection wire with a minimum of 12 AWG.

PART 3 EXECUTION

3.1 PROTECTION

Perform all work specified in a safe manner using procedures outlined in the Contractor's Work Plan. Provide at the contractor's expense a professional Geotechnical Engineer licensed in the State of Missouri to

monitor construction activities and to prepare necessary work plans and reports; see paragraph QUALITY CONTROL.

Use equipment of type and size appropriate for the site conditions (soil character and moisture content). Maintenance of exposed subgrades and fills is the responsibility of the Contractor. The Contractor is required to prevent damage by ineffective drainage, dewatering, and heavy loads and equipment by implementing precautionary measures. Repair or replace any defects or damage at the Contractor's expense.

3.1.1 Underground Utilities

Location of the existing utilities indicated is approximate. Physically verify the location and elevation of the existing utilities indicated prior to starting construction. The Contractor is responsible for protecting utilities from damage during construction. Contractor is responsible for contacting local utility locate services and coordinating all utility location work with the Port Authority.

3.1.2 Existing Structure Protection

Limits of existing structure demolition shall be as indicated in the Contract Drawings. The existing structure shall not be cut, undermined, damaged or destroyed beyond the limits indicated by any operations under this contract. If existing conditions are encountered which require demolition limits to change from those specified on the Contract Drawings, coordinate with the Engineer prior to proceeding with demolition operations. Refer to Section 02 41 00 DEMOLITION for additional information and requirements related to demolition of the existing structure.

If in the process of clearing the pile driving lines the Contractor encounters stone or other materials at a depth or location which would jeopardize the stability of the existing structure if the material were to be removed to accommodate pile driving, the Contractor shall cease all work activity at that location which would have a negative effect upon the existing structure. After a determination is made on the requirements for proceeding with the work, the Contractor will be notified in writing of the requirements by the Engineer. Work shall proceed without interruption at any other location while the determination is being made.

The Contractor shall assume full responsibility for stability of the existing structure and partially installed new structure while performing construction activities identified in the specification. The Contractor's Work Plan shall indicate the procedures by which the Contractor will safely monitor the existing structure and partially installed new structure for indications of instability. Indications of instability include, but are not limited to, visual loss of existing structure fill, rotations, deflections, or deformations which are a direct result of construction activities. If any indications of existing or new structure instability are noted by the Contractor, the Contractor shall immediately halt construction operations in the vicinity of the instability and shall follow the procedure outlined in the paragraph above to make a determination of how to proceed.

3.1.3 Drainage and Dewatering

Provide for the collection and disposal of surface and subsurface water encountered during construction.

3.1.3.1 Drainage

Provide for the collection and disposal of surface and subsurface water encountered during construction. Construct storm drainage features (ponds/basins) at the earliest stages of site development, and throughout construction grade the construction area to provide positive surface water runoff away from the construction activity and/or provide temporary ditches, swales, and other drainage features and equipment as required to keep soils from becoming unstable, prevent erosion, or undermining of foundations. Remove unstable material from working platforms for equipment operation and soil support for subsequent construction features and provide new material as specified herein. It is the responsibility of the Contractor to assess the site conditions to employ necessary measures to permit construction to proceed.

3.1.3.2 Dewatering

Control groundwater flowing toward or into excavations to prevent sloughing of excavation slopes and walls, boils, uplift and heave in the excavation and to eliminate interference with orderly progress of construction. French drains, sumps, ditches or trenches are not allowed within **3 feet** of the foundation of any structure, except with specific written approval, and after specific contractual provisions for restoration of the foundation area have been made. Perform control measures by the time the excavation reaches the water level in order to maintain the integrity of the in-situ material. Include information in **Contractor's Work Plan** outlining procedures for accomplishing any required dewatering work.

3.1.4 Shoring and Sheet piling

Include any required shoring and sheet piling in **Contractor's Work Plan** to stabilize features, prevent undermining or unintended horizontal and vertical movement of adjacent structures, and prevent slippage or movement in banks or slopes adjacent to the excavation. Submit **Drawings and Calculations**, certified by a registered professional engineer licensed in the State of Missouri, describing the methods for shoring and sheet piling of excavations. Drawings to include material sizes and types, arrangement of members, and the sequence and method of installation and removal. Calculations are to include data and references used.

3.1.5 Protection of Graded Surfaces

Protect newly backfilled, graded, and topsoiled areas from traffic, erosion, and settlements that may occur. Repair or reestablish damaged grades, elevations, or slopes.

3.2 SELECTION OF BORROW MATERIAL

Borrow material shall be satisfactory material, as defined in paragraph "Satisfactory Materials", selected to meet the requirements and conditions for the particular fill for which it is to be used. All granular material must be thoroughly washed before the material is brought to the construction site. Contractor shall not bring borrow material to the job site until all required submittals and reports pertaining to borrow material have been approved in writing by the Port Authority. If the Contractor brings material to the job site without first obtaining written approval from the Port Authority, the materials shall be removed within

forty-eight (48) hours of receipt of a direction from the Port Authority to remove the material from the job site. The Contractor shall not be entitled to any additional increase in the contract price or any additional time for completion of the contract associated with the removal of the materials notwithstanding any other provision in the contract. If the Contractor has not completed removal of the material from the job site within forty-eight (48) hours of receipt of a direction from the Port Authority to remove the material for the job site, this failure shall constitute a material breach of the contract and entitle the Port Authority to all appropriate remedial actions including, but not limited to, termination for default.

3.2.1 Borrow Materials from [Commercial Borrow Source](#)

Submit name and location of commercial source of borrow material and a letter from owner/operator of quarry or borrow site certifying that all environmental and operating permits have been acquired.

The contractor shall submit for approval, prior to importing borrow material from a commercial borrow source, the name of the borrow site or quarry and the supporting documentation required in paragraph "Commercial Borrow Source." The commercial borrow site or quarry shall be in the business of providing borrow and whose materials meet all applicable federal, state, and local environmental statutory and regulatory requirements.

3.3 SURFACE PREPARATION

3.3.1 Clearing and Grubbing

Remove trees, stumps, logs, shrubs, brush and vegetation and other items that would interfere with construction operations. Remove stumps entirely. Grub out matted roots and roots as required to clear area for proposed construction.

3.3.2 Stockpiling Operations

Place and grade stockpiles of satisfactory and unsatisfactory materials as specified. Keep stockpiles in a neat and well drained condition, giving due consideration to drainage at all times. Clear, grub, and seal by rubber-tired equipment, the ground surface at stockpile locations; separately stockpile excavated satisfactory and unsatisfactory materials. Protect stockpiles of satisfactory materials from contamination which may destroy the quality and fitness of the stockpiled material. Do not create stockpiles that could obstruct the flow of any stream, endanger a partly finished structure, impair the efficiency or appearance of any structure, or be detrimental to the completed work in any way. If the Contractor fails to protect the stockpiles, and any material becomes unsatisfactory, remove and replace such material with satisfactory material from approved sources.

3.4 EXCAVATION

Excavate to contours, elevation, and dimensions indicated. Excavate soil disturbed or weakened by Contractor's operations, and soils softened or made unstable for subsequent construction due to exposure to weather. Use material removed from excavations meeting the specified requirements in the construction of fills, embankments, subgrades, shoulders, bedding (as backfill), and for similar purposes to minimize surplus material and to

minimize additional material to brought on site. Do not excavate below indicated depths except to remove unstable material as determined by the Contractor's Geotechnical Engineer. Remove and replace excavations below the grades shown with appropriate materials as directed by the Contractor's Geotechnical Engineer.

If at any time during excavation, including excavation from borrow areas, the Contractor encounters material that may be classified as rock or as hard/unyielding material, uncover such material, and notify the Engineer. Do not proceed with the excavation of this material until the Engineer has classified the materials as common excavation or rock excavation. Failure on the part of the Contractor to uncover such material, notify the Engineer, and allow sufficient time for classification and delineation of the undisturbed surface of such material will cause the forfeiture of the Contractor's right of claim to any classification or volume of material to be paid for other than that allowed by the Engineer for the areas of work in which such deposits occur.

3.4.1 Underground Utilities

Perform work adjacent to utilities in accordance with procedures outlined by utility owner. Excavation made with power-driven equipment is not permitted within 2 feet of known utility or subsurface construction. For work immediately adjacent to or for excavations exposing a utility or other buried obstruction, excavate by hand. Start hand excavation on each side of the indicated obstruction and continue until the obstruction is uncovered or until clearance for the new grade is assured. Support uncovered lines or other existing work affected by the contract excavation until approval for backfill is granted by the Engineer. Report damage to utility lines or subsurface construction immediately to the Engineer.

3.4.2 Structural Excavation

Make excavations to the lines, grades, and elevations shown, or as directed. Provide trenches and foundation pits of sufficient size to permit the placement and removal of forms for the full length and width of structure footings and foundations as shown. Clean rock or other hard foundation material of loose debris and cut to a firm, level, stepped, or serrated surface. Remove loose disintegrated rock and thin strata.

Concrete placement is not allowed until structure and slab subgrades have been inspected and approved by the Engineer.

3.4.3 Pile Cap Excavation

After the pile driving has been completed, remove loose and displaced material, leaving a smooth, solid, undisturbed surface to receive the concrete or masonry. Backfill and compact over-excavations and changes in grade due to pile driving operations to 95 percent of **ASTM D698** maximum density.

Concrete placement is not allowed until structure and slab subgrades have been inspected and approved by the Engineer.

3.5 SUBGRADE PREPARATION

3.5.1 General Requirements

Shape subgrade to line, grade, and cross section as indicated. Remove

unsatisfactory and unstable material in surfaces to receive fill or in excavated areas, and replace with select fill. Do not place material on surfaces that are muddy, frozen, contain frost, or otherwise containing unstable material. Scarify the surface to a depth of 4 inches prior to placing fill. Step or bench sloped surfaces steeper than 1 vertical to 4 horizontal prior to scarifying. Place 4 inches of loose fill and blend with scarified material. When subgrade is part fill and part excavation or natural ground, scarify to a depth of 8 inches.

3.5.2 Subgrade for Structures and Concrete Slabs

Compact material to 95 percent of ASTM D698. After final rolling, the surface of the subgrade for structures and concrete slabs must not show deviations greater than 0.05 foot when tested with a 12-foot straightedge applied both parallel and at right angles to the centerline of the area.

3.5.3 Subgrade for Aggregate Drive

Compact the top 18 inches of subgrade for the aggregate drive to at least 95 percent of ASTM D698.

3.6 UTILIZATION OF EXCAVATED MATERIALS

Use satisfactory material removed from excavations, insofar as practicable, in the construction of fills, embankments, subgrades, shoulders, bedding (as backfill), and for similar purposes around the project site. Submit procedure and location for disposal of unused satisfactory material. Dispose surplus satisfactory excavated material not required for fill and unsatisfactory excavated material as specified in paragraph DISPOSITION OF SURPLUS MATERIAL. Stockpile and use coarse rock from excavations for constructing slopes or embankments adjacent to streams, or sides and bottoms of channels and for protecting against erosion. Do not dispose excavated material to obstruct the flow of any stream, endanger a partly finished structure, impair the efficiency or appearance of any structure, or be detrimental to the completed work in any way.

3.7 FILLING AND COMPACTION

Prepare ground surface on which backfill is to be placed and provide compaction requirements for backfill materials in conformance with the applicable portions of paragraphs for SUBGRADE PREPARATION. Do not place material on surfaces that are muddy, frozen, or contain frost. Finish compaction by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, or other approved equipment well suited to the soil being compacted. Moisten material as necessary to provide the moisture content that will readily facilitate obtaining the specified compaction with the equipment used. Fill and backfill to contours, elevations, and dimensions indicated. Compact and test each lift before placing overlaying lift.

3.7.1 Structural Fill Placement

Place fill and backfill beneath and adjacent to structures in successive horizontal layers of loose material not more than 8 inches in depth, or in loose layers not more than 4 inches in depth when using hand-operated compaction equipment. Do not place over wet or frozen materials. Compact to at least 90 percent of laboratory maximum density for cohesive materials or 95 percent of laboratory maximum density for cohesionless materials, except as otherwise specified. Perform compaction in such a

manner as to prevent wedging action or eccentric loading upon or other damage to the structure. Moisture condition fill and backfill material to a moisture content that will readily facilitate obtaining the specified compaction.

3.7.2 Fill Stone Placement

Proposed Fill Stone Material shall be placed to the final elevations and grades shown on the Contract Drawings. Structure shall be filled in 3-foot lifts in a manner that prevents uneven loading of the steel sheet piling walls. Each lift of fill shall be consolidated using an approved method included in the [Contractor's Work Plan](#) until vertical settlement of each lift of stone fill is no longer observed. Any volume decrease of the fill stone due to settlement shall be compensated by placing additional fill stone material.

Care must be taken when placing fill stone material to not damage/settle adjacent existing or newly installed site features, buildings and improvements, tie-rods, walers, or other miscellaneous steel members. The placement and consolidation operations shall not misalign or otherwise adjust the verticality (i.e., plumbness) of, or otherwise distort, the newly installed steel sheet piling. Snow, ice, frozen or deleterious material shall not be placed in the cells, and shall be removed from open excavations prior to the placement of new fill stone material. Fill Stone material shall not be placed above the elevation indicated on the Contract Drawings until the complete steel waler, tie-rod, and anchor wall system has been installed. Filling above this elevation prior to installation of the complete steel waler, tie-rod, and anchor wall system could potentially cause rotational instability of the newly installed steel sheet piling.

During all stages of placement of Fill Stone material, the stability of both the existing structure and the previously installed permanent steel sheet piling shall be monitored to ensure stability. Any detected rotation, bulging, breakage, or other evidence of movement shall be promptly corrected by the Contractor to ensure that the existing structure and previously installed permanent steel sheet piling remain stable.

3.7.3 Compaction

3.7.3.1 General Site

Compact underneath areas designated for vegetation and areas outside the [5 foot](#) line of slabs or structures to 85 percent of [ASTM D698](#).

3.7.3.2 Adjacent Areas

Compact areas within [5 feet](#) of slabs or structures to 95 percent of [ASTM D698](#).

3.8 FINISHING/FINISH OPERATIONS

During construction, keep embankments and excavations shaped and drained. Maintain ditches and drains along subgrade to drain effectively at all times. Do not disturb the finished subgrade by traffic or other operation. Protect and maintain the finished subgrade in a satisfactory condition until ballast, subbase, base, or pavement is placed. Do not permit the storage or stockpiling of materials on finished subgrade. Do not lay subbase, base course, ballast, or pavement until the subgrade has

been checked and approved, and in no case place subbase, base, surfacing, pavement, or ballast on a muddy, spongy, frozen or otherwise unstable subgrade.

Finish the surface of excavations, embankments, and subgrades to a smooth and compact surface in accordance with the lines, grades, and cross sections or elevations shown. Provide the degree of finish for graded areas within **0.1 foot** of the grades and elevations indicated except as indicated for subgrades specified in paragraph SUBGRADE PREPARATION. Finish gutters and ditches in a manner that will result in effective drainage. Finish the surface of areas to be turfed to a smoothness suitable for the application of turfing materials. Repair graded, topsoiled, or backfilled areas prior to acceptance of the work, and re-established grades to the required elevations and slopes.

3.8.1 Grading Around Structures

Construct areas within **5 feet** outside of each building and structure line true-to-grade, shape to drain, and maintain free of trash and debris until final inspection has been completed and the work has been accepted.

3.8.2 Grading

Finish grades as indicated within **one-tenth of one foot**. Grade areas to drain water away from structures. Maintain areas free of trash and debris. For existing grades that will remain but which were disturbed by Contractor's operations, grade as directed by the Engineer.

3.9 SPECIAL REQUIREMENTS FOR EARTHWORK

Special requirements for Earthwork are as follows:

3.9.1 Construction of Aggregate Drive

Provide surface aggregate material in accordance with Article 2.1.3 of this Specification. Aggregate drive shall be constructed to conform to the thickness and plan limits indicated on the Contract Drawings. Construction of aggregate drive shall conform to the requirements of the 2025 Missouri Standard Specifications for Highway Construction Section 310 AGGREGATE SURFACE. Aggregate drive is subject to approval by the Engineer before the work can be considered complete.

3.9.2 Construction of Aggregate Base for Slab (Bid Option 1)

Provide aggregate base material in accordance with Article 2.1.4 of this Specification. Aggregate base for slab shall be constructed to conform to the thickness and plan limits indicated on the Contract Drawings. Construction of aggregate base for slab shall conform to the requirements of the 2025 Missouri Standard Specifications for Highway Construction Section 304 AGGREGATE BASE COURSE. Aggregate base for slab is subject to approval by the Engineer before the work can be considered complete.

3.10 TESTING

Perform testing by the Contractor's validated testing facility at the contractor's expense. Submit qualifications of the Contractor's validated testing facilities.

3.10.1 Tolerance Tests for Subgrades

Perform continuous checks on the degree of finish specified in paragraph SUBGRADE PREPARATION during construction of the subgrades.

3.11 DISPOSITION OF SURPLUS MATERIAL

Remove from Port Authority property all surplus or other soil material not required or not suitable for filling or backfilling, along with brush, refuse, stumps, roots, and timber. Properly disposed of in accordance with all applicable laws and regulations. Prepare plan for [Disposition of Surplus Material](#) to include permissions document to dispose of nonsalable products.

3.12 QUALITY CONTROL

The Contractor shall establish and maintain a quality control system for all operations performed under this specification to assure compliance with contract requirements and maintain records of its quality control for all operations performed, including, but not limited to, the following:

- a. Miscellaneous Civil Site Work;
- b. Demolition;
- c. Sheet Pile Construction;
- d. Dewatering;
- e. Excavation;
- f. Backfilling and Compaction;
- g. Disposal;
- h. Observance of Safety Regulations;

-- End of Section --

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9/19/2025

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SECTION 31 41 16

METAL SHEET PILING
9/19/2025

PART 1 GENERAL

1.1 DESCRIPTION

Design, furnish, install and test metal sheet piles at the locations indicated on the drawings and specified herein.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN WELDING SOCIETY (AWS)

AWS A5.1 (2012) Specification for Carbon Steel Electrodes for Shielded Metal Arc Welding

AWS D1.1 (2020; Errata 1 2021) Structural Welding Code - Steel

AWS D1.5 (2020; Errata 1 2022) Bridge Welding Code

ASTM INTERNATIONAL (ASTM)

ASTM A6 (2024) Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling

ASTM A370 (2022) Standard Test Methods and Definitions for Mechanical Testing of Steel Products

ASTM A572 (2021; E 2021) Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel

American Institute of Steel Construction (AISC)

AISC - RCSC (2020) Specification for Structural Joints Using High-Strength Bolts

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

MASTER PAINTERS INSTITUTE (MPI)

1.3 SUBMITTALS

Engineer approval is required for submittals with an "E" classification. Submittals not having an "E" classification are for information only. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Delivery, Storage, and Handling Plan; E

Contractor's Work Plan; E

Pulling and Redriving Plan; E

Installation Procedures; E

SD-02 Shop Drawings

Hot-Rolled Sheet Piling Plan and Details; E

Steel Sheet Piling; E

Pile Placement; E

Pile Splicing; E

As-Driven Survey; E

SD-03 Product Data

Pile Driving Equipment; E

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Pile Driving Records; E

1.4 DELIVERY, STORAGE, AND HANDLING

Conform all delivery, storage, and handling of materials to the requirements specified herein. Develop and submit plans for the delivery, storage, and handling of piles. Submit [delivery, storage, and handling plan](#) for piles at least 30 days prior to delivery of piles to the job site.

1.4.1 Delivery and Storage

Materials delivered to the site must be new, manufactured from a single

source, and undamaged and must be accompanied by mill certifications and certified test reports. Provide the manufacturer's identification and mill certification mark on the sheet piling as required by the referenced specifications. Store and handle sheet piling in the manner recommended by the manufacturer to prevent permanent deflection, distortion or damage to the interlocks; as a minimum, support on level blocks or racks spaced at a distance such that excessive sag or deflection of the pile does not occur. At the pile ends, the piles shall not overhang the supports by more than 2 feet.

Storage of sheet piling should also facilitate required inspection activities and prevent damage to coatings and corrosion protection prior to installation. Piles of a different type or grade shall not be intermixed in stockpiles.

1.4.2 Handling

Lift piles to ensure that the maximum permissible curvature is not exceeded. Provide handling holes per the manufacturer's standard. Do not damage piles when dragging piles across the ground or barge deck. When lifting piles, slings should be positioned so that there is no concentration of weight at any one point.

Inspect piles for excessive curvature and for damage before transporting them from the storage area to the driving area and immediately prior to placement in the driving leads. Curvature in the pile must be measured with the pile laying on a flat surface and is the distance between the pile at the mid-length of the pile and the flat surface. Straightness of the sections of piles must conform to AWS D1.5, Section 3.5.1.1. Piles having excessive curvature will be rejected.

1.4.3 Damaged Piles

Inspect each pile for straightness and structural damage before transporting them to the project site and immediately prior to placement in the driving leads. Bring any damage to the attention of the Engineer. Piles which are damaged during delivery, storage, or handling to the extent they are rendered unsuitable for the work, in the opinion of the Engineer, will be rejected and removed from the project site, or may be repaired, if approved, at no cost to the Port Authority.

Any pile damaged by reason of internal defects or by improper driving must be corrected by one of the following methods approved by the Engineer for the pile in question:

- a. The pile is withdrawn, if practicable, and replaced by a new and, if necessary, longer pile.

A pile driven below the specified butt elevation must be corrected by one of the following methods approved by the Engineer:

- a. The pile is spliced (if approved).

A pile driven out of its proper location or out of plumb as approved by the Engineer, must be corrected by one of the following methods approved by the engineer:

- a. The pile is withdrawn, if practicable, and replaced by a new and, if necessary, longer pile.

1.5 HOT-ROLLED SHEET PILING PLAN AND DETAILS (SHOP DRAWINGS)

Detailed shop drawings shall be submitted for all sheet piling to be installed for the Project, including any required fabricated sections. The shop drawings shall include complete piling dimensions and details, driving starting point and sequence and location of installed piling, and diametric pan layout. Shop drawings shall also detail and dimension walers, tie rods, weep holes, connection plates, and all other sheet pile appurtenances. The shop drawings shall also include details and dimensions of templates and other temporary guide structures used for installing piling. The shop drawings shall provide specific information with respect to the method of handling and installing the piling to prevent permanent deflection, distortion or damage to piling interlocks.

No protruding elements on the outside face of the steel sheet piling shall be allowed unless specifically approved by the Engineer. Elements with protrusions, such as steel sheet pile connectors, shall be placed such that all protrusions are located on the inside face of the steel sheet piling. Use steel sheet pile connectors without unnecessary protrusions where possible.

The shop drawings shall be presented in a scalable fashion and also indicate the location of all internal bracing including tie rods, wales and ancillary members (such as the locations of interlocks, member splices and corner struts). The shop drawings shall have a sufficient amount of cross sections and specific details to indicate to the Engineer's representative during his/her review that the proposed Work will be installed in accordance with the Contract Drawings.

Refer to section 2.1 of this specification for additional requirements.

1.6 MATERIAL CERTIFICATES

For each shipment, submit certificates identified with specific lots prior to installing piling. Include in the identification data piling type, dimensions, chemical composition, mechanical properties, section properties, heat number, and mill identification mark.

Also, required for submittal are certified materials test reports which demonstrate that all appurtenant metal materials such as specialized interlocks and/or corners meet the physical and chemical properties specified. These shall be submitted for each shipment, and identified with specific lots prior to installation.

1.7 CONTRACTOR'S WORK PLAN

Submit documentation outlining the procedures to be used for the required sheet pile construction. Include measures to be taken to protect partially completed work in the event of cessation of work. Refer to specification 02 41 00 DEMOLITION for additional information regarding measures which must be taken by the Contractor to ensure sheet pile global and local structural stability during all construction operations.

1.8 PULLING AND REDRIVING PLAN

The Contractor shall provide a narrative to be included within the proposed Pulling and Redriving Plan to explain the proposed method(s) to be implemented by the Contractor to pull and redrive steel sheet piling at

the Project Site. The Plan shall be submitted and approved by the Engineer prior to the commencement of construction operations.

PART 2 PRODUCTS

2.1 STEEL SHEET PILING

Submit detail drawings for sheet piling, including fabricated sections, showing complete piling dimensions and details, driving sequence and location of installed piling. Refer to Section 1.5 of this specification for further requirements of steel sheet pile shop drawings.

- a. Include in the drawings details of top protection, special reinforcing tips, tip protection, lagging, splices, fabricated additions to plain piles, cut-off method, corrosion protection, and dimensions of templates and other temporary guide structures for installing piling. Provide details of the method for handling piling to prevent permanent deflection, distortion or damage to piling interlocks.
- b. Metal sheet piling must be hot-rolled steel sections conforming to **ASTM A572**, Grade 60, or comparable meeting minimum section modulus required.
- c. The steel sheet piling provided must meet or exceed the structural properties of a PZC-28 steel sheet pile section.
- d. The elastic section modulus (S_x) per linear foot of wall length shall not be less than 51.3 in³/ft. The nominal bending capacity ($F_y \times S_x$) shall not be less than 3,078 k-in. The minimum flange thickness of the sheet piling shall not be less than 0.550 inches. The minimum web thickness of the sheet piling shall not be less than 0.550 inches.

Alternate sections of piling will be allowed for use provided that the requirements listed above as well as all other requirements of this specification are met, and that the substitution is approved by the Engineer. The construction of hot-rolled steel sheet pile walls using a section other than as shown on the Plans, and specified, shall include all related adjustments to other elements of the structure to adapt it to the Contractor's hot-rolled steel sheet pile design, and shall be provided at no additional cost to the Port Authority or Engineer. All other requirements of these specifications for the steel sheet piling structure shall apply.

DO NOT SUBSTITUTE sections or modify details except upon written approval from the Engineer.

2.1.1 General Requirements

Provide sheet piles with minimum section modulus, shape, and size as specified in this specification. Sheet piling including special fabricated sections must be full-length sections of the dimensions shown. Provide fabricated sections conforming to the requirement and the piling manufacturer's recommendations for fabricated sections.

2.1.2 Interlocks

The interlocks of sheet piling must be free-sliding, provide a swing angle suitable for the intended installation but not less than 5 degrees when interlocked, and maintain continuous interlocking when installed.

2.1.3 Hot-Rolled Sheet Pile Connectors

All corners, bends, or plan deviations from straight of the steel sheet piling shall be achieved using hot-rolled steel sheet pile connectors. The connectors shall be fully compatible with the proposed steel sheet piling. Include all connectors in the Hot-Rolled Sheet Piling Plan and Details submittal for approval.

2.1.4 Weep Holes

Provide weep holes in the sheet piling of the size, type, and spacing indicated on the Contract Drawings.

2.2 APPURTENANT METAL MATERIALS

Provide metal plates, shapes, bolts, nuts, rivets and other appurtenant fabrication and installation materials conforming to manufacturer's standards and to the requirements specified in the respective sheet piling standards and in Sections 05 12 00 STRUCTURAL STEEL, 05 50 14 STRUCTURAL METAL FABRICATIONS, and 05 51 33 METAL LADDERS.

2.3 TESTS, INSPECTIONS, AND VERIFICATIONS

Requirements for material tests, workmanship and other measures for quality assurance must be as specified herein and in Sections 05 12 00 STRUCTURAL STEEL, 05 50 14 STRUCTURAL METAL FABRICATIONS, and 05 51 33 METAL LADDERS. Provide manufacturer's steel plant certificate for Engineer's review and approval.

2.3.1 Materials Tests

Submit certified materials tests reports showing that sheet piling and appurtenant metal materials meet the specified requirements, for each shipment and identified with specific lots prior to installing materials. Material test reports must meet the requirements of ASTM A6 and ASTM A370 as applicable.

If suitable certifications cannot be provided, perform materials tests conforming to the following requirements. Sheet piling and appurtenant materials must be tested and certified by the manufacturer to meet the specified chemical, mechanical and section property requirements prior to delivery to the site. Testing of sheet piling for mechanical properties must be performed after the completion of all rolling and forming operations. Testing of sheet piling must meet the requirements of ASTM A6 and ASTM A370 as applicable.

2.4 PILE DRIVING EQUIPMENT

Submit complete descriptions of sheet piling driving equipment including hammers, extractors, protection caps, and other installation appurtenances, prior to commencement of work. Descriptive information includes manufacturer's name, model numbers, capacity, rated energy, hammer details, cushion material, helmet, and templates. Provide pile driving equipment conforming to the following requirements. Submit descriptions of pile driving equipment for approval at least 30 days prior to commencement of work.

2.4.1 Driving Hammers

Hammers must be steam, air, or diesel drop, single-acting, double-acting, differential-acting, or vibratory type. The driving energy of the hammers shall be as recommended by the manufacturer for the piling weights and subsurface materials to be encountered. Repair damage to piling caused by use of a pile hammer with excess delivered force or energy. Note that although vibratory hammers are likely to be predominantly used for installation of the steel sheet piling, the Contractor may require the use of an impact hammer to complete the advancement of the steel sheet piling to the design depths indicated on the Contract Drawings.

2.5 Bolted Connections

Bolted connections shall be made with high-strength bolts and bolt hole fabrication shall be performed in accordance with the applicable provisions of **AISC - RCSC** (2020) Specification for Structural Joints Using High-Strength Bolts and AISC 360.

Refer to specification **05 12 00** STRUCTURAL STEEL for additional requirements.

PART 3 EXECUTION

3.1 PRELIMINARY WORK

3.1.1 Pile Length Markings

Mark each pile prior to driving with horizontal lines at **one foot** intervals. Mark the interval number on pile every **5 feet** from pile tip.

3.2 EARTHWORK

Perform in accordance with Section **31 00 00** EARTHWORK.

3.3 INSTALLATION

3.3.1 RESTRICTIONS

No pile driving is allowed between sunset and sunrise. Pilings shall not be driven within 100 feet of concrete less than 7 days old.

3.3.2 FLOATING PLANT

If floating plant is required, barges on which pile placement equipment is mounted shall be anchored against movement, independent from the existing structure, during placement of piles.

3.3.3 Placing and Driving

3.3.3.1 Placing

The Contractor will be required to clear the steel sheet pile drivelines as necessary prior to installation of the steel sheet piling. Any pre-excavation and/or driveline clearing required within the area where sheet pilings are to be installed shall be completed prior to placing sheet pilings. This also includes proposed drivelines where existing improvements are present.

Submit a written description of the site specific pile [installation procedures](#) for Engineer review and approval. [Pile placement](#) installation drawings and details must also be provided.

Any excavation required within the area where sheet pilings are to be installed must be completed prior to placing sheet pilings. Pilings properly placed and driven must be interlocked throughout their length with adjacent pilings to form a continuous diaphragm throughout the length or run of piling wall. Placing of steel sheet piles shall conform to the following requirements:

- a. Pilings must be carefully located as indicated on the approved Shop Drawings. Pilings must be placed plumb with out-of-plumbness not exceeding [1/8 inch per foot](#) of length and true to line. Place the pile so the face will not be more than [6 inches](#) from vertical alignment at any point. Top of pile at elevation of cut-off must be within [1/2 inch](#) horizontally and [1/4 inches](#) vertically of the location indicated. Manipulation of piles to force them into position will not be permitted. Check all piles for heave. Re-drive all heaved piles to the required tip elevation.
- b. Interlocks of piles shall be placed and driven with the ball end leading in the direction of the driving.
- c. Provide temporary wales, templates, current deflectors, or guide structures as required to ensure that the pilings are placed and driven to the correct alignment. Use a system of structural framing sufficiently rigid to resist lateral and driving forces and to adequately support the sheet piling until design tip elevation is achieved.
- d. Special steel sheet piles shall be installed as shown on the approved shop drawings. During piling installation, piles shall be checked for alignment at a minimum of every 5 piles.

3.3.3.2 Driving

3.3.3.2.1 Refusal Criteria

Sheet piling shall not be driven past practical refusal. Practical refusal shall be defined as pile penetration resistance of 10 blows per inch for a maximum of 3 consecutive inches of pile penetration with the pile driving hammer on the highest setting or setting determined by the Contractor's professional Geotechnical Engineer licensed in the state of Missouri.

The Contractor shall exercise caution when driving the sheet piles to ensure that the allowable driving stress capacity of the sheet piles is not exceeded during driving operations. Any damage to the sheet piling which occurs during sheet pile installation operations shall be corrected by the Contractor at no additional cost to the Port Authority. The corrective actions necessary to address the sheet pile damage shall be as directed by the Engineer.

All sheet pile installation operations shall be observed by the Contractor's geotechnical engineer licensed in the state of Missouri who shall be responsible for monitoring the pile driving operations and shall be responsible for determining the suitability of the driven piles.

3.3.3.2.2 Required Tip Elevations

The required sheet pile tip elevation is indicated on the Contract Drawings. Soil boring information is provided in the Contract Drawings.

The Contractor shall be aware that the boundary between soft and hard strata may have gradual or abrupt transitions. The soil strata elevations encountered in the field can be expected to vary away from the boring test locations indicated in the Contract Drawings. Do not drive sheet piles beyond practical refusal criteria indicated in this Specification.

Sheet pile tip elevations are critical for the local and global stability of the structure. Subject to the criteria listed below, if during pile driving operations the installed sheet piling tip elevation does not meet or exceed the tip elevation indicated on the Contract Drawings, the Contractor shall notify the Engineer and shall stop sheet pile installation operations at this location until the Engineer can review and provide guidance to the Contractor. Sheet pile tip elevation criteria which, if met or exceeded, shall require the Contractor to notify the Engineer is as follows:

- a. Any two (2) consecutive installed sheet piles have tip elevations that are one (1) foot or greater above the tip elevation specified on the Contract Drawings.
- b. Any installed sheet pile has a tip elevation that is greater than two (2) feet above the tip elevation specified on the Contract Drawings.

3.3.3.2.3 Driving and [Pile Driving Records](#)

Submit records of the completed sheet piling driving operations, including a system of identification which shows the disposition of approved piling in the work, driving equipment performance data, piling penetration rate data, piling dimensions and top and bottom elevations of installed piling. Prior to driving pilings in water, paint a horizontal line on both sides of each piling at a fixed distance from the bottom so that it will be visible above the water line after installation. This line must indicate the profile of the bottom elevation of installed pilings and potential problem areas can be identified by abrupt changes in its elevation. Drive pilings with the proper size hammer and by approved methods so as not to subject the pilings to damage and to ensure proper interlocking throughout their lengths. Driving of steel sheet piling shall conform to the following requirements:

- a. Pilings shall be driven with the proper size hammer and by approved methods so as not to subject the pilings to damage and to ensure proper interlocking throughout their lengths. The selection of the hammer(s) to be used for piling installation is the sole responsibility of the Contractor as to meet the needs of the project to land the piling to the design tip elevation(s) without overstress, distortion or damage. Maintain driving hammers in proper alignment during driving operations by use of leads or guides attached to the hammer. Caution must be taken in the sustained use of vibratory hammers when a hard driving condition is encountered to avoid interlock-melt or damage. Discontinue the use of vibratory hammers and employ impact hammers when the penetration rate due to vibratory loading is [one foot](#) or less per minute. The work of using an impact hammer in such circumstances shall be at no additional cost to the Port Authority.

- b. Employ a protecting cap in driving when using impact hammers to prevent damage to the tops of pilings. Pilings damaged during driving or driven out of interlock shall be removed and replaced at the Contractor's expense.
- c. Drive pilings without the aid of an air or water jet.
- d. Take adequate precautions to ensure that pilings are driven plumb. If at any time the forward or leading edge of the piling wall is found to be out-of-plumb in the plane of the wall the piling being driven must be driven to the required depth and tapered pilings must be provided and driven to interlock with the out-of-plumb leading edge or other approved corrective measures must be taken to insure the plumbness of succeeding pilings. The maximum permissible taper for any tapered piling must be $\frac{1}{8}$ inch per foot of length. The horizontal alignment of the steel sheet pile wall shall be within one inch of required location after completion of driving and after assembly and tightening of tie rods.
- e. Pilings in each run or continuous length of piling wall must be driven alternately in increments of depth to the required depth or elevation. No piling will be driven to a lower elevation than those behind it in the same run except when the pilings behind it cannot be driven deeper. Incrementally sequence driving of individual piles such that the tip of any sheet pile must not be more than 4 feet below that of any adjacent sheet pile. When the penetration resistance exceeds five blows per inch, the tip of any sheet pile must not be more than 2 feet below any adjacent sheet pile. If the piling next to the one being driven tends to follow below final elevation it may be pinned to the next adjacent piling.
- f. If obstructions restrict driving a piling to the specified penetration, the obstructions must be removed or penetrated with a chisel beam at no additional cost to the Port Authority. Should boulders or other obstructions render it impracticable to drive a pile to the specified penetration, or if soil conditions are encountered which are resulting in damage to the piling by attempting to drive it to the required tip elevation, the Contractor shall thereupon notify the Engineer's Representative at the site and request direction. The Engineer will determine any changes in design or alignment of the pile structure that may be necessary to insure the adequacy and stability of the structure. Upon notification of the Engineer's findings and determination, the Contractor shall proceed with the work in accordance with the Engineer's directive.
- g. Pilings must be driven to depths shown and must extend up to the elevation indicated for the top of pilings. Piling driven to rock must be seated individually on the rock. After piles are driven to the required bottom elevation, the piles shall be cut off to the required top elevation as shown on the drawings, and all sharp edges shall be ground smooth. A tolerance of $\frac{1}{4}$ inch above the indicated top elevation will be permitted.

3.3.4 Cutting-Off and Splicing

Pilings driven to practical refusal or to the point where additional penetration cannot be attained and are extending above the required top elevation in excess of the specified tolerance must be cut off to the required top elevation. Pilings driven below the required top elevation

and pilings damaged by driving and cut off to permit further driving must be extended as required to reach the top elevation by splicing when directed at no additional cost to the Port Authority. Submit a [Procedure for insufficient pile length](#). Provide [pile splicing](#) information and details for Engineer review and approval prior to installation in the field. If directed by the Engineer, pilings must be spliced as required to drive them to depths greater than shown and extend them up to the required top elevation.

- a. Pilings adjoining spliced pilings must be full length unless otherwise approved. If splices are allowed in adjoining pilings, the splices must be spaced at least [2 feet](#) apart in elevation. Splicing of pilings must be as indicated. Should splicing of piles be necessary, the splice shall be made by an approved engineered splice or an approved butt weld, making a full penetration of the pile section, or as otherwise directed or approved by the Engineer. Ends of pilings to be spliced must be squared before splicing to eliminate dips or camber. Pilings must be spliced together with concentric alignment of the interlocks so that there are no discontinuities, dips or camber at the abutting interlocks. Spliced pilings must be free sliding and able to obtain the maximum swing with contiguous pilings. Shop and File welding of splices must conform to the requirements of [AWS A5.1](#) and [AWS D1.1](#). Submit [welding certifications](#) for all welders and welding operators for Engineer review and approval.
- b. The tops of pilings excessively battered during driving must be trimmed when directed, at no cost to the Port Authority.
- c. The Contractor shall cut holes in pilings for bolts, rods, drains, weep holes, or utilities in a neat and workmanlike manner, as shown on the Contract Drawings or as directed by the Engineer's Representative. Use a straight edge in cuts made by burning to avoid abrupt nicks. Bolt holes in steel piling must be drilled or may be burned and reamed by approved methods which will not damage the surrounding metal. Holes other than bolt holes must be reasonably smooth and the proper size for rods and other items to be inserted. Do not use explosives for cutting.

3.3.5 Inspection of Driven Piling

The Contractor shall perform continuous inspection during pile driving. Inspect all piles for compliance with tolerance requirements. Bring any unusual problems which may occur to the attention of the Engineer. Inspect the interlocked joints of driven pilings extending above the water surface. The underwater portion of each interlock, from river bottom to water surface, shall be accepted should no evidence or circumstances arise during driving which would possibly result in separation of the interlock. Pilings found to be out of interlock must be removed and replaced at the Contractor's expense.

3.3.6 Pulling and Redriving

The Contractor shall pull selected pilings after driving to determine the condition of the underwater portions of pilings when directed by the Engineer. The method of pulling shall be in accordance with the approved Pulling and Redriving Plan. Any piling so pulled and found to be damaged to the extent that its usefulness in the structure is impaired shall be removed and replaced at the Contractor's expense. Pilings pulled and found to be in satisfactory condition shall be redriven when directed

by the Engineer. Note that regardless of the fact that direction was given to the Contractor by the Engineer, the Contractor is still responsible for extracting and redriving the sheets as to create a complete system.

3.3.7 Survey Data

After the driving of each pile group is complete and before superimposed concrete is placed, provide the Engineer with an **as-driven survey** showing actual location and top elevation of each pile. Submit an as-driven survey showing actual location and top elevation of each production pile within 7 calendar days of completing the pile installation. Do not proceed with placing concrete until the Engineer has reviewed the survey and verified the safe load for the pile group driven. Present a survey in such form that it gives deviation from plan location in two perpendicular directions and elevations of each pile to nearest **half inch**. Survey must be prepared and certified by a professional land surveyor licensed in Missouri.

3.4 INSTALLATION RECORDS

Maintain a Pile Driving Records for each sheet pile driven. Indicate on the installation record: installation dates and times, type and size of hammer, rate of operation, total driving time, dimensions of driving helmet and cap used, blows required per **foot** for each **foot** of penetration, final driving resistance in blows for final **6 inches**, pile locations, tip elevations, ground elevations, cut-off elevations, and any reheading or cutting of piles. Record any unusual pile driving problems during driving. Submit complete records to the Engineer.

3.5 VIBRATION CONTROL

The Contractor is responsible for all damages resulting from the pile driving operations and must take whatever measures necessary to monitor the stability of the existing structure during pile driving operations.

3.6 CESSATION OF WORK

Whenever the work is discontinued for periods exceeding two (2) calendar days, the Contractor, before closing down operations, shall protect all the partially completed work that is exposed against damage. The Contractor's procedures of providing such protection shall be per the procedures outlined in the Contractor's approved Work Plan.

3.7 DISSIMILAR METALS

Where dissimilar metals are in contact, protect surfaces with a coating in accordance with MPI 79 to prevent galvanic or corrosive action.

-- End of Section --