PART VI

CONTRACT AGREEMENT

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PART VI

CONTRACT AGREEMENT

THIS AGREEMENT, made on the 13th day of March, 20___, by and between **Lexington-Fayette Urban County Government**, acting herein called "OWNER" and **L-M Asphalt Partners Ltd dba ATS Construction**, doing business as a partnership located in the City of Lexington, County of Fayette, and State of Kentucky, hereinafter called "CONTRACTOR."

WITNESSETH: That the CONTRACTOR and the OWNER in consideration of five million one hundred twenty-six thousand five hundred Dollars and No Cents ($5,126,500.00) quoted in the proposal by the CONTRACTOR, dated February 25, 2026, hereby agree to commence and complete the construction described as follows:

1. SCOPE OF WORK

The CONTRACTOR shall furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor, insurance, and other accessories and services necessary to complete the said project in accordance with the conditions and prices stated in the Proposal, General Conditions, Special Conditions of the Contract, the Specifications, Contract Documents, and IonWave Q&A and Addenda, therefore as prepared by GRW Inc.for the LFD Fire Training Academy Phase 1 Site Development Project.

2. TIME OF COMPLETION

The time estimated and authorized by the OWNER for the proper execution of the Work by the Contract, in full, is hereby fixed as four hundred ten (410) calendar days to substantial completion and an additional thirty (30) calendar days to final completion date. The time shall begin in accordance with the Notice to Proceed provided by OWNER.

3. ISSUANCE OF WORK ORDERS

Notice to begin Work will be given in whole or for part of the Work as determined by the OWNER pending the availability of funds. The order of construction will be as determined after consultation between the CONTRACTOR and the OWNER.

4. THE CONTRACT SUM

The OWNER agrees to pay the CONTRACTOR in current funds for the performance of the Contract, as quoted in the proposal, subject to any additions and deductions, as provided therein.

5. PROGRESS PAYMENTS

The OWNER shall make payments on account of the Contract, as provided in accordance with the General Conditions, less the aggregate of previous payments.

6. ACCEPTANCE AND FINAL PAYMENT

Final payment shall be due within ninety (90) days after completion of the Work, provided the Work be then fully completed and the Contract fully accepted.

Before issuance of final certificate, the CONTRACTOR shall submit evidence satisfactory to the Owner that all payrolls, material bills, and other indebtedness connected with the Work has been paid.

If, after the Work has been substantially completed, full completion thereof is materially delayed through no fault of the CONTRACTOR, the OWNER shall without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

7. THE CONTRACT DOCUMENTS

The Advertisement for Bids, Information for Bidders, the General Conditions, Performance and Payment Bonds, Contract Agreement, Special Conditions, Technical Specifications, any and all Addenda, and Proposal, Ion Wave Q&A, and Plan Drawings form the Contract, and they are fully a part of the Contract as if hereto attached or herein repeated.

8. EXTRA WORK

The OWNER, without invalidating the Contract, may order extra work or make changes by altering, adding to or deducting from the Work, the Contract Sum being adjusted accordingly. All such Work shall be executed and paid for in accordance with the General Conditions, which is a part of this Contract.

9. **THE FOLLOWING IS AN ENUMERATION OF THE SPECIFICATIONS AND DRAWINGS (CONTRACT DOCUMENTS):**

SPECIFICATIONS

SECTION NO.	TITLE
I	Advertisement for Bids
II	Information for Bidders
III	Form of Proposal
IV	General Conditions
V	Special Conditions
VI	Contract Agreement
VII	Performance and Payment Bonds
VIII	Addenda
IX	Technical Specifications and Drawings

IN WITNESSETH WHEREOF, the parties hereto have executed this Contract as of the date and year above written.

(Seal)

Lexington-Fayette Urban County Government.
Lexington, Kentucky
(Owner)

ATTEST:

Clerk of the Urban County Council

BY: Linda Gorton
MAYOR

Mackenzie Stack
(Witness)

Mayor
(Title)

(Seal)

L-M Asphalt Partners LTD. DBA ATS Construction
(Contractor)

BY:

Greer Stone
(Witness) Greer Stone

President
(Title)

3009 Atkinson Avenue, Suite 400, Lexington KY 40509
(Address and Zip Code)

IMPORTANT: *Strike out any non-applicable terms.

Secretary of the Owner should attest. If the CONTRACTOR is corporation, Secretary should attest. Give proper title of each person-executing Contract.

PERFORMANCE BOND

Bond No: 14BCSJL3846

CONTRACTOR:
(Name, legal status and address)
L-M Asphalt Partners dba ATS Construction
3009 Atkinson Ave #400
Lexington KY 40509

SURETY: Hartford Fire Insurance Company
(Name, legal status and principal place of business)
The Hartford -Bond Claim Department
One Hartford Plaza, T-11
Hartford, CT 06155

OWNER:
(Name, legal status and address)
Lexington Fayette Urban County Government
Department of General Services
200 E Main St
Lexington, KY 40507

CONSTRUCTION CONTRACT
Date: March 6, 2026
Amount: $5,126,500.00
Description: 1-2026 LFD Fire Training Academy Phase 1 Site Development
(Name and location)

BOND
Date: 3/6/2026
(Not earlier than Construction Contract Date)

Amount: $5,126,500.00

Modifications to this Bond: [X] None [ ] See Section 16

CONTRACTOR AS PRINCIPAL
Company: L-M Asphalt Partners dba ATS Construction
(Corporate Seal)
Signature: Brian R. Billings, President
Name and Title: Brian R. Billings - President

SURETY
Company: Hartford Fire Insurance Company
(Corporate Seal)
Signature: Tina Carpenter
Name and Title: Tina Carpenter, Attorney-in-fact

(Any additional signatures appear on the last page of this Performance Bond.)

(FOR INFORMATION ONLY – Name, Address and telephone)
AGENT or BROKER:

Acrisure LLC
780 Winchester Road
Lexington, KY 40505

OWNER'S REPRESENTATIVE:
(Architect, Engineer, or other party:)

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

§ 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after

.1 the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

.2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

.3 the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

§ 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

§ 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

§ 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

§ 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

§ 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

§ 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

§ 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

§ 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

.2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and

.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

§ 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.

§ 9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.

§ 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

§ 13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said

statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 14 Definitions

§ 14.1 Balance of the Contract Price. The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

§ 14.2 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 Contractor Default. Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 14.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 16 Modifications to this bond are as follows:

Section 8 is hereby deleted in its entirety and replaced with the following:

If the Surety elects to act under Section 5.1, 5.2, 5.3, or 5.4, the Surety's liability is limited to the amount of this bond.

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL	**SURETY**
Company:	Company:
(Corporate Seal)	*(Corporate Seal)*
Signature:	Signature:
Name and Title:	Name and Title:
Address	Address

PAYMENT BOND

Bond No: 14BCSJL3846

CONTRACTOR:
(Name, legal status and address)

L-M Asphalt Partners dba ATS Construction
3009 Atkinson Ave #400
Lexington KY 40509

SURETY: Hartford Fire Insurance Company
(Name, legal status and principal place of business)

The Hartford -Bond Claim Department
One Hartford Plaza, T-11
Hartford, CT 06155

OWNER:
(Name, legal status and address)

Lexington Fayette Urban County Government
Department of General Services
200 E Main St
Lexington, KY 40507

CONSTRUCTION CONTRACT
Date: March 6, 2026
Amount: $5,126,500.00
Description: 1-2026 LFD Fire Training Academy Phase 1 Site Development
(Name and location)

BOND
Date: March 6, 2026
(Not earlier than Construction Contract Date)

Amount: $5,126,500.00
Modifications to this Bond: [x] **None** [ ] **See Section 18**

CONTRACTOR AS PRINCIPAL
Company: L-M Asphalt Partners dba ATS Construction

(Corporate Seal)

Signature: Brian R. Billings PRESIDENT
Name and Title: Brian R. Billings - President

SURETY
Company: Hartford Fire Insurance Company

(Corporate Seal)

Signature: Tina Carpenter
Name and Title: Tina Carpenter, Attorney-in-fact

(Any additional signatures appear on the last page of this Payment Bond.)

(FOR INFORMATION ONLY – Name, Address and telephone)
AGENT or BROKER:

Acrisure LLC
780 Winchester Road
Lexington, KY 40505

OWNER'S REPRESENTATIVE:
(Architect, Engineer, or other party:)

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

§ 2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

§ 4 When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.

§ 5 The Surety's obligations to a Claimant under this Bond shall arise after the following:

§ 5.1 Claimants, who do not have a direct contract with the Contractor,

.1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and

.2 have sent a Claim to the Surety (at the address described in Section 13).

§ 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).

§ 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.

§ 7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

§ 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

§ 7.2 Pay or arrange for payment of any undisputed amounts.

§ 7.3 The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

§ 8 The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

§ 9 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

§ 10 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to, or give notice on behalf of, Claimants or otherwise have any obligations to Claimants under this Bond.

§ 11 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 13 Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

§ 14 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 15 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

§ 16 Definitions

§ 16.1 Claim. A written statement by the Claimant including at a minimum:

.1 the name of the Claimant;

.2 the name of the person for whom the labor was done, or materials or equipment furnished;

.3 a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;

.4 a brief description of the labor, materials or equipment furnished;

.5 the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;

.6 the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;

.7 the total amount of previous payments received by the Claimant; and

.8 the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

§ 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

§ 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

§ 16.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 16.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 17 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 18 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL	**SURETY**
Company:	Company:
(Corporate Seal)	*(Corporate Seal)*
Signature:	Signature:
Name and Title:	Name and Title:
Address	Address

POWER OF ATTORNEY

Direct Inquiries, Bond Authenticity and Claims to:
THE HARTFORD
BOND, T-14
One Hartford Plaza
Hartford, Connecticut 06155
Bond.Claims@thehartford.com
call: **888-266-3488** *or fax:* **860-757-5835**

KNOW ALL PERSONS BY THESE PRESENTS THAT:

Agency Name: ACRISURE LLC
Agency Code: 14-732421

- ☒ **Hartford Fire Insurance Company**, a corporation duly organized under the laws of the State of Connecticut
- ☒ **Hartford Casualty Insurance Company**, a corporation duly organized under the laws of the State of Indiana
- ☒ **Hartford Accident and Indemnity Company**, a corporation duly organized under the laws of the State of Connecticut
- ☐ **Hartford Insurance Company of the Midwest**, a corporation duly organized under the laws of the State of Indiana

having their home office in Hartford, Connecticut, (hereinafter collectively referred to as the "Companies") do hereby make, constitute and appoint, ***up to the amount of*** Unlimited :
Tina Carpenter, Mary Crouch, Jeff Fairchild, John W. Hampton, David Henry, Anna Morris of LEXINGTON, Kentucky

their true and lawful Attorney(s)-in-Fact, each in their separate capacity if more than one is named above, to sign its name as surety(ies) only as delineated above by ☒, and to execute, seal and acknowledge any and all bonds, undertakings, contracts and other written instruments in the nature thereof, on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

In Witness Whereof, and as authorized by a Resolution of the Board of Directors of the Companies on May 23, 2016 the Companies have caused these presents to be signed by its Assistant Vice President and its corporate seals to be hereto affixed, duly attested by its Assistant Secretary. Further, pursuant to Resolution of the Board of Directors of the Companies, the Companies hereby unambiguously affirm that they are and will be bound by any mechanically applied signatures applied to this Power of Attorney.

Phyllis A. Clark, Assistant Secretary

Joelle L. LaPierre, Assistant Vice President

STATE OF FLORIDA
COUNTY OF SEMINOLE } ss. Lake Mary

On this 1st day of March, 2024, before me personally came Joelle L. LaPierre, to me known, who being by me duly sworn, did depose and say: that (s)he resides in Seminole County, State of Florida; that (s)he is the Assistant Vice President of the Companies, the corporations described in and which executed the above instrument; that (s)he knows the seals of the said corporations; that the seals affixed to the said instrument are such corporate seals; that they were so affixed by authority of the Boards of Directors of said corporations and that (s)he signed his/her name thereto by like authority.

Mariluz Arce
My Commission HH 287363
Expires July 13, 2026

I, the undersigned, Assistant Vice President of the Companies, DO HEREBY CERTIFY that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which is still in full force effective as of March 6, 2026.

Signed and sealed in Lake Mary, Florida.

Keith D. Dozois, Assistant Vice President

PERFORMANCE BOND

Bond No: 14BCSJL3846

CONTRACTOR:
(Name, legal status and address)
L-M Asphalt Partners dba ATS Construction
3009 Atkinson Ave #400
Lexington KY 40509

SURETY: Hartford Fire Insurance Company
(Name, legal status and principal place of business)
The Hartford -Bond Claim Department
One Hartford Plaza, T-11
Hartford, CT 06155

OWNER:
(Name, legal status and address)
Lexington Fayette Urban County Government
Department of General Services
200 E Main St
Lexington, KY 40507

CONSTRUCTION CONTRACT
Date: March 6, 2026
Amount: $5,126,500.00
Description: 1-2026 LFD Fire Training Academy Phase 1 Site Development
(Name and location)

BOND
Date: 3/6/2026
(Not earlier than Construction Contract Date)

Amount: $5,126,500.00

Modifications to this Bond: [X] **None** [ ] **See Section 16**

CONTRACTOR AS PRINCIPAL
Company: L-M Asphalt Partners dba ATS Construction

Signature: Brian R. Billings, President (Corporate Seal)
Name and Title: Brian R. Billings - President

SURETY
Company: Hartford Fire Insurance Company

Signature: Tina Carpenter (Corporate Seal)
Name and Title: Tina Carpenter, Attorney-in-fact

(Any additional signatures appear on the last page of this Performance Bond.)

(FOR INFORMATION ONLY – Name, Address and telephone)
AGENT or BROKER:

Acrisure LLC
780 Winchester Road
Lexington, KY 40505

OWNER'S REPRESENTATIVE:
(Architect, Engineer, or other party:)

The Company executing this bond vouches that this document conforms to the American Institute of Architects Document A312, 2010 edition

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

§ 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after

.1 the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

.2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

.3 the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

§ 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

§ 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

§ 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

§ 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

§ 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

§ 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

§ 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

§ 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

.2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and

.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

§ 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.

§ 9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.

§ 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

§ 13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said

statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 14 Definitions

§ 14.1 Balance of the Contract Price. The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

§ 14.2 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 Contractor Default. Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 14.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 16 Modifications to this bond are as follows:

Section 8 is hereby deleted in its entirety and replaced with the following:

If the Surety elects to act under Section 5.1, 5.2, 5.3, or 5.4, the Surety's liability is limited to the amount of this bond.

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL	**SURETY**
Company:	Company:
(Corporate Seal)	*(Corporate Seal)*
Signature:	Signature:
Name and Title:	Name and Title:
Address	Address

PAYMENT BOND

Bond No: 14BCSJL3846

CONTRACTOR:
(Name, legal status and address)

L-M Asphalt Partners dba ATS Construction
3009 Atkinson Ave #400
Lexington KY 40509

SURETY: Hartford Fire Insurance Company
(Name, legal status and principal place of business)

The Hartford -Bond Claim Department
One Hartford Plaza, T-11
Hartford, CT 06155

OWNER:
(Name, legal status and address)

Lexington Fayette Urban County Government
Department of General Services
200 E Main St
Lexington, KY 40507

CONSTRUCTION CONTRACT
Date: March 6, 2026
Amount: $5,126,500.00
Description: 1-2026 LFD Fire Training Academy Phase 1 Site Development
(Name and location)

BOND
Date: March 6, 2026
(Not earlier than Construction Contract Date)

Amount: $5,126,500.00
Modifications to this Bond: [x] **None** [ ] **See Section 18**

CONTRACTOR AS PRINCIPAL
Company: L-M Asphalt Partners dba ATS Construction

(Corporate Seal)

Signature: Brian R. Billings PRESIDENT
Name and Title: Brian R. Billings - President

SURETY
Company: Hartford Fire Insurance Company

(Corporate Seal)

Signature: Tina Carpenter
Name and Title: Tina Carpenter, Attorney-in-fact

(Any additional signatures appear on the last page of this Payment Bond.)

(FOR INFORMATION ONLY – Name, Address and telephone)

AGENT or BROKER:

Acrisure LLC
780 Winchester Road
Lexington, KY 40505

OWNER'S REPRESENTATIVE:
(Architect, Engineer, or other party:)

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

§ 2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

§ 4 When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.

§ 5 The Surety's obligations to a Claimant under this Bond shall arise after the following:

§ 5.1 Claimants, who do not have a direct contract with the Contractor,

.1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and

.2 have sent a Claim to the Surety (at the address described in Section 13).

§ 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).

§ 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.

§ 7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

§ 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

§ 7.2 Pay or arrange for payment of any undisputed amounts.

§ 7.3 The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

§ 8 The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

§ 9 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

§ 10 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to, or give notice on behalf of, Claimants or otherwise have any obligations to Claimants under this Bond.

§ 11 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 13 Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

§ 14 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 15 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

§ 16 Definitions

§ 16.1 Claim. A written statement by the Claimant including at a minimum:

.1 the name of the Claimant;

.2 the name of the person for whom the labor was done, or materials or equipment furnished;

.3 a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;

.4 a brief description of the labor, materials or equipment furnished;

.5 the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;

.6 the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;

.7 the total amount of previous payments received by the Claimant; and

.8 the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

§ 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

§ 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

§ 16.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 16.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 17 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 18 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL	**SURETY**
Company:	Company:
(Corporate Seal)	*(Corporate Seal)*
Signature:	Signature:
Name and Title:	Name and Title:
Address	Address

POWER OF ATTORNEY

Direct Inquiries, Bond Authenticity and Claims to:
THE HARTFORD
BOND, T-14
One Hartford Plaza
Hartford, Connecticut 06155
Bond.Claims@thehartford.com
call: **888-266-3488** *or fax:* **860-757-5835**

KNOW ALL PERSONS BY THESE PRESENTS THAT:

Agency Name: ACRISURE LLC
Agency Code: 14-732421

- [X] **Hartford Fire Insurance Company**, a corporation duly organized under the laws of the State of Connecticut
- [X] **Hartford Casualty Insurance Company**, a corporation duly organized under the laws of the State of Indiana
- [X] **Hartford Accident and Indemnity Company**, a corporation duly organized under the laws of the State of Connecticut
- [ ] **Hartford Insurance Company of the Midwest**, a corporation duly organized under the laws of the State of Indiana

having their home office in Hartford, Connecticut, (hereinafter collectively referred to as the "Companies") do hereby make, constitute and appoint, ***up to the amount of*** Unlimited :
Tina Carpenter, Mary Crouch, Jeff Fairchild, John W. Hampton, David Henry, Anna Morris of LEXINGTON, Kentucky

their true and lawful Attorney(s)-in-Fact, each in their separate capacity if more than one is named above, to sign its name as surety(ies) only as delineated above by ☒, and to execute, seal and acknowledge any and all bonds, undertakings, contracts and other written instruments in the nature thereof, on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

In Witness Whereof, and as authorized by a Resolution of the Board of Directors of the Companies on May 23, 2016 the Companies have caused these presents to be signed by its Assistant Vice President and its corporate seals to be hereto affixed, duly attested by its Assistant Secretary. Further, pursuant to Resolution of the Board of Directors of the Companies, the Companies hereby unambiguously affirm that they are and will be bound by any mechanically applied signatures applied to this Power of Attorney.

Phyllis A. Clark, Assistant Secretary

Joelle L. LaPierre, Assistant Vice President

STATE OF FLORIDA
COUNTY OF SEMINOLE } ss. Lake Mary

On this 1st day of March, 2024, before me personally came Joelle L. LaPierre, to me known, who being by me duly sworn, did depose and say: that (s)he resides in Seminole County, State of Florida; that (s)he is the Assistant Vice President of the Companies, the corporations described in and which executed the above instrument; that (s)he knows the seals of the said corporations; that the seals affixed to the said instrument are such corporate seals; that they were so affixed by authority of the Boards of Directors of said corporations and that (s)he signed his/her name thereto by like authority.

Mariluz Arce
My Commission HH 287363
Expires July 13, 2026

I, the undersigned, Assistant Vice President of the Companies, DO HEREBY CERTIFY that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which is still in full force effective as of March 6, 2026.

Signed and sealed in Lake Mary, Florida.

Keith D. Dozois, Assistant Vice President

L-MASPH-02 TCARPENTERFULTON

ACORD

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 3/5/2026

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Acrisure South Insurance Services, LLC 1317 Citizens Blvd Leesburg, FL 34748	CONTACT NAME: John Hampton PHONE (A/C, No, Ext): (859) 254-1836 FAX (A/C, No): E-MAIL ADDRESS: tcarpenter-fulton@acrisure.com
INSURED L-M Asphalt Partners LTD dba ATS Construction 3009 Atkinson Ave., Ste 400 Lexington, KY 40509	INSURER(S) AFFORDING COVERAGE — NAIC # INSURER A : The Charter Oak Fire Insurance Company — 25615 INSURER B : Travelers Property Casualty Company of America — 25674 INSURER C : The Standard Fire Insurance Company — 19070 INSURER D : INSURER E : INSURER F :

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE [X] OCCUR X XCU GEN'L AGGREGATE LIMIT APPLIES PER: POLICY [X] PRO-JECT [ ] LOC OTHER:	X	X	DTCO3E855071	4/1/2025	4/1/2026	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ 300,000 $ 10,000 $ 1,000,000 $ 2,000,000 $ 2,000,000
B	AUTOMOBILE LIABILITY X ANY AUTO X OWNED AUTOS ONLY [ ] SCHEDULED AUTOS X HIRED AUTOS ONLY [X] NON-OWNED AUTOS ONLY	X	X	810-8M955327	4/1/2025	4/1/2026	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 1,000,000 $ $ $
B	X UMBRELLA LIAB [X] OCCUR EXCESS LIAB [ ] CLAIMS-MADE DED [X] RETENTION $ 10,000			CUP0J675466	4/1/2025	4/1/2026	EACH OCCURRENCE AGGREGATE	$ 5,000,000 $ 5,000,000
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y/N [N] If yes, describe under DESCRIPTION OF OPERATIONS below	N/A		UB-2N535772-25-26-G	4/1/2025	4/1/2026	X PER STATUTE [ ] OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ 1,000,000 $ 1,000,000 $ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

LFD Fire Training Academy -Phase 1 Site Development Project

Lexington Fayette Urban County Government is additional insureds with respect to general and auto liability per written contract, the general liability is primary and non-contributory and includes products and completed operations. Policies contain a 30-day notice of cancellation endorsement. Waiver of subrogation in favor of LFUCG and its elected and appointed officials, employees, agents, volunteers and successors in interest per written contract and as permitted by law on the coverage as indicated above.

CERTIFICATE HOLDER

Lexington-Fayette Urban County Government
Dept of General Services
200 East Main Street
Lexington, KY 40507

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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CONTRACT DOCUMENTS
AND
SPECIFICATIONS

DEPARTMENT OF GENERAL SERVICES

FOR

LFD Fire Training Academy - Phase 1 Site Development Project

Bid No. 1-2026

Prepared by: GRW Inc.

PART 1

ADVERTISEMENT FOR BIDS

INDEX

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1. INVITATION
2. DESCRIPTION OF WORK
3. OBTAINING PLANS, SPECIFICATIONS, AND BID DOCUMENTS
4. METHOD OF RECEIVING BIDS
5. METHOD OF AWARD
6. BID WITHDRAWAL
7. BID SECURITY
8. SUBMISSION OF BIDS
9. RIGHT TO REJECT
10. NOTIFICATION TO THE LFUCG FOR AFFIRMATIVE ACTION
11. NOTICE CONCERNING MWDBE AND VETERAN GOALS – LFUCG
12. PRE-BID CONFERENCE

PART 1

ADVERTISEMENT FOR BIDS

1. INVITATION

Sealed proposals for the **LFD Fire Training Academy Phase 1 Site Developmen Project** will be received by the Lexington-Fayette Urban County Government (LFUCG) via Ion Wave until 2:00 p.m., local time, **February 25, 2026** for furnishing all labor and/or materials and performing all work as set forth by this advertisement, Ion Wave Q&A, conditions (general and special), specifications, and/or the drawings prepared by GRW Inc for Lexington-Fayette Urban County Government. Immediately following the scheduled closing time for reception of bids, all proposals which have been submitted in accordance with the above will be opened electronically and a bid tab sheet will be available via Ion Wave.

LFUCG will only be accepting bids on-line through Ion Wave for this solicitation. Base bid and alternate totals (if required) should be provided on the appropriate line items tab on Ion Wave. Submissions without line item totals (if required) may be rejected and deemed non-responsive. All forms normally provided with bid submission should be downloaded from Ion Wave, filled out and attached with bid submission. A copy of bid bond must be included with submission. THESE INSTRUCTIONS SUPERCEDE ALL OTHER BID SUBMISSION INSTRUCTIONS PROVIDED IN THIS PACKAGE. PLEASE SUBMIT ALL QUESTIONS VIA THE Q&A MODULE ON ION WAVE.

2. DESCRIPTION OF WORK

Consisting of the construction and/or furnishing of items as listed in the Bid Schedule beginning on page P-6, Part III, Form of Proposal, of this document, for the LFD Fire Training Academy Phase 1 Site Development Project, Lexington-Fayette County, Kentucky.

Specs and drawings are available on Ion Wave only.

3. OBTAINING PLANS, SPECIFICATIONS, AND BID DOCUMENTS

Plans, Specifications, and Contract Documents shall be obtained from Ion Wave (LFUCG's electronic bidding system). Ion Wave can be accessed at https://lexingtonky.ionwave.net

4. METHOD OF RECEIVING BIDS

Bids will be received from Prime Contracting firms on a **Lump Sum** for total Project. Bidder must include a price for all bid items to be considered. **Bids shall be submitted in the manner and subject to the conditions as set forth and described in the Information for Bidders and Special Conditions.**

Bids/proposals should be submitted online via Ion Wave.

5. METHOD OF AWARD

The Contract, if awarded, will be to the lowest responsive and responsible bidder for the total project whose qualifications indicate the award will be in the best interest of the OWNER and whose bid/proposal complies with all the prescribed requirements. No Notice of Award will be given until the OWNER has concluded such investigation as deemed necessary to establish the responsibility, qualifications and financial ability of Bidders to do the work in accordance with the Contract Documents to the satisfaction of the OWNER within the time prescribed. The OWNER reserves the right to reject the Bid of any Bidder who does not pass such investigation to the OWNER's satisfaction. The OWNER reserves the right to reject the Bid of any Bidder that is deemed to be unbalanced or front loaded. In analyzing Bids, the OWNER may take into consideration alternate and unit prices, if requested by the Bid forms.

Bids will be evaluated based on the following weighted criteria:

1. **Past record and performance on contracts with LFUCG with respect to control of cost, quality of work and ability to meet schedule. Provide General Contractor's Project Experiences with LFUCG or similar Government agency in the past 15 years with contact info (5 points);**
2. **Capacity. Provide General Contractor's number of current active projects with associated % of completion (15 points);**
3. **References: Provide at least two client references and one subcontractor/supplier reference for General Contractor, including references for all active projects listed above related to Capacity (20 points);**
4. **References: Provide at least one client reference for the following Subcontractors (10 pts);**
   - **Electrical**
   - **Earthwork**
   - **Paving**
5. **Cost of services (50 points).**

6. BID WITHDRAWAL

No bidder may withdraw his bid for a period of ninety (90) calendar days after the closing date for receipt of bids. Errors and omissions will not be cause for withdrawal of bid without forfeit of bid bond.

7. BID SECURITY

If the bid is $50,000 or greater, bid shall be accompanied by a certified check or bid bond payable to the Lexington-Fayette Urban County Government in an amount not less than Five Percent (5%) of the base bid. Bid bond shall be executed by a Surety Company authorized to do business in the Commonwealth of Kentucky and countersigned by a licensed Kentucky Resident Agent, representing the Surety Company. Bid Bonds are not required for bids under $50,000. A cashier's check or irrevocable letter of credit is an acceptable form of bid security.

8. SUBMISSION OF BIDS

CONTRACTORS shall submit their bids via Ion Wave not later than 2:00 p.m. local time, **February 25, 2026**. Bids will remain sealed until **February 25, 2026**, 2:00 pm, the official Bid closure time. Bids will not be received after the scheduled closing time for receipt of bids. If pricing is submitted in line items tab, bid tab sheet will be immediately available after bid opening, under the Documents link on Ion Wave.

9. RIGHT TO REJECT

The Lexington-Fayette Urban County Government reserves the right to reject any and all bids and to waive all informalities and/or technicalities where the best interest of the Lexington-Fayette Urban County Government may be served.

10. NOTIFICATION TO THE LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT FOR AFFIRMATIVE ACTION PLAN AND CURRENT WORKFORCE

The successful bidder must submit the following to the Lexington-Fayette Urban County Government:

1. Affirmative Action Plan for his/her firm.
2. Current Workforce Analysis Form

Failure to submit this as required herein may result in disqualification of the Bidder from the award of the contract.

11. NOTICE CONCERNING MWDBE and VETERAN OWNED SMALL BUSINESS GOALS

The Lexington-Fayette Urban County Government has a Certified Minority and Women Business Enterprise seventeen percent (17%) minimum goal including minimum subgoals of five percent (5%) for Minority Business Enterprises (MBE) and a subgoal of twelve percent (12%) for Women Business Enterprises (WBE); a three (3%) minimum goal for Certified Veteran-Owned Small Businesses and/or Certified Service- Disabled Veteran Owned Businesses; and a goal of utilizing Disadvantaged Business Enterprises (DBE), where applicable, for government contracts.

For assistance in locating certified DBEs, MBEs, WBEs, VOSBs and/or VOSBs, contact Sherita Miller at 859/258-3320 or by writing the address listed below:

Sherita Miller, MPA, CPSD
Minority Business Enterprise Liaison
Division of Procurement
Lexington-Fayette Urban County Government
200 East Main Street
Lexington, Kentucky 40507
smiller@lexingtonky.gov

12. PRE-BID CONFERENCE

A pre-bid conference is scheduled for February 2, 2026, 2:00 pm, at 1375 Old Frankfort Pike, Lexington, KY.

END OF SECTION

PART II

INFORMATION FOR BIDDERS

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1. RECEIPT AND OPENING OF BIDS
2. PREPARATION OF BID
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6. LIQUIDATED DAMAGES FOR FAILURE TO ENTER INTO CONTRACT
7. TIME OF COMPLETION AND LIQUIDATED DAMAGES
8. EXAMINATION OF CONTRACT DOCUMENTS AND SITE
9. ADDENDA AND INTERPRETATIONS
10. SECURITY FOR FAITHFUL PERFORMANCE
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21. ASSISTANCE TO BE OFFERED TO DBE CONTRACTORS
22. LFUCG NON-APPROPRIATION CLAUSE
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PART II

INFORMATION FOR BIDDERS

1. RECEIPT AND OPENING OF BIDS

The Lexington-Fayette Urban County Government (herein called the OWNER) invites bids from firms on the project described in the Advertisement for Bids. The OWNER will receive bids via Ion Wave, at the time and in the manner set forth in the Advertisement for Bids, and the Bids. The OWNER may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any and all bids. Any bid may be withdrawn prior to the scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be considered. No bidder may withdraw a bid within 90 days after the actual time and date of the bid opening, but OWNER may, in its sole discretion, release any bid and return the Bid Security prior to that date.

The Lexington-Fayette Urban County Government assumes no responsibility for bids that are not delivered as indicated above.

2. PREPARATION OF BID

All sections of the bid package requiring Contractor information must be filled in and uploaded in the Response Attachments tab in IonWave. Bid bonds must be uploaded also. All pricing must be submitted in the Line Items tab in IonWave.

3. SUBCONTRACTS

The bidder is specifically advised that any person, firm, or other party to whom it is proposed to award a subcontract under this Contract must be acceptable to the OWNER. All proposed subcontractors must be identified on the Form of Proposal. Prior to the award of Contract, the OWNER or the OWNER'S representative will advise the CONTRACTOR of the acceptance and approval thereof or of any action necessary to be taken. Should any Subcontractor be rejected by the OWNER, the CONTRACTOR shall present a new name and/or firm to the OWNER at no change in the Contract Price.

4. QUALIFICATION OF BIDDER

The OWNER may make such investigations as the OWNER deems necessary to determine the ability of the bidder to perform the Work, and the bidder shall furnish to the OWNER all such information and data for this purpose as the OWNER may request. The OWNER reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the OWNER that such bidder is properly qualified to carry out the obligations of the Contract and to complete the Work contemplated therein. Conditional bids will not be accepted.

In evaluating Bids, OWNER shall consider the qualifications of the BIDDERS, whether or not the Bids comply with the prescribed requirements, and alternatives and unit prices, as requested. OWNER may consider maintenance requirements, performance data, and disruption or damage to private property. It is OWNER'S intent to accept alternatives by the bid forms, in the order in which they are listed in the Bid Form but OWNER may accept or decline them in order or combination. The contract, if awarded, will be awarded to the lowest responsive and qualified, responsible BIDDER based upon OWNER'S evaluation which indicates that the award will be in the best interest of OWNER and the general public.

In the event there is any question as to the bidder's qualifications and ability to complete the work, a final determination will be made in accordance with a fair evaluation by the Urban County Government of the above listed elements.

A. If the OWNER requires filling out a detailed financial statement, the bidder may provide its current certified financial statement(s) for the required time interval.

B. Corporate firms are required to be registered with the Office of the Secretary of State, Commonwealth of Kentucky.

C. Documents Required of CONTRACTOR - (1) A sworn statement signed by the President or owner of the Company regarding all current work in progress anywhere; (2) A document showing the percent of completion of each project and the total worth of each project; and (3) Documentation showing the percentage of the DBE employment levels on each project of the Bidder's current work force, and DBE participation levels for Subcontractors.

D. Optional OWNER Requirements - The OWNER, at its discretion, may require the BIDDER/CONTRACTOR to provide: (1) A current detailed financial statement for a period including up to 3 prior years. (2) Financial security or insurance in amounts and kinds acceptable to the OWNER to meet the financial responsibility requirements for the CONTRACTOR to indemnify the OWNER. (3) Additional information and/or DBE work force data, as well as DBE participation data.

Each bidder agrees to waive any claim it has or may have against the Owner and their respective employees, arising out of or in connection with the administration, evaluation, or recommendation of any bid.

5. BID SECURITY

A. Each bid must be accompanied by a bid bond prepared on a Form of Bid Bond and attached hereto, duly executed by the bidder as principal and having as surety thereon a surety company approved by the OWNER, in the amount of 5% of the bid. Such bid bond will be returned to the unsuccessful bidder(s) only upon written request to the Director of Procurement within seven (7) days of opening of bids. Bid bond shall be made payable to the Lexington-Fayette Urban County Government. Bid security is not required for projects under $50,000.

B. Bonds shall be placed with an agent licensed in Kentucky with surety authorized to do business within the state. When the premium is paid for such coverage, the full commission payable shall be paid to such local agent who shall not divide such commission with any person other than a duly licensed resident local agent.

6. LIQUIDATED DAMAGES FOR FAILURE TO ENTER INTO CONTRACT

The successful bidder, upon his failure or refusal to execute and deliver the Contract and bonds required within ten (10) days after he has received notice of the acceptance of his bid, shall forfeit to the OWNER, as liquidated damages for such failure or refusal, the security deposited with his bid.

7. TIME OF COMPLETION

Bidder must agree to commence work on or before a date to be specified in a written "Notice to Proceed" from the OWNER and to fully complete the Project within the time as specified in the Contract. Bidder must agree also to pay **$500.00** per day thereafter deadline for substantial completion and **$500.00** per day thereafter deadline for final completion.

8. EXAMINATION OF CONTRACT DOCUMENTS AND SITE

A. It is the responsibility of each Bidder before submitting a Bid, to (a) examine the Contract Documents thoroughly, (b) visit the site(s) to become familiar with local conditions that may affect cost, progress, performance or furnishing of the work, (c) consider Federal, State and Local laws and regulations that may affect cost, progress, performance or furnishing of the work, (d) study and carefully correlate Bidder's observations with the Contract Documents, and (e) notify Owner of all conflicts, errors or discrepancies in the Contract Documents.

B. Bidders should examine the requirements of Section 4 of the General Conditions for information pertaining to subsurface conditions, underground structures, underground facilities, and availability of lands, easements, and rights-of-way. The completeness of data, presented in the Contract Documents, pertaining to subsurface conditions, underground structures, and underground facilities for the

purposes of bidding or construction is not assured. The Bidder will, at Bidder's own expense, make or obtain any additional examinations, investigations, explorations, tests and studies and obtain any additional information and data which pertain to the physical conditions (surface and subsurface) which may affect cost, progress, performance or furnishing of the Work and which Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price, and other terms and conditions of the Contract Documents. On request in advance, OWNER will provide access to the site to conduct such explorations and tests as each Bidder deems necessary for submission of a bid. Bidder shall fill all holes, clean up and restore the site to its former condition upon completion of such explorations.

C. The submission of a Bid will constitute an incontrovertible representation by the Bidder that Bidder has complied with every requirement of this paragraph; that without exception the Bid is premised upon furnishing and performing the Work required by the Contract Documents and such means, methods, techniques, sequences or procedures of construction as may be indicated in or required by the Contract Documents; and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

9. ADDENDA AND INTERPRETATIONS

No interpretation of the meaning of the Contract Documents will be made to any bidder orally. Every request for such interpretation should be in writing addressed to the Director of Procurement, who in turn will have an addendum issued under signature of the Project Manager for the Lexington-Fayette Urban County Government, and to be given consideration must be received at least seven (7) days prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications which, if issued, will be mailed by certified mail with return receipt requested, faxed or emailed to all prospective bidders. Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under his bid as submitted. All addenda so issued shall become part of the Contract Documents.

10. SECURITY FOR FAITHFUL PERFORMANCE

A. Simultaneously with his delivery of the executed Contracts, the CONTRACTOR shall furnish a surety bond or bonds as security for the faithful performance of this Contract and for payment of all persons performing labor on the Project under this Contract and furnishing materials in connection with this Contract, as specified in the General Conditions. The surety on such bond or bonds shall be a duly authorized surety company satisfactory to the OWNER and authorized to do business in the Commonwealth of Kentucky.

B. All bonds required by this Contract and laws of this State shall be placed with agents licensed in the State of Kentucky. When the premium is paid for such coverages, the full commission shall be paid to such local agent who shall not divide such commission with any person other than a duly licensed resident local agent.

C. **Contractor shall use standard Performance and Payment Bond forms such as documents provided with this contract book or AIA form A312-1984 (or later).**

11. POWER OF ATTORNEY

Attorney-in-fact who signs bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

12. TAXES AND WORKMEN'S COMPENSATION

The CONTRACTOR and subcontractor will be required to accept liability for payment of all payroll taxes, sales and use tax, and all other taxes or deductions required by local, state or federal law. Each shall carry Workmen's Compensation Insurance to the full amounts as required by Statutes and shall include the cost of all foregoing items in the proposal. The CONTRACTOR will not otherwise be reimbursed or compensated for such tax payments. The CONTRACTOR is urged to ascertain at his own risk his actual tax liability in connection with the execution or performance of his Contract.

13. LAWS AND REGULATIONS

The bidder's attention is directed to the fact that all applicable state laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the Project shall apply to the Contract throughout, and they will be deemed to be included in the contract, the same as though herein written out in full.

14. EROSION AND SEDIMENT CONTROL AND PERMITS

The CONTRACTOR and Subcontractors performing work on projects on behalf of the OWNER shall also comply with all applicable federal, state, and local environmental regulations and all requirements and conditions set forth in "special" permits including but not limited to Corp of Engineers 404 permits, 401 Water Quality Certifications, Stream Crossing and Floodplain Encroachment Permits as described in Part 4 General Conditions Paragraph 5.17.

15. PREVAILING WAGE LAW AND MINIMUM HOURLY RATES

Federal wage rates and regulations, if required for this Project, will be as described in the Special Conditions.

16. AFFIRMATIVE ACTION PLAN

The successful Bidder must submit the entire proposal with their bid, the following items to the Urban County Government:

1. Certification of Bid Proposal/DBE – see Part III

2. LFUCG MWDBE Participation Form – see Part III

3. Documentation Required for Good Faith Efforts and Outreach Plans – see Part III

A Work Force Analysis Form shall be submitted for each Contract. Failure to submit any of these items as required herein may result in disqualification of the Bidder from award of the Contract.

17. CONTRACT TIME

The number of calendar days within which the Work is to be substantially completed and ready for final payment (the Contract Time) is set forth in the Contract Agreement.

18. SUBSTITUTE OR "APPROVED EQUAL" ITEMS

The Contract, if awarded, will be on the basis of materials and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or "approved equal" items. Whenever it is indicated in the Drawings or specified in the Specifications that a substitute or "approved equal" item of material or equipment may be furnished or used by the CONTRACTOR if acceptable to the OWNER, application for such acceptance will not be considered by the OWNER until after the effective date of the Agreement. The procedure for submission of any such application by the CONTRACTOR and consideration by the OWNER is set forth in the General Conditions.

19. ALTERNATE BIDS

Bidders shall submit alternate bids/proposals only if and when such alternate bids/proposals have been specifically requested in an Invitation for Bids. If alternate bids/proposals are requested in an Invitation for Bids, the form of submission of such alternate bid and the conditions under which such alternate bids will be considered for award of a contract will be established in the Invitation.

Any Bidder who submits a bid incorporating an alternate proposal when alternate bids/proposals have not been requested in the Invitation for Bids shall have his/her bid rejected as non-responsive.

Any Bidder who submits a bid incorporating two (2) or more prices for an item or groups of items (unless such method of pricing is requested in the Invitation for Bids), or which imposes conditions for acceptance other than those established in the Invitation for Bids, shall have their bid rejected as non-responsive.

20. SIGNING OF AGREEMENT

When OWNER gives a Notice of Award to the successful Bidder, it will be accompanied by the required number of unsigned counterparts of the Agreement with all other written Contract Documents attached. Within ten days thereafter, CONTRACTOR shall sign and deliver the required number of counterparts of the Agreement and attached documents to OWNER with the required Bonds, Certificate of Insurance, and Power of Attorney. The OWNER will deliver one fully signed counterpart to CONTRACTOR at such time as it has been signed by the Mayor.

21. ASSISTANCE TO BE OFFERED TO DISADVANTAGED BUSINESS ENTERPRISE (MWDBE) CONTRACTORS AND VETERAN OWNED SMALL BUSINESSES

A. Outreach for MWDBE(s) and Veteran Owned Small Businesses (VOSB)

The Lexington-Fayette Urban County Government (LFUCG) maintains a database of MWDBE contractors and Veteran Owned Small Businesses. When a LFUCG construction project is advertised for bidding, notices are sent to companies registered at https://lexingtonky.ionwave.net. The notices describe the project and indicate the deadline for submitting bids.

If you wish to be added to the LFUCG MWDBE and Veteran contractor database, please contact:

Sherita Miller, MPA, CPSD
Minority Business Enterprise Liaison
Division of Procurement
Lexington-Fayette Urban County Government
200 East Main Street, Room 338
Lexington, Kentucky 40507
smiller@lexingtonky.gov

B. Bid Bond Assistance for MWDBE(s)

For those MWDBE contractors who wish to bid on LFUCG project, bid bond assistance is available. This bid bond assistance is in the form of a "Letter of Certification" which is accepted by the LFUCG's Division of Purchasing, in lieu of a bid bond. The "Letter of Certification" must be included in the bid package when it is submitted to the Division of Purchasing. The "Letter of Certification" will reference the specific project for which the bid is being submitted, and the time and date on which the bid is due. Bid bond assistance must be requested from the Lexington-Fayette Urban County Government's Division of Procurement.

C. Eligibility for Bid Bond Assistance for MWDBE(s)

In order to be eligible for any Bid bonding assistance, a MWDBE construction company must be owned or controlled at the level of 51% or more by a member or members of a minority group or females. Prior to receiving assistance, a statement providing evidence of ownership and control of the company by a member or members of a minority group or females must be signed by the Owner or corporate officer and by an attorney or accountant submitted to:

Sherita Miller, MPA, CPSD
Division of Procurement
Lexington-Fayette Urban County Government
200 East Main Street, Room 338
Lexington, Kentucky 40507
smiller@lexingtonky.gov
859-258-3323

D. MWDBE and VETERAN OWNED SMALL BUSINESSES (VOSB)

The LFUCG will, upon request, assist prime contractors in the procurement of eligible DBE subcontractors in an effort to achieve a seventeen percent (17%) minimum goal including minimum subgoals of five percent (5%) for Minority Business Enterprises (MBE) and a subgoal of twelve percent (12%) for Women Business Enterprises (WBE); a three (3%) minimum goal for Certified Veteran-Owned Small Businesses and/or Certified Service- Disabled Veteran Owned Businesses; and a goal of utilizing Disadvantaged Business Enterprises (DBE), where applicable, for government contracts.

For a list of eligible subcontractors, please contact:

Sherita Miller, MPA, CPSD
Minority Business Enterprise Liaision

Division of Procurement
Lexington-Fayette Urban County Government
200 East Main Street, Room 338
Lexington, Kentucky 40507
smiller@lexingtonky.gov
859-258-3323

22. LFUCG NON-APPROPRIATION CLAUSE

Contractor acknowledges that the LFUCG is a governmental entity, and the contract validity is based upon the availability of public funding under the authority of its statutory mandate.

In the event that public funds are unavailable and not appropriated for the performance of the LFUCG's obligations under this contract, then this contract shall automatically expire without penalty to the LFUCG thirty (30) days after written notice to Contractor of the unavailability and non-appropriation of public funds. It is expressly agreed that the LFUCG shall not activate this non-appropriation provision for its convenience or to circumvent the requirements of this contract, but only as an emergency fiscal measure during a substantial fiscal crisis, which affects generally its governmental operations.

In the event of a change in the LFUCG's statutory authority, mandate and mandated functions, by state and federal legislative or regulatory action, which adversely affects the LFUCG's authority to continue its obligations under this contract, then this contract shall automatically terminate without penalty to the LFUCG upon written notice to Contractor of such limitation or change in the LFUCG's legal authority.

23. NOTICE OF CONTENTION

Vendors who respond to this invitation have the right to file a notice of contention associated with the bid process or to file a notice of appeal of the recommendation made by the Director of Procurement resulting from this invitation.

Notice of contention with the bid process must be filed within 3 business days of the bid/proposal opening by (1) sending a written notice, including sufficient documentation to support contention, to the Director of the Division of Procurement or (2) submitting a written request for a meeting with the Director of Procurement to explain his/her contention with the bid process. After consulting with the Commissioner of Finance the Chief Administrative Officer and reviewing the documentation and/or hearing the vendor, the Director of Procurement shall promptly respond in writing findings as to the compliance with bid processes. If, based on this review, a bid process irregularity is deemed to have occurred the Director of Procurement will consult with the Commissioner of Finance, the Chief Administrative Officer and the Department of Law as to the appropriate remedy.

Notice of appeal of a bid recommendation must be filed within 3 business days of the bid recommendation by (1) sending a written notice, including sufficient documentation to support appeal, to the Director, Division of Procurement or (2) submitting a written request for a meeting with the Director of Procurement to explain the appeal. After reviewing the documentation and/or hearing the vendor and consulting with the Commissioner of Finance and the Chief Administrative Officer, the Director of Procurement shall in writing, affirm or withdraw the recommendation.

END OF SECTION

PART III

FORM OF PROPOSAL

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PART III

Invitation to Bid No. 1-2026

LFD Fire Training Academy Phase 1 Site Development Project

1. FORM OF PROPOSAL

Place: Lexington, Kentucky

Date: _____

The following Form of Proposal shall be followed exactly in submitting a proposal for this Work.

This Proposal Submitted by _____

_____
(Name and Address of Bidding Contractor)

(Hereinafter called "Bidder"), organized and existing under the laws of the State of _____, doing business as _____ _____ "a corporation," "a partnership", or an "individual" as applicable.

To: Lexington-Fayette Urban County Government
(Hereinafter called "OWNER")
Office of the Director of Purchasing
200 East Main Street, 3rd Floor
Lexington, KY 40507

Gentlemen:

The Bidder, in compliance with your Invitation for Bids for **LFD Fire Training Academy Phase 1 Site Development Project** having examined the Plans and Specifications with related documents, having examined the site for proposed Work, and being familiar with all of the conditions surrounding the construction of the proposed Project, including the availability of materials and labor, hereby proposes to furnish all labor, materials, and supplies, and to construct the Project in accordance with the Contract Documents, within the time set forth therein, and at the lump sum and/or unit prices stated hereinafter. These prices are to cover all expenses incurred in performing the Work required under the Contract Documents, of which this proposal is a part.

The Bidder hereby acknowledges receipt of the following addenda:

Addendum No. _____ Date _____

Addendum No. _____ Date _____

Addendum No. _____ Date _____

Addendum No. _____ Date _____

Addendum No. _____ Date _____

Addendum No. _____ Date _____

Addendum No. _____ Date _____

Addendum No. _____ Date _____

Insert above the number and the date of any Addendum issued and received. If none has been issued and received, the word "NONE" should be inserted.

2. LEGAL STATUS OF BIDDER

Bidder _____

Date _____

* 1. A corporation duly organized and doing business under the laws of the State of _____, for whom _____, bearing the official title of _____, whose signature is affixed to this Bid/Proposal, is duly authorized to execute contracts.

* 2. A Partnership, all of the members of which, with addresses are: (Designate general partners as such)

_____

_____

_____

_____

_____

* 3. An individual, whose signature is affixed to this Bid/Proposal (please print name)

_____

_____

*(The Bidder shall fill out the appropriate form and strike out the other two.)

3.

BIDDERS AFFIDAVIT

Comes the Affiant, _____, and after being first duly sworn, states under penalty of perjury as follows:

1. His/her name is _____ and he/she is the individual submitting the bid or is the authorized representative of _____, the entity submitting the bid (hereinafter referred to as "Bidder").

2. Bidder will pay all taxes and fees, which are owed to the Lexington-Fayette Urban County Government at the time the bid is submitted, prior to award of the contract and will maintain a "current" status in regard to those taxes and fees during the life of the contract.

3. Bidder will obtain a Lexington-Fayette Urban County Government business license, if applicable, prior to award of the contract.

4. Bidder has authorized the Division of Procurement to verify the above-mentioned information with the Division of Revenue and to disclose to the Urban County Council that taxes and/or fees are delinquent or that a business license has not been obtained.

5. Bidder has not knowingly violated any provision of the campaign finance laws of the Commonwealth of Kentucky within the past five (5) years and the award of a contract to the Bidder will not violate any provision of the campaign finance laws of the Commonwealth.

6. Bidder has not knowingly violated any provision of Chapter 25 of the Lexington-Fayette Urban County Government Code of Ordinances, known as the "Ethics Act."

7. Bidder acknowledges that "knowingly" for purposes of this Affidavit means, with respect to conduct or to circumstances described by a statute or ordinance defining an offense, that a person is aware or should have been aware that his conduct is of that nature or that the circumstance exists.

8. Bidder will comply with all registration requirements as a contractor where required by Section 5-85 of the Code of Ordinances of the Lexington-Fayette Urban County Government. Bidder will utilize as subcontractors on the contract only contractors who are registered as required by Section 5-85 of the Code of Ordinances. Bidder will maintain a "current" status with regard to all contractor registration requirements during the life of the contract and will ensure that all subcontractors maintain a "current" status with regard to all contractor registration requirements during the life of the contract. Bidder has authorized the Division of Procurement to verify the registration of Bidder and Bidder's subcontractors with the Division of Building Inspection.

_____ _____
Signature Printed Name

_____ _____
Title Date

Company Name _____

Address _____

Subscribed and sworn to before me by _____
(Affiant)

_____
(Title)

of _____ this _____ day of _____ , 20_____.
(Company Name)

_____
Notary Public
[seal of notary]

My commission expires: _____

4. BID SCHEDULE – SCHEDULE OF VALUES

The Bidder agrees to perform all the Work described in the Specifications and shown on the Plans for the following proposed lump sum and/or unit prices, if applicable, which shall include the furnishing of all labor, materials, supplies, equipment and/or vehicle usage, services, all items of cost, overhead, taxes (federal, state, local), and profit for the Contractor and any Subcontractor involved, within the time set forth herein. If unit prices are applicable, Bidder must make the extensions and additions showing the total amount of bid.

Form of proposal must include unit bid prices written in words, unit price written in numbers and total amount bid (unit price x quantity) per line item OR bid may be considered non-responsive. In case of price discrepancy, unit bid price written in words will prevail followed by unit price written in numbers then total amount bid per line item.

If a discrepancy between the unit price and the item total exists, the unit price prevails except: If the unit price is illegible, omitted, or the same as the item total, item total prevails and the unit price is the quotient of the item total and the quantity.

If the unit price and the item total are illegible or are omitted, the bid may be determined nonresponsive. If a lump sum total price is illegible or is omitted, the bid may be determined nonresponsive.

For a unit price based bid, the sum of the item totals is the bid amount the Division uses for bid comparison.

The LFUCG's decision on the bid amount is final.

Pricing should be submitted in the Line Items tab on IonWave. Page P-9 must be fully executed and attached to bid submission or bid will be considered non-responsive.

Item No.	Description	Unit	Quantity
1.	Base Bid, as per specs.	LS	1
2.	Deduct Alternate 1. Revise the Training Pad to Heavy Duty Asphalt. Refer to Construction Documents for location and paving details	LS	1

LIST OF UNIT PRICES

The following List of Unit Prices is required by the Owner to be completely executed and submitted with each Bidder's Proposal. Each unit price shall include the furnishing of all labor, materials, supplies and services, and shall include all items of cost, overhead and profit for the Contractor and any Sub-Contractors involved, and shall be used uniformly, without modification, for either additions or deductions from the Bid. These unit prices as established shall also be used to determine the equitable adjustment of the Contract Price in connection with changes, or extra work performed under the Contract. The "Rules of Measurement" set forth in the Special Conditions shall govern where volume units are concerned.

DESCRIPTION OF WORK	UNIT
1. Removal of unsatisfactory soil and replacement with satisfactory soil material.	CY
2. Mass rock excavation and replacement with satisfactory soil material.	TON
3. Trench rock excavation and replacement with satisfactory soil material.	TON
4. Concrete paving.	CY
5. Asphalt paving.	TON
6. DGA fill compacted in place.	TON
7. No. 2 stone fill compacted in place.	TON
8. Tensar HX-165 Geogrid.	SF

Submitted by:

_____
Firm

_____
Address

_____
City, State & Zip

Bid must be signed:
(original signature)

_____
Signature of Authorized Company Representative – Title

_____
Representative/s Name (Typed or Printed)

_____
Area Code – Phone –Fax #

_____
E-Mail Address

OFFICIAL ADDRESS:

_____

_____

_____

_____ (Seal if Bid is by Corporation)

By signing this form you agree to ALL terms, conditions, and associated forms in this bid package

5. STATEMENT OF BIDDER'S QUALIFICATIONS

The following statement of the Bidder's qualifications is required to be filled in, executed, and submitted with the Proposal:

1. Name of Bidder: _____

2. Permanent Place of Business: _____

3. When Organized: _____

4. Where Incorporated: _____

5. Construction Plant and Equipment Available for this Project:

_____

_____

_____

_____

_____

_____

(Attach Separate Sheet If Necessary)

6. Financial Condition:

If specifically requested by the OWNER, the apparent low Bidder is required to submit its latest three (3) years audited financial statements to the OWNER'S Division of Procurement within seven (7) calendar days following the bid opening.

7. In the event the Contract is awarded to the undersigned, surety bonds will be furnished by:

_____(Surety)

Signed: _____(Representative of Surety)

8. The following is a list of similar projects performed by the Bidder: (Attach separate sheet if necessary).

NAME	LOCATION	CONTRACT SUM

9. The Bidder has now under contract and bonded the following projects:

NAME	LOCATION	CONTRACT SUM

10. List Key Bidder Personnel who will work on this Project.

NAME	POSITION DESCRIPTION	NO. OF YEARS WITH BIDDER

11. DBE Participation on current bonded projects under contract:

SUBCONTRACTORS (LIST)	PROJECT (SPECIFIC TYPE)	DBE	% of WORK

(USE ADDITIONAL SHEETS IF NECESSARY)

12. We acknowledge that, if we are the apparent low Bidder, we will submit to the OWNER within 7 calendar days following the Bid Opening, a sworn statement on the OWNER'S form regarding all current work on hand and under contract, and a statement on the OWNER'S form of the experience of our officers, office management and field management personnel. Additionally, if requested by the OWNER, we will within 7 days following the request submit audited financial statements and loss history for insurance claims for the 3 most recent years (or a lesser period stipulated by the OWNER)—all in accordance with the Bid Documents.

Respectfully submitted:

_____
(Name of Contracting Firm)

BY: _____

TITLE: _____

DATE _____

6. LIST OF PROPOSED SUBCONTRACTORS

The following list of proposed subcontractors is required by the OWNER to be executed, completed and submitted with the BIDDER'S FORM OF PROPOSAL. All subcontractors are subject to approval of the Lexington-Fayette Urban County Government. Failure to submit this list completely filled out may be cause for rejection of bid.

BRANCH OF WORK-LIST	DBE	% of EACH MAJOR ITEM Work

LIST OF MATERIALS/ SUPPLIERS

Bidders are hereby advised that this list must be complete and submitted with the Bid.

Listing "as per plans and specifications", will not be considered as sufficient identification. Where more than one "Make or Brand" is listed for any one item, the Owner has the right to select the one to be used.

Item	Brand Name, Manufacturer and/or Supplier

7.

LEXINGTON

MINORITY BUSINESS ENTERPRISE PROGRAM

Sherita Miller, MPA, CPSD
Minority Business Enterprise Liaison
Division of Procurement
Lexington-Fayette Urban County Government
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OUR MISSION: The mission of the Minority Business Enterprise Program (MBEP) is to facilitate the full participation of minority and women owned businesses in the procurement process and to promote economic inclusion as a business imperative essential to the long- term economic viability of Lexington-Fayette Urban County Government.

To that end the urban county council adopted and implemented Resolution 272-2024 – a Certified Minority and Women Business Enterprise seventeen percent (17%) minimum goal including minimum subgoals of five percent (5%) for Minority Business Enterprises (MBE) and a subgoal of twelve percent (12%) for Women Business Enterprises (WBE); a three (3%) minimum goal for Certified Veteran-Owned Small Businesses and/or Certified Service- Disabled Veteran Owned Businesses; and a goal of utilizing Disadvantaged Business Enterprises (DBE), where applicable, for government contracts.

The resolution states the following definitions shall be used for the purposes of reaching these goals:

Certified Disadvantaged Business Enterprise (DBE) *– a business in which at least fifty-one percent (51%) is owned, managed and controlled by a person(s) who is socially and economically disadvantaged as define by 49 CFR subpart 26.*

Certified Minority Business Enterprise (MBE) *– a business in which at least fifty-one percent (51%) is owned, managed and controlled by an ethnic minority (i.e. Black American, Asian American, Hispanic American, Native American)*

Certified Women Business Enterprise (WBE) *– a business in which at least fifty-one percent (51%) is owned, managed and controlled by a woman.*

Certified Veteran-Owned Small Business (VOSB) *– a business in which at least fifty-one percent (51%) is owned, managed and controlled by a veteran who served on active duty with the U.S. Army, Air Force, Navy, Marines or Coast Guard.*

Certified Service -Disabled Veteran Owned Small Business (SDVOSB) *– a business in which at least fifty-one percent (51%) is owned, managed and controlled by a disabled veteran who served on active duty with the U.S. Army, Air Force, Navy, Marines or Coast Guard.*

The term "Certified" shall mean the business is appropriately certified, licensed, verified, or validated by an organization or entity recognized by the Division of Procurement as having the appropriate credentials to make a determination as to the status of the business.
The following certifications are recognized and accepted by the MBEP:

Kentucky Transportation Cabinet (KYTC), Disadvantaged Business Enterprise (DBE)
Kentucky Minority and Women Business Enterprise (MWBE)
Women's Business Enterprise National Council (WBENC)
National Women Business Owners Corporation (NWBOC)
National Minority Supplier Development Council (NMSDC)
Tri-State Minority Supplier Development Council (TSMSDC)
U.S. Small Business Administration Veteran Small Business Certification (VetCert)
Kentucky Service- Disabled Veteran Owned Small Business (SDVOSB)

To comply with Resolution 272-2024, prime contractors, minority and women business enterprises, veteran owned small businesses, and service-disabled veteran owned small businesses must complete monthly contract compliance audits in the Diverse Business Management Compliance system, https://lexingtonky.diversitycompliance.com/

A list of organizations that certify and/or maintain lists of certified businesses (i.e. DBE, MBE, WBE, VOSB and/or SDVOSB) is available upon request by emailing, Sherita Miller, smiller@lexingtonky.gov.

LEXINGTON

LFUCG MWDBE PARTICIPATION FORM
Bid/RFP/Quote Reference #_____

The MWDBE and/or veteran subcontractors listed have agreed to participate on this Bid/RFP/Quote. If any substitution is made or the total value of the work is changed prior to or after the job is in progress, it is understood that those substitutions must be submitted to the Division of Procurement for approval immediately. **Failure to submit a completed form may cause rejection of the bid.**

MWBE Company, Name, Address, Phone, Email	DBE/MBE WBE/VOSB/SDVOSB	Work to be Performed	Total Dollar Value of the Work	% Value of Total Contract
1.				
2.				
3.				
4.				

The undersigned company representative submits the above list of MDWBE and veteran firms to be used in accomplishing the work contained in this Bid/RFP/Quote. Any misrepresentation may result in the termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and false claims.

Company _____ **Company Representative** _____

Date _____ **Title** _____

LEXINGTON

LFUCG MWDBE SUBSTITUTION FORM

Bid/RFP/Quote Reference #_____

The substituted MWDBE and/or veteran subcontractors listed below have agreed to participate on this Bid/RFP/Quote. These substitutions were made prior to or after the job was in progress. These substitutions were made for reasons stated below and are now being submitted to the Division of Procurement for approval. By the authorized signature of a representative of our company, we understand that this information will be entered into our file for this project. **Note: Form required if a subcontractor is being substituted on a contract.**

SUBSTITUTED DBE/MBE/WBE/VOSB Company Name, Address, Phone, Email	DBE/MBE/WBE/VOSB/SDVOSB Formally Contracted/ Name, Address, Phone, Email	Work to Be Performed	Reason for the Substitution	Total Dollar Value of the Work	% Value of Total Contract
1.					
2.					
3.					
4.					

The undersigned acknowledges that any misrepresentation may result in termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and false claims.

_____ _____

Company **Company Representative**

_____ _____

Date **Title**

LEXINGTON

DOCUMENTATION REQUIRED FOR GOOD FAITH EFFORTS AND OUTREACH PLANS

As affirmed in Resolution Number 272-2024, the Urban County Council has adopted an annual aspirational goal of utilizing at least seventeen percent (17%) of public funds spend from certain discretionary agreements with certified Minority Business Enterprises (MBEs) and certified Woman Business Enterprises (WBEs); utilizing at least three percent (3%) of public funds from certain discretionary agreements with Certified Veteran-Owned Small Business and Certified Service-Disabled Veteran-Owned Small Businesses (VOSBs); and utilizing Disadvantaged Business Enterprises (DBEs) where applicable. Bidders should make every effort to achieve these goals.

Therefore, as an element of the responsiveness of the bid, all Bidders are required to submit documentation of their good faith and outreach efforts to ensure all businesses, including small and disadvantaged businesses such as minority-, woman-, and veteran-owned businesses, have an equal opportunity to compete for and participate in the performance of any subcontracts resulting from this procurement. Examples of good faith and outreach efforts that satisfy this requirement to encourage the participation of, DBEs, MBEs, WBEs, VOSBs and/or SDVOSBs include:

1. Advertised opportunities to participate in the contract in at least two (2) publications of general circulation media; trade and professional association publications; small and minority business or trade publications; and publications or trades targeting minority, women, and disadvantaged businesses not less than fifteen (15) days prior to the deadline for submission of bids to allow, DBEs, MBEs, WBEs, VOSBs and/or SDVOSBs to participate.

2. Attended LFUCG Procurement Economic Inclusion Outreach event(s) within the past year to meet new small businesses, DBEs, MBEs, WBEs, VOSBs and/or SDVOSBs to partner with on LFUCG contracts and procurements.

3. Attended pre-bid/pre-proposal meetings that were scheduled by LFUCG to inform small businesses, DBEs, MBEs, WBEs, VOSBs and/or SDVOSBs of subcontracting opportunities.

4. Sponsored Economic Inclusion event to provide networking opportunities for prime contractors and small businesses, DBEs, MBEs, WBEs, VOSBs and/or SDVOSBs.

5. Requested a list of certified small, DBE, MBE, WBE, VOSB and/or SDVOSB subcontractors or suppliers from LFUCG and showed evidence of contacting the companies on the list(s).

6. Contacted organizations that work with small, DBE, MBE, WBE, and VOSB companies for assistance in finding certified DBEs, MBEs, WBEs, VOSB and/or SDVOSBs to work on this project. Those contacted and their responses must be a part of the bidder's outreach efforts documentation.

7. Sent written notices, by certified mail, email, or facsimile, to qualified, certified small businesses, DBEs, MBEs, WBEs, VOSBs and/or SDVOSBs soliciting their participation in the contract not less than seven (7) days prior to the deadline for submission of bids to allow them to participate effectively.

8. Followed up initial solicitations by contacting small businesses, DBEs, MBEs, WBEs, VOSBs and/or SDVOSBs via tailored communications to determine their level of interest.

9. Provided the interested small businesses, DBEs, MBEs, WBEs, VOSBs and/or SDVOSBs with adequate and timely information about the plans, specifications, and requirements of the contract.

10. Selected portions of the work to be performed by small businesses, DBEs, MBEs, WBEs, VOSBs and/or SDVOSBs in order to increase the likelihood of subcontracting participation. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate small, DBE, MBE, WBE, VOSB and/or SDVOSB participation, even when the prime contractor may otherwise perform these work items with its own workforce.

11. Negotiated in good faith with interested small businesses, DBEs, MBEs, WBEs, VOSBs and/or SDVOSBs, not rejecting them as unqualified without sound reasons based on a thorough investigation of their capabilities. Any rejection must be so noted in writing with a description as to why an agreement could not be reached.

12. Included documentation of quotations received from interested small businesses, DBEs, MBEs, WBEs, VOSBs and/or SDVOSBs that were not used due to uncompetitive pricing or were rejected as unacceptable and/or copies of responses from firms indicating that they would not be submitting a bid.

    a. Bidder has to submit sound reasons why the quotations were considered unacceptable. The fact that the bidder has the ability and/or desire to perform the contract work with its own forces will not be considered a sound reason for rejecting a small business', DBE's MBE's, WBE's, VOSB's and/or SDVOSB's quote. Nothing in this provision shall be construed to require the bidder to accept unreasonable quotes in order to satisfy the participation goals.

13. Made an effort to offer assistance to or refer interested small businesses, DBEs, MBEs, WBEs, VOSBs and/or SDVOSBs to obtain the necessary equipment, supplies, materials, insurance and/or bonding to satisfy the work requirements of the bid proposal.

14. Made efforts to expand the search for small businesses, DBEs, MBEs, WBEs, VOSBs and/or SDVOSBs beyond the usual geographic boundaries.

15. Other – any other evidence that the bidder submits that may demonstrate that the bidder has made reasonable efforts to include small, DBE, MBE, WBE, VOSB and/or SDVOSB participation.

Bidder must document, with specificity, each of the efforts it made to include small businesses, DBEs, MBEs, WBEs, VOSBs and/or SDVOSBs as subcontractors in the procurement, including the date on which each effort was made, the medium through which each effort was made, and the outcome of each effort.

Note: Failure to submit the documentation requested in this section may be cause for rejection of bid. Bidders may include any other documentation deemed relevant to this requirement which is subject to review by the MBE Liaison. Documentation of Good Faith and Outreach Efforts must be submitted with the Bid, regardless of the proposed level of small, DBE, MBE, WBE, VOSB and/or SDVOSB participation in the procurement. If the Good Faith and Outreach Effort documentation is not submitted with the bid response, the bid may be rejected.

OUTREACH EFFORTS EVALUATION

Outreach efforts demonstrated by the bidder or respondent will be evaluated on a pass/fail basis.

ATTACHMENT A – SMALL AND DISADVANTAGED, MINORITY-, WOMEN-, AND VETERAN-OWNED BUSINESS OUTREACH PLAN

Proposer Name: _____ **Date:** _____

Project Name: _____ **Project Number:** _____

Contact Name: _____ **Telephone:** _____

Email: _____

The mission of the Minority Business Enterprise Program is to facilitate the full participation of disadvantaged businesses, minority-, women-, veteran-, and service-disabled veteran-owned businesses in the procurement process and to promote economic inclusion as a business imperative essential to the long -term economic viability of Lexington-Fayette Urban County Government.

To that end, small and disadvantaged businesses, including minority-, woman-, veteran-, and service-disabled veteran-owned businesses, must have an equal opportunity to be utilized in the performance of contracts with public funds spent from certain discretionary agreements. By submitting its offer, Bidder/Proposer certifies that it has taken, and if there are further opportunities will take, reasonable steps to ensure that small and disadvantaged businesses, including minority-, woman-, veteran-, and service-disabled veteran-owned businesses, are provided an equal opportunity to compete for and participate in the performance of any subcontracts resulting from this procurement.

The information submitted in response to this clause will not be considered in any scored evaluation. Failure to submit this form may cause the bid or proposal to be rejected.

Is the Bidder/ Proposer a certified firm? Yes ☐ No ☐

If yes, indicate all certification type(s):

DBE ☐ MBE ☐ WBE ☐ SBE ☐ VOSB/SDVOSB ☐

and supply a copy of the certificate and/or certification letter if not currently listed on the city's Minority Business Enterprise Program's (MBEP) certified list.

1. Include a list of firms that Bidder/ Proposer has had a contractual relationship with within the last two years that are minority-owned, woman-owned, veteran-owned or small businesses, regardless of their certification status.

Click or tap here to enter text.

2. Does Bidder/Proposer foresee any subcontracting opportunities for this procurement?

Yes ☐ No ☐

If no, please explain why in the field below. Do not complete the rest of this form and submit this first page with your bid and/or proposal. (Click or tap here to enter text.)

If yes, please complete the following pages and submit all pages with your bid and/or proposal.

Describe the steps Bidder/Proposer took to solicit small and disadvantaged businesses, including MBEs, WBEs, VOSBs, and SDVOSBs, for subcontracting opportunities for this procurement.

3. Check the good faith and outreach efforts the Bidder/Proposer used to encourage the participation of small and disadvantaged businesses including, MBEs, WBEs, VOSBs and SDVOSBs:

☐ Bidder placed advertisements in search of prospective small businesses, DBEs, MBEs, WBEs, VOSBs and/or SDVOSBs for the solicitation.

☐ Bidder attended LFUCG Procurement Economic Inclusion Outreach event(s) within the past year.

☐ Bidder attended pre-bid and/or pre-proposal meetings for this solicitation.

☐ Bidder sponsored an Economic Inclusion Outreach event.

☐ Bidder requested a list of certified small, DBE, MBE, WBE, VOSB and/or SDVOSB subcontractors or suppliers from LFUCG.

☐ Bidder contacted organizations that work with small, DBE, MBE, WBE, VOSB and/or SDVOSB companies.

☐ Bidder sent written notices to certified small, DBE, MBE, WBE, VOSB and SDVOSB businesses.

☐ Bidder followed up to initial solicitations with interested small, DBE, MBE, WBE, VOSB and/or SDVOSB.

☐ Bidder provided small, DBE, MBE, WBE, VOSB and/or SDVOSB businesses interested in performing the solicited work with prompt access to the plans, specifications, scope of work, and requirements of the solicitation.

☐ Bidder made efforts to segment portions of the work to be performed by small businesses, DBEs, MBEs, WBEs, VOSBs and/or SDVOSBs, including dividing sub-bid/partnership opportunities into economically feasible units/parcels, to facilitate participation.

☐ Bidder negotiated in good faith with interested small, DBE, MBE, WBE, VOSB and/or SDVOSB businesses.

☐ Bidder provided adequate rationale for rejecting any small business', DBEs, MBEs, WBEs, VOSBs or SDVOSBs for lack of qualifications.

☐ Bidder offered assistance in obtaining bonding, insurance, financial, equipment, or other resources to small businesses, DBEs, MBEs, WBEs, VOSBs and/or SDVOSBs, in an effort to assist them in meeting project requirements.

☐ Bidder made efforts to expand the search for small businesses, DBEs MBEs, WBEs, VOSBs and/or SDVOSBs beyond the usual geographic boundaries.

☐ Bidder made other reasonable efforts to include small businesses, DBEs, MBEs, WBEs, VOSBs and/or SDVOSBs participation.

4. Bidder/Proposer must include documentation, including the date each effort was made, the medium through which each effort was made, and the outcome of each effort with this form, regardless of the level of small, DBE, MBE, WBE, VOSB and/or SDVOSB participation. Examples of required documentation include copies of email communications, copies of newspaper advertisements, or copies of quotations received from interested small businesses, DBEs, MBEs, WBEs, VOSBs or SDVOSBs.

Click or tap here to enter text.

For detailed information regarding outreach efforts that satisfy the MBE Program's requirements, please see "Documentation Required for Good Faith Efforts and Outreach Plans" page.

<u>Note</u>: The Bidder/Proposer must be willing to report the identity of each subcontractor and the value of each subcontract to MBEP if awarded a contract from this procurement.

Failure to submit the documentation requested may be cause for rejection of the bid. Bidders may include any other documentation deemed relevant to this requirement, which is subject to review by the MBE Liaison. Documentation of Good Faith and Outreach Efforts must be submitted with the bid, regardless of the proposed level of SBEs, DBEs, MBEs, WBEs, VOSBs and/or SDVOSBs participation in the procurement. If the Good Faith and Outreach Effort Form and associated documentation is not submitted with the bid response, the bid may be rejected.

The undersigned acknowledges that all information is accurate. Any misrepresentations may result in termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and claims.

Company

Date

4870-1925-6809, v. 1

Company Representative

Title

8. AUTHENTICATION OF BID AND STATEMENT OF NON-COLLUSION, NON-CONFLICT OF INTEREST

I hereby swear (or affirm) under the penalty for false swearing:

1. That I am the Bidder (if the Bidder is an individual), a partner of the Bidder (if the Bidder is a partnership), or an officer or employee of the bidding corporation having authority to sign on its behalf (if the Bidder is a corporation);

2. That the attached bid has been arrived at by the Bidder independently, and has been submitted without collusion with, and without any agreement, understanding or planned common course of action, with any other contractor, vendor of materials, supplies, equipment or services described in the Invitation to Bid, designed to limit independent bidding or competition;

3. That the contents of the bid or bids have not been communicated by the Bidder or its employees or agents to any person not an employee or agent of the Bidder or its surety on any bond furnished, with the bid or bids, and will not be communicated to any such person, prior to the official opening of the bid or bids;

4. That the Bidder is legally entitled to enter into the contracts with the Lexington-Fayette Urban County Government, and is not in violation of any prohibited conflict of interest;

5. (Applicable to corporation only) That as a foreign corporation, we are registered with the Secretary of State, Commonwealth of Kentucky, and authorized to do business in the State _____ or, that as a domestic corporation, we are in good standing with the Secretary of State, Commonwealth of Kentucky _____. Check the statement applicable.

6. This offer is for 60 calendar days from the date this bid is opened. In submitting the above, it is expressly agreed that, upon proper acceptance by the Lexington-Fayette Urban County Government of any or all items bid above, a contract shall thereby be created with respect to the items accepted.

7. That I have fully informed myself regarding the accuracy of the statements made in this statement.

8. That I certify that Subcontractors have not and will not be awarded to any firm(s) that have been debarred from noncompliance with the Federal Labor Standards, Title VI of the Civil Rights Act of 1964 As Amended, Executive Order 11246 As Amended or any other Federal Law.

9. STATEMENT OF EXPERIENCE

NAME OF INDIVIDUAL: _____

POSITION/TITLE: _____

STATEMENT OF EXPERIENCE: _____

_____

_____

_____

NAME OF INDIVIDUAL: _____

POSITION/TITLE: _____

STATEMENT OF EXPERIENCE: _____

_____

_____

_____

NAME OF INDIVIDUAL: _____

POSITION/TITLE: _____

STATEMENT OF EXPERIENCE: _____

_____

_____

_____

NAME OF INDIVIDUAL: _____

POSITION/TITLE: _____

STATEMENT OF EXPERIENCE: _____

_____

_____

NAME OF INDIVIDUAL: _____

POSITION/TITLE: _____

STATEMENT OF EXPERIENCE: _____

_____

_____

NAME OF INDIVIDUAL: _____

POSITION/TITLE: _____

STATEMENT OF EXPERIENCE: _____

_____

_____

* Include all officers, office management's, Affirmative Action officials, and field management personnel. (Attach separate sheets if necessary.)

10. EQUAL OPPORTUNITY AGREEMENT

Standard Title VI Assurance

The Lexington Fayette-Urban County Government, (hereinafter referred to as the "Recipient") hereby agrees that as a condition to receiving any Federal financial assistance from the U.S. Department of Transportation, it will comply with Title VI of the Civil Rights Act of 1964, 78Stat.252, 42 U.S.C. 2000d-4 (hereinafter referred to as the "Act"), and all requirements imposed by or pursuant to Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, (49 CFR, Part 21) Nondiscrimination in Federally Assisted Program of the Department of Transportation – Effectuation of Title VI of the Civil Rights Act of 1964 (hereinafter referred to as the "Regulations") and other pertinent directives, no person in the United States shall, on the grounds of race, color, national origin, sex, age (over 40), religion, sexual orientation, gender identity, veteran status, or disability be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which the Recipient receives Federal financial assistance from the U.S. Department of Transportation, including the Federal Highway Administration, and hereby gives assurance that will promptly take any necessary measures to effectuate this agreement. This assurance is required by subsection 21.7(a) (1) of the Regulations.

The Law

* Title VII of the Civil Rights Act of 1964 (amended 1972) states that it is unlawful for an employer to discriminate in employment because of race, color, religion, sex, age (40-70 years) or national origin.
* Executive Order No. 11246 on Nondiscrimination under Federal contract prohibits employment discrimination by contractor and subcontractor doing business with the Federal Government or recipients of Federal funds. This order was later amended by Executive Order No. 11375 to prohibit discrimination on the basis of sex.
* Section 503 of the Rehabilitation Act of 1973 States:

  The Contractor will not discriminate against any employee or applicant for employment because of physical or mental handicap.
* Section 2012 of the Vietnam Era Veterans Readjustment Act of 1973 requires Affirmative Action on behalf of disabled veterans and veterans of the Vietnam Era by contractors having Federal Contracts.
* Section 206 (A) of Executive Order 12086, Consolidation of Contract Compliance Functions for Equal Employment Opportunity, states:

  The Secretary of Labor may investigate the employment practices of any Government contractor or sub-contractor to determine whether or not the contractual provisions specified in Section 202 of this order have been violated.

The Lexington-Fayette Urban County Government practices Equal Opportunity in recruiting, hiring and promoting. It is the Government's intent to affirmatively provide employment opportunities for those individuals who have previously not been allowed to enter into the mainstream of society. Because of its importance to the local Government, this policy carries the full endorsement of the Mayor, Commissioners, Directors, and all supervisory personnel. In following this commitment to Equal Employment Opportunity and because the Government is the

benefactor of the Federal funds, it is both against the Urban County Government policy and illegal for the Government to let contracts to companies which knowingly or unknowingly practice discrimination in their employment practices. Violation of the above mentioned ordinances may cause a contract to be canceled and the contractor may be declared ineligible for future consideration.

Please sign this statement in the appropriate space acknowledging that you have read and understand the provisions contained herein. Return this document as part of your application packet.

Bidders

I/We agree to comply with the Civil Rights Laws listed above that govern employment rights of minorities, women, Vietnam veterans, handicapped, and aged persons.

_____ _____

Signature Name of Business

The Entity (regardless of whether construction contractor, non-construction contractor or supplier) agrees to provide equal opportunity in employment for all qualified persons, to prohibit discrimination in employment because of race, color, religion, sex (including pregnancy, sexual orientation or gender identity), national origin, disability, age, genetic information, political affiliation, or veteran status, and to promote equal employment through a positive, continuing program from itself and each of its sub-contracting agents. This program of equal employment opportunity shall apply to every aspect of its employment policies and practices.

The Kentucky equal Employment Opportunity Act of 1978 (KRS 45.560-45.640) requires that any count, city, town, school district, water district, hospital district, or other political subdivision of the state shall include in directly or indirectly publicly funded contracts for supplies, materials, services, or equipment hereinafter entered into the following provisions:

During the performance of this contract, the contractor agrees as follows:

(1) *The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, age or national origin;*

(2) *The contractor will state in all solicitations or advertisements for employees placed by or on behalf of the contractors that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, age or national origin;*

(3) *The contract will post notices in conspicuous places, available to employees and applicants for employment, setting forth the provisions of the non-discrimination clauses required by this section; and*

(4) *The contractor will send a notice to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding advising the labor union or workers' representative of the contractor's commitments under the nondiscrimination clauses.*

The Act further provides:

KRS 45.610. Hiring minorities – Information required

(1) For the length of the contract, each contractor shall hire minorities from other sources within the drawing area, should the union with which he has collective bargaining agreements be unwilling to supply sufficient minorities to satisfy the agreed upon goals and timetable.

(2) Each contractor shall, for the length of the contract, furnish such information as required by KRS 45.560 to KRS 45.640 and by such rules, regulations and orders issued pursuant thereto and will permit access to all books and records pertaining to his employment practices and work sites by the contracting agency and the department for purposes of investigation to ascertain compliance with KRS 45.560 to 45.640 and such rules, regulations and orders issued pursuant thereto.

KRS 45.620. Action against contractor – Hiring of minority contractor or subcontractor

(1) If any contractor is found by the department to have engaged in an unlawful practice under this chapter during the course of performing under a contract or subcontract covered under KRS 45.560 to 45.640, the department shall so certify to the contracting agency and such certification shall be binding upon the contracting agency unless it is reversed in the course of judicial review.

(2) If the contractor is found to have committed an unlawful practice under KRS 45.560 to 45.640, the contracting agency may cancel or terminate the contract, conditioned upon a program for future compliance approved by the contracting agency and the department. The contracting agency may declare such a contractor ineligible to bid on further contracts with that agency until such time as the contractor complies in full with the requirements of KRS 45.560 – 45.640.

(3) The equal employment provisions of KRS 45.560 to 45.640 may be met in part by a contractor by subcontracting to a minority contractor or subcontractor. For the provisions of KRS 45.560 to 45.640, a minority contractor or subcontractor shall mean a business that is owned and controlled by one or more persons disadvantaged by racial or ethnic circumstances.

KRS 45.630 Termination of existing employee not required, when

Any provision of KRS 45.560 to 45.640 notwithstanding, no contractor shall be required to terminate an existing employee upon proof that that employee was employed prior to the date of the contract.

KRS 45.640 Minimum skills

Nothing in KRS 45.560 to 45.640 shall require a contractor to hire anyone who fails to demonstrate the minimum skills required to perform a particular job.

It is recommended that all of the provisions quoted above to be included as special conditions in each contract. In the case of a contract exceeding $250,000, the contractor is required to furnish evidence that his work-force in Kentucky is representative of the available work-force in the area from which

he draws employees, or to supply an Affirmative Action plan which will achieve such representation during the life of the contract.

11. EQUAL EMPLOYMENT OPPORTUNITY AFFIRMATIVE ACTION POLICY

It is the policy of _____

to assure that all applicants for employment and all employees are treated on a fair and equitable basis without regard to their race, religion, sex, color, handicap, natural origin or age.

Such action shall include employment, promotion, demotion, recruitment or recruitment advertising, layoff or termination, rates of pay and other forms of compensation, and selection for training, whether apprenticeship and/or on-the-job-training.

Furthermore, this company agrees to make special recruitment efforts to hire the protected class whenever feasible. This company also agrees to adhere to all applicable federal, state, and local laws relating to Equal Employment Opportunity for all individuals.

12. WORKFORCE ANALYSIS FORM

Name of Organization: _____

Categories	Total	White (Not Hispanic or Latino)		Hispanic or Latino		Black or African-American (Not Hispanic or Latino		Native Hawaiian and Other Pacific Islander (Not Hispanic or		Asian (Not Hispanic or Latino		American Indian or Alaskan Native (not Hispanic or Latino		Two or more races (Not Hispanic or Latino		Total	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Administrators																	
Professionals																	
Superintendents																	
Supervisors																	
Foremen																	
Technicians																	
Protective Service																	
Para-Professionals																	
Office/Clerical																	
Skilled Craft																	
Service/Maintenance																	
Total:																	

Prepared by: _____ **Date:** _____/_____/_____

(Name and Title)

Revised 2015-Dec-15

13. EVIDENCE OF INSURABILITY

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT CONSTRUCTION PROJECT
(Use separate form for each Agency or Brokerage agreeing to provide coverage)

Names Insured: _____ Employee ID: _____

Address: _____ Phone: _____

Project to be insured: _____

In lieu of obtaining certificates of insurance at this time, the undersigned agrees to provide the above Named Insured with the minimum coverage listed below. These are outlined in the Insurance and Risk Management of Part V (Special Conditions), including all requirements, and conditions:

Section Items	Coverage	Minimum Limits and Policy Requirements	Limits Provided To Insured	Name of Insurer	A.M. Best's Code	Rating
SC-2 – see provisions	CGL	$1,000,000 per occ. And $2,000,000 aggregate	$			
SC-2 – see provisions	AUTO	$1,000,000/per occ.	$			
SC-2 – see provisions	WC	Statutory w /endorsement as noted	$			
SC-2 – see provisions	EXC	$5,000.000 per occ.	$			

Section 2 includes required provisions, statements regarding insurance requirements, and the undersigned agrees to abide by all provisions for the coverage's checked above unless stated otherwise when submitting.

_____ _____
Agency or Brokerage Name of Authorized Representative

_____ _____
Street Address Title

_____ _____
City State Zip Authorized Signature

_____ _____
Telephone Number Date

NOTE: Authorized signatures may be the agent's if agent has placed insurance through an agency agreement with the insurer. If insurance is brokered, authorized signature must be that of authorized representative of insurer.

IMPORTANT: Contract may not be awarded if a completed and signed copy of this form for all coverage's listed above is not provided with the bid.

14. DEBARRED FIRMS

PROJECT NAME: _____

BID NUMBER: _____

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT
LEXINGTON, KY

All prime Contractors shall certify that Subcontractors have not and will not be awarded to any firms that has been debarred for noncompliance with the Federal Labor Standards, Title VI of the Civil Rights Act of 1964 As Amended, Executive Order 11246 As Amended or any other Federal Law.

All bidders shall complete the attached certification in duplicate and submit both copies to the Owner with the bid proposal. The Owner (grantee) shall transmit one copy to the Lexington-Fayette Urban County Government, Division of Community Development, within fourteen (14) days after bid opening.

The undersigned hereby certifies that the firm of _____ has not and will not award a subcontract, in connection with any contract award to it as the result of this bid, to any firm that has been debarred for noncompliance with the Federal labor Standards, Title VI of the civil Rights Act of 1964, Executive Order 11246 as amended or any Federal Law.

_____
Name of Firm Submitting Bid

_____
Signature of Authorized Official

_____
Title

_____
Date

15. DEBARMENT CERTIFICATION

All contractors/subcontractors shall complete the following certification and submit it with the bid proposal.

The contractor/subcontractor certifies in accordance with Executive Order 12549 (Debarment and Suspension 2/18/86) that to the best of its knowledge and belief, that it and its principals:

1) Are not presently debarred, suspended, proposed for debarment, declared negligible, or voluntarily excluded from covered transactions or contract by any Federal department or agency for noncompliance with the Federal Labor Standards, Title VI of the Civil Rights Act of 1964 as amended, Executive Order 11246 as amended or any other Federal law;

    a) Have not within a three year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

    b) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1)(a) of this certification; and

    c) Have not within a three year period preceding this bid has one or more public (Federal, State or local) transactions or contracts terminated for cause or default.

2) Where the contractor is unable to certify to any of the statements in this certification, such prospective contractors shall attach an explanation to this certification form.

Firm Name: _____

Project: _____

Printed Name and Title of Authorized Representative: _____

Signature: _____

Date: _____

END OF SECTION

PART IV

GENERAL CONDITIONS

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END OF SECTION

PART IV

GENERAL CONDITIONS

1. DEFINITIONS

Wherever used in these General Conditions or the other Contract Documents, the following terms have the meanings indicated which are applicable to both the singular and plural thereof.

1.1 Addenda
Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bid Documents or the Contract Documents.

1.2 Agreement
The written agreement between OWNER and CONTRACTOR covering the Work to be performed; other Contract Documents are attached to the Agreement and made a part thereof as provided therein.

1.3 Application for Payment
The form accepted by CONSULTANT which is to be used by CONTRACTOR in requesting progress or final payments and which is to include such supporting documentation as is required by the Contract Documents.

1.4 Bid
The offer or proposal of the Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

1.5 Bidder
An individual, partnership, or corporation, who submit a Bid for a prime contract with the OWNER, for the Work described in the proposed Contract Documents.

1.6 Bonds
Bid, performance and payment bonds and other instruments of security.

1.7 Calendar Day
A calendar day of twenty-four hours measured from midnight to the next midnight shall constitute a day.

1.8 Change Order
A document recommended by CONSULTANT, which is signed by CONTRACTOR and OWNER and authorizes an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract Time, issued on or after the Effective Date of the Agreement.

1.9 Contract Documents

The Advertisement for Bidders, Information for Bidders, Agreement, Addenda (which pertain to the Contract Documents), CONTRACTOR'S Bid (including documentation accompanying the Bid and any post-bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Bonds, these General Conditions, the Special Conditions, the Specifications and the Drawings as the same are more specifically identified in the Agreement, together with all amendments, modifications and supplements.

1.10 Contract Unit Price

The monies payable by OWNER to CONTRACTOR under the Contract Documents as stated in the Agreement. Unit Prices are to be firm for the term of this Contract.

1.11 Contract Time

The number of consecutive calendar days between the date of issuance of the Notice to Proceed and the contract completion date.

1.12 CONTRACTOR

The person, firm or corporation with whom OWNER has entered into the Agreement.

1.13 Defective

An adjective which when modifying the word Work refers to Work that is unsatisfactory, faulty or deficient, or does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged prior to CONSULTANT'S recommendation of final payment (unless responsibility for the protection thereof has been assumed by OWNER).

1.14 Drawings

The drawings which show the character and scope of the Work to be performed and which have been prepared or approved by CONSULTANT and are referred to in the Contract Documents.

1.15 Effective Date of the Agreement

The date indicated in the Agreement on which it becomes effective.

1.16 CONSULTANT

The Lexington-Fayette Urban County Government or its authorized representative.

1.17 Field Order

A documented order issued by CONSULTANT which orders minor changes in the Work, but which does not involve a change in the Contract Price or the Contract Time.

1.18 Giving Notice
Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

1.19 Laws and Regulations
Laws, rules, regulations, ordinances, codes and/or orders.

1.20 Notice of Award
The written notice by OWNER to the apparent successful bidder stating that upon compliance by the apparent successful bidder with the conditions enumerated therein, within the time specified, OWNER will sign and deliver the Agreement.

1.21 Notice to Proceed
A written notice given by OWNER to CONTRACTOR fixing the date on which the Contract Time will commence to run and on which CONTRACTOR shall start to perform CONTRACTOR'S obligations under the Contract Documents.

1.22 OWNER
The Lexington-Fayette Urban County Government.

1.23 Partial Utilization
Placing a portion of the Work in service for the purpose for which it is intended (or related purpose) before reaching Completion for all the Work.

1.24 Project
The total construction of which the Work to be provided under the Contract Documents may be the whole, or a part as indicated elsewhere in the Contract Documents.

1.25 Inspector
The authorized representative who is assigned to the site or any part thereof.

1.26 Shop Drawings
All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by or for CONTRACTOR to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a Supplier and submitted by CONTRACTOR to illustrate material or equipment for some portion of the Work.

1.27 Specifications
Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and

workmanship as applied to the Work and certain administrative details applicable thereto.

1.28 Standard Specifications

The "Standard Specifications for Road and Bridge Construction", Transportation Cabinet, Department of Highways, Commonwealth of Kentucky, current edition. MUTCD shall refer to the "Manual of Uniform Traffic Control Devices.

1.29 Subcontractor

An individual, firm or corporation having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the site.

1.30 Special Conditions

The part of the Contract Documents which amends or supplements these General Conditions.

1.31 Supplier

A manufacturer, fabricator, supplier, distributor, materialman or vendor.

1.32 Underground Facilities

All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities which have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems or water.

1.33 Unit Price Work

An amount equal to the sum of the established unit prices for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

1.34 Work

The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work is the result of performing services, furnishing labor and furnishing and incorporating materials and equipment into the construction, all as required by the Contract Documents.

1.35 Time Period

When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

2. PRELIMINARY MATTERS

2.1 Delivery of Bonds

When the CONTRACTOR delivers the executed Agreements to OWNER, CONTRACTOR shall also deliver to OWNER, such Bonds, Insurance Certificate, and Power of Attorney as CONTRACTOR may be required to furnish.

2.2 Copies of Documents

Owner shall furnish to CONTRACTOR up to three copies (unless otherwise specified in the Special Conditions) of the Contract Documents as are reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction.

2.3 Commencement of Contract Time; Notice to Proceed

The Contract Time will commence to run on the day specified in the Notice to Proceed.

2.4 Starting the Project

CONTRACTOR shall start to perform the Work on the date when the Contract Time commences to run, but no Work shall be done at the site prior to the date on which the Contract Time commences to run.

2.5 Before Starting Construction

Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. CONTRACTOR shall promptly report in writing to CONSULTANT any conflict, error or discrepancy which CONTRACTOR may discover and shall obtain a written interpretation or clarification from CONSULTANT before proceeding with any Work affected thereby; however, CONTRACTOR shall not be liable to OWNER or CONSULTANT for failure to report any conflict, error or discrepancy in the Contract Documents, unless CONTRACTOR had actual knowledge thereof or should reasonably have known thereof.

2.6 Submittal of Schedules

Within ten days after the effective date of the Agreement (unless otherwise specified) CONTRACTOR shall submit to CONSULTANT for review:

2.6.1 an estimated progress schedule indicating the starting and completion dates of the various stages of the Work;

2.6.2 a preliminary schedule of Shop Drawing submissions; and

2.6.3 a preliminary schedule of values for all of the Work which will include quantities and prices of items aggregating the Contract Price and will subdivide the Work into costs per labor and materials by specification

section to serve as the basis for progress payments during construction. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work which will be confirmed in writing by CONTRACTOR at the time of submission. Schedule of values shall be submitted on AIA G702/703 forms, or approved equal.

2.7 Preconstruction Conference

Before CONTRACTOR starts the Work at the proposed site, a conference attended by CONTRACTOR, CONSULTANT, EEO-Affirmative Action Officer, and other appropriate parties will be held to discuss the following issues: (1) The scheduling of the Work to be completed; (2) The procedures for handling shop drawings and other submittals; (3) The processing of applications for payment; (4) The establishment of an understanding among the involved parties in regard to the proposed project; (5) The establishment of procedures for effectively implementing the LFUCG's 10% minimum DBE goals; and (6) Requirement for Mechanic's Lien on Partial Applications for Payment.

2.8 Finalizing Schedules

At least ten days before submission of the first Application for Payment a conference attended by CONTRACTOR, CONSULTANT and others as appropriate will be held to finalize the schedules submitted in accordance with paragraph 2.6. The finalized progress schedule will be acceptable to CONSULTANT as providing orderly progression of the Work to completion within the Contract Time, but such acceptance will neither impose on CONSULTANT responsibility for the progress or scheduling of the Work nor relieve CONTRACTOR from full responsibility thereof. The finalized schedule of Shop Drawing submissions will be acceptable to CONSULTANT as providing a workable arrangement for processing the submissions. The finalized schedule of values will be acceptable to CONSULTANT as to form and substance.

3. CONTRACT DOCUMENTS: INTENT, CONFLICTS, AMENDING AND REUSE

3.1 General

The Contract Documents comprise the entire agreement between OWNER and CONTRACTOR concerning the Work. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. The Contract Documents will be construed in accordance with the law of the place of the Project.

3.2 Intent

It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any Work, materials or equipment that may reasonably be inferred from the Contract Documents as being required to produce the intended result will be supplied whether or not specifically called for. When words which have a well-known technical or trade meaning are used

to describe Work, materials or equipment such words shall be interpreted in accordance with that meaning. Reference to standard specifications, manuals or codes of any technical society, organization or association, or to the laws or regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code or laws or regulations in effect at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of OWNER, CONTRACTOR or CONSULTANT, or any of their consultants, agents or employees from those set forth in the Contract Documents, nor shall it be effective to assign to CONSULTANT, or any of CONSULTANT'S consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 8.12.3 or 8.12.4. Clarifications and interpretations of the Contract Documents shall be issued by CONSULTANT as provided in paragraph 8.4.

3.3 Conflicts

If, during the performance of the Work, CONTRACTOR finds a conflict, error or discrepancy in the Contract Documents, CONTRACTOR shall so report to CONSULTANT in writing at once and before proceeding with the Work affected thereby shall obtain a written interpretation or clarification from CONSULTANT; however, CONTRACTOR shall not be liable to OWNER or CONSULTANT for failure to report any conflict, error or discrepancy in the Contract Documents unless CONTRACTOR had actual knowledge thereof or should reasonably have known thereof.

In resolving such conflicts, errors and discrepancies, the documents shall be given precedence in the following order:

1. Agreement
2. Field and Change Orders
3. Addenda
4. Special Conditions
5. Instruction to Bidders
6. General Conditions
7. Specifications and Drawings

Figure dimension on drawings shall govern over scale dimensions and detailed Drawings shall govern over general Drawings.

3.4 Amending and Supplementing Contract Documents

The Contract Documents may be amended to provide for additions, deletions and revisions in the Work or to modify the terms and conditions thereof by means of a Change Order or a Field Order. Contract Price and Contract Time may only be changed by a Change Order.

3.5 Reuse of Documents

Neither CONTRACTOR nor any Subcontractor or Supplier or other person or organization performing or furnishing any of the Work under a direct or indirect contract with OWNER shall have or acquire any title to or ownership rights in any of the Drawings, Specifications or other documents (or copies of any thereof) prepared by or bearing the seal of CONSULTANT; and they shall not reuse any of them on extensions of the Project or any other project without written consent of OWNER and CONSULTANT and specific written verification or adaptation by CONSULTANT.

4. AVAILABILITY OF LANDS; PHYSICAL CONDITIONS, REFERENCE POINTS

4.1 Availability of Lands

OWNER shall furnish, as indicated in the Contract Documents, the lands upon which the Work is to be performed, rights-of-way and easements for access thereto, and such other lands which are designated for the use of CONTRACTOR. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by OWNER, unless otherwise provided in the Contract Documents. If CONTRACTOR believes that any delay in OWNER'S furnishing these lands, rights-of-way or easements entitles CONTRACTOR to an extension of the Contract Time, CONTRACTOR may make a claim therefor as provided in Article 11. CONSULTANT shall determine if the claim is legitimate or not. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.2 Physical Conditions

4.2.1 Explorations and Reports

Reference is made to the Special Conditions for identification of those reports of explorations and tests of subsurface conditions at the site that have been utilized by CONSULTANT in preparation of the Contract Documents. CONTRACTOR may rely upon the accuracy of the technical data contained in such reports, but not upon non-technical data, interpretations or opinions contained therein or for the completeness thereof for CONTRACTOR'S purposes. Except as indicated in the immediately preceding sentence and in paragraph 4.2.6, CONTRACTOR shall have full responsibility with respect to subsurface conditions at the site.

4.2.2 Existing Structures

Reference is made to the Special Conditions for identification of those drawings of physical conditions in or relating to existing surface and

subsurface structures (except Underground Facilities referred to in paragraph 4.3 which are at or contiguous to the site that have been utilized by CONSULTANT in preparation of the Contract Documents. CONTRACTOR may rely upon the accuracy of the technical data contained in such drawings, but not for the completeness thereof for CONTRACTOR'S purposes. Except as indicated in the immediately preceding sentence and in paragraph 4.2.6, CONTRACTOR shall have full responsibility with respect to physical conditions in or relating to such structures.

4.2.3 Report of Differing Conditions
If CONTRACTOR believes that:

4.2.3.1 any technical data on which CONTRACTOR is entitled to rely as provided in paragraphs 4.2.1 and 4.2.2 is inaccurate, or

4.2.3.2 any physical conditions uncovered or revealed at the site differ materially from that indicated, reflected or referred to in the Contract Documents,

CONTRACTOR shall, promptly after becoming aware thereof and before performing and WORK in connection therewith (except in an emergency) notify OWNER and CONSULTANT in writing about the inaccuracy or difference.

4.2.4 CONSULTANT'S Review
CONSULTANT will promptly review the pertinent conditions, determine the necessity of obtaining additional explorations or tests with respect thereto and advise CONTRACTOR of CONSULTANT'S findings and conclusions.

4.2.5 Possible Document Change
If CONSULTANT concludes that there is a material error in the Contract Documents or that because of newly discovered conditions a change I the Contract Documents is required, a Change Order will be issued as provided in Article 10 to reflect and document the consequences of the inaccuracy or difference.

4.2.6 Possible Price and Time Adjustments
In each such case, an increase or decrease in the Contract Price or an extension or shortening of the Contract Time, or any combination thereof, will be allowable to the extent that they are attributable to any such inaccuracy or difference.

4.3 Physical Conditions-Underground Facilities

4.3.1 Shown or Indicated
The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site is

based on information and data furnished to OWNER or CONSULTANT by the owners of such underground facilities or by others. Unless it is otherwise expressly provided in the Special Conditions:

4.3.1.1 OWNER and CONSULTANT shall not be responsible for the accuracy or completeness of any such information or data; and,

4.2.1.2 CONTRACTOR shall have full responsibility for reviewing and checking all such information and data; for locating all underground facilities shown or indicated in the Contract Documents; for coordination of the Work with the owners of such underground facilities during construction; and for the safety and protection thereof and repairing any damage thereto resulting from the Work, the cost of all of which will be considered as having been included in the Contract Price.

4.3.2 Not Shown or Indicated

If an underground facility is uncovered or revealed at or contiguous to the site which was not shown or indicated in the Contract Documents and which CONTRACTOR could not reasonably have been expected to be aware of, CONTRACTOR shall, promptly after becoming aware thereof and before performing any Work affected thereby (except in an emergency), identify the owner of such Underground Facility and give written notice thereof to that owner and to OWNER and CONSULTANT. CONSULTANT will promptly review the underground facility to determine the extent to which the Contract Documents should be modified to reflect and document the consequences of the existence of the Underground Facility, and the Contract Documents will be amended or supplemented to the extent necessary. During such time, CONTRACTOR shall be responsible for the safety and protection of such underground facility. CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, to the extent that they are attributable to the existence of any underground facility that was not shown or indicated in the Contract Documents and which CONTRACTOR could not reasonably have been expected to be aware of.

4.4 Reference Points

OWNER shall provide engineering surveys to establish reference points for construction which in CONSULTANT'S judgment are necessary to enable CONTRACTOR to proceed with the Work. CONTRACTOR shall be responsible for laying out the Work (unless otherwise specified), shall protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of OWNER. CONTRACTOR shall report to CONSULTANT whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points by a Registered Land Surveyor.

5. CONTRACTOR'S RESPONSIBILITIES

5.1 Supervision

CONTRACTOR shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. CONTRACTOR shall assure that all CONTRACTOR personnel (including subcontractors, etc.) conduct themselves in a courteous and respectful manner toward the CONSULTANT and the general public. CONTRACTOR shall keep at the Project Site during the progress of the Work a competent project manager/superintendent and all necessary assistants, all of whom shall be satisfactory to OWNER. OWNER reserves the right to reject CONTRACTOR'S construction superintendent and project management personnel if they are unsatisfactory to OWNER and upon such rejection CONTRACTOR shall designate and provide competent successors. Failure to comply with this condition of the Contract will result in immediate suspension of the Work. Following a review by the Commissioner of Public Works, the Contract may be terminated (see GC section 14). CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences and procedures of construction, but CONTRACTOR shall not be responsible for the negligence of others in the design or selection of a specific means, method, technique, sequence or procedure of construction which is indicated in and required by the Contract Documents. CONTRACTOR shall be responsible to see that the finished Work complies accurately with the Contract Documents.

5.2 Superintendence

CONTRACTOR shall keep on the Work at all times during its progress a competent resident superintendent, who shall not be replaced without written notice to OWNER and CONSULTANT except under extraordinary circumstances. The superintendent will be CONTRACTOR'S representative at the site and shall have authority to act on behalf of CONTRACTOR. All communications given to the superintendent shall be as binding as if given to CONTRACTOR.

5.3 Labor

CONTRACTOR shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. CONTRACTOR shall at all times maintain good discipline and order at the site. OWNER reserves the right to require CONTRACTOR to remove from the Project any of it's personnel, or subcontractor's personnel for violating LFUCG Policies, Rules or Regulations. Except in connection with the safety or protection of persons or the Work or property at the site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all Work at the site shall be performed during regular working hours, and CONTRACTOR will not permit overtime work or the performance of Work on Saturday, Sunday or any legal holiday without OWNER'S written consent given after prior written notice to CONSULTANT.

5.4 Start-Up and Completion of Work

Unless otherwise specified, CONTRACTOR shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up and completion of the Work.

5.5 Materials and Equipment

All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. If required by CONSULTANT, CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable supplier except as otherwise provided in the Contract Documents; but no provision of any such instructions will be effective to assign to CONSULTANT, or any of CONSULTANT'S consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 8.12.3 or 8.12.4.

5.5.1 Not Clearly Specified or Indicated

In all instances where materials specified are obtainable in different sizes, weights, trade grades, qualities or finishes, etc., whose weights, trade grades, qualities or finishes, etc., are not clearly specified or indicated on the Drawings, the CONTRACTOR shall notify the CONSULTANT of all such instances at least five (5) days in advance of receiving the proposals. The CONSULTANT will then determine which size, weight, trade grade, quality, finish, etc., is required.

5.5.2 Coordination of Work

The CONTRACTOR shall see that for his own Work and for the work of each subcontractor, proper templates and patterns necessary for the coordination of the various parts of the Work are prepared. The CONTRACTOR shall furnish or require the Subcontractor to furnish such duplicates as will enable the Subcontractors to fit together and execute fully their respective portions of the Work.

5.6 Adjusting Progress Schedule

CONTRACTOR shall submit to CONSULTANT for acceptance (to the extent indicated in paragraph 2.8) adjustments in the progress schedule to reflect the impact thereon of new developments; these will conform generally to the progress schedule then in effect and additionally will comply with any provisions of the Contract Documents applicable thereto.

5.7 Substitutes or "Or-Equal" Items

5.7.1 General

Whenever materials or equipment are specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular supplier, the naming of the item is intended to establish the type, function, and quality required. Unless the name is followed by words indicating that no substitution is permitted, materials or equipment of other Suppliers may be accepted by OWNER/CONSULTANT if sufficient information is submitted by CONTRACTOR to allow OWNER/CONSULTANT to determine that the material or equipment proposed is equivalent or equal to that named. The procedure for review by OWNER/CONSULTANT will include the following. Requests for review of substitute items of material and equipment will not be accepted by OWNER/CONSULTANT from anyone, other than CONTRACTOR. If CONTRACTOR wishes to furnish or use a substitute item of material or equipment, CONTRACTOR shall make written application to OWNER/CONSULTANT for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified. The application will state that the evaluation and acceptance of the proposed substitute will not prejudice CONTRACTOR'S achievement of completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which shall be considered by OWNER/CONSULTANT in evaluating the proposed substitute. OWNER/CONSULTANT may require CONTRACTOR to furnish at CONTRACTOR'S expense additional data about the proposed substitute.

5.7.2 Substitutes

If a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents, CONTRACTOR may furnish or utilize a substitute means, method, sequence, technique or procedure of construction acceptable to OWNER/CONSULTANT, if CONTRACTOR submits sufficient information to allow OWNER/CONSULTANT to determine that the substitute proposed is equivalent to that indicated or required by the Contract

Documents. The procedure for review by OWNER/CONSULTANT will be similar to that provided in paragraph 5.7.1 as applied by OWNER/CONSULTANT.

5.7.3 OWNER/CONSULTANT'S Approval

OWNER/CONSULTANT will be allowed a reasonable time within which to evaluate each proposed substitute. OWNER/CONSULTANT will be the sole judge of acceptability, and no substitute will be ordered, installed or utilized without OWNER/CONSULTANT'S prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. OWNER may require CONTRACTOR to furnish at CONTRACTOR'S expense a special performance guarantee or other surety with respect to any substitute. OWNER/CONSULTANT will record time required by OWNER/CONSULTANT and OWNER/CONSULTANT'S consultants in evaluating substitutions proposed by CONTRACTOR and in making changes in the Contract Documents occasioned thereby. Whether or not OWNER/CONSULTANT accepts a proposed substitute, CONTRACTOR shall reimburse OWNER for the charges of OWNER/CONSULTANT and OWNER/CONSULTANT'S consultants for evaluating each proposed substitute.

5.8 Subcontractors, Suppliers, and Others

5.8.1 Acceptable to CONSULTANT

CONTRACTOR shall not employ any Subcontractor, Supplier or other person or organization (including those acceptable to OWNER and CONSULTANT as indicated in paragraph 5.8.2), whether initially or as a substitute, against whom OWNER or CONSULTANT may have reasonable objection. CONTRACTOR shall not be required to employ any Subcontractor, Supplier or other person or organization to furnish or perform any of the Work against whom CONTRACTOR has reasonable objection.

5.8.2 Objection After Due Investigation

If the Contract Documents require the identity of certain Subcontractors, Suppliers or other persons or organizations (including those who are to furnish the principal items of materials and equipment) to be submitted to OWNER in advance of the specified date prior to the Effective Date of the Agreement for acceptance by OWNER and CONSULTANT and if CONTRACTOR has submitted a list thereof, OWNER'S or CONSULTANT'S acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the bidding documents or the Contract Documents) of any such Subcontractor, Supplier or other person or organization so identified may be revoked on the basis of reasonable objection after due investigation, in which case CONTRACTOR shall submit an acceptable substitute. No acceptance by

OWNER or CONSULTANT of any such Subcontractor, Supplier or other person or organization shall constitute a waiver of any right of OWNER or CONSULTANT to reject defective Work.

5.8.3 Contractor Responsible for Acts of Subcontractors

The CONTRACTOR shall perform on the site, and with its own organization, work equivalent to at least fifty (50) percent of the total amount of Work to be performed under the Contract. This percentage may be reduced by a supplemental agreement to this Contract if, during performing the Work, the CONTRACTOR requests a reduction and the Urban County project manager determines that the reduction would be to the advantage of the Urban County Government.

The CONTRACTOR shall, at the time he submits his proposal for the Contract, notify the OWNER in writing of the names of Subcontractors proposed for the Work. He shall not employ any Subcontractor without the prior written approval of the OWNER.

CONTRACTOR shall be fully responsible to OWNER and CONSULTANT for all acts and omissions of the Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR just as CONTRACTOR is responsible for CONTRACTOR'S own acts and omissions. Nothing in the Contract Documents shall create any contractual relationship between OWNER or CONSULTANT and any such Subcontractor, Supplier or other person or organization, nor shall it create any obligation on the part of OWNER or CONSULTANT to pay or to see to the payment of any moneys due any such Subcontractor, Supplier or other person or organization except as may otherwise be required by Laws and Regulations.

5.8.4 Division of Specifications

The divisions and sections of the Specifications and the identifications of any Drawings shall not control CONTRACTOR in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

5.8.5 Agreement Between Contractor and Subcontractors

All Work performed for CONTRACTOR by a Subcontractor will be pursuant to an appropriate agreement between CONTRACTOR and the Subcontractor which specifically binds the Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of OWNER and CONSULTANT.

5.8.6 Statements and Comments by CONTRACTOR

Neither the CONTRACTOR, his employees, nor his subcontractors shall at any time make any statement or comment as

to the project scope, nature, intention, design, or construction method to any third party or parties without the explicit written consent of the OWNER.

Any third party requesting such information shall be referred to the OWNER or his representative.

Should there be any change from the original intent of the project as a result of any statement or comment by the contractor, his employees or subcontractors, contractor shall be held liable for any change in the scope, nature, design, or construction method and shall bear the full cost for the previously mentioned changes.

5.9 Patent Fees and Royalties

CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product or device which is the subject of patent rights or copyrights held by others.

5.10 Permits

Unless otherwise provided in the Special conditions, CONTRACTOR shall obtain and pay for all construction permits and licenses. OWNER shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of opening of Bids, or if there are no Bids on the Effective Date of the Agreement. CONTRACTOR shall pay all charges of utility owners for connections to the Work, and OWNER shall pay all charges of such utility owners for capital costs related thereto such as plant investment fees.

5.11 Laws and Regulations

5.11.1 CONTRACTOR to Comply

CONTRACTOR shall give all notices and comply with all Laws and Regulations applicable to furnishing and performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither OWNER nor CONSULTANT shall be responsible for monitoring CONTRACTOR'S compliance with any Laws and Regulations.

5.11.2 Specifications and Drawings at Variance

If CONTRACTOR observes that the Specifications or Drawings are at variance with any Laws or Regulations, CONTRACTOR shall give CONSULTANT prompt written notice thereof, and any necessary changes will be authorized by one of the methods indicated in paragraph 3.4. If CONTRACTOR performs any Work knowing or having reason to know that it is contrary to such Laws, or Regulations, and without such notice to CONSULTANT, CONTRACTOR shall bear all costs arising therefrom; however, it shall not be CONTRACTOR'S primary responsibility to make certain that the Specifications and Drawings are in accordance with such Laws and Regulations.

Any party, firm or individual submitting a proposal pursuant to invitation must have paid all taxes owed to the Lexington-Fayette Urban County Government at the time the proposal is submitted, and must maintain a "current" status in regard to those taxes throughout the Contract. If applicable, business must be licensed in Fayette County.

5.12 Taxes

CONTRACTOR shall pay all sales, consumer, use and other similar taxes required to be paid by CONTRACTOR in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work. Any party, firm or individual submitting a proposal pursuant to invitation must have paid all taxes owed to the Lexington-Fayette Urban County Government at the time the proposal is submitted, and must maintain a "current" status in regard to those taxes throughout the Contract. If applicable, business must be licensed in Fayette County.

5.13 Use of Premises

5.13.1 Project Site

CONTRACTOR shall confine construction equipment, the storage of materials and equipment and the operations of workers to the staging areas or work site areas identified in and permitted by the Contract Documents and other land and areas permitted by Laws and Regulations, rights-of-way, permits and easements, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such

land or area, or to the owner or occupant thereof or of any land or areas contiguous thereto, resulting from the performance of the Work. Should any claim be made against OWNER or CONSULTANT by any such owner or occupant because of the performance of the Work, CONTRACTOR shall promptly attempt to settle with such other party by agreement or otherwise resolve the claim by arbitration or at law. CONTRACTOR shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold OWNER and CONSULTANT harmless from and against all claims, damages, losses and expenses (including, but not limited to, fees of engineers, architects, attorneys and other professionals and court and arbitration costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any such other party against OWNER or CONSULTANT to the extent based on a claim arising out of CONTRACTOR'S performance of the Work.

5.13.2 Clean UP

During the progress of the Work, CONTRACTOR shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work, CONTRACTOR shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery, and surplus materials, and shall leave the site clean and ready for occupancy by OWNER. CONTRACTOR shall restore to original condition all property not designated for alteration by the Contract Documents.

5.13.1 Loading of Structures

CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

5.14 Record Drawings

CONTRACTOR shall maintain in a safe place at the site one record copy of all Drawings, Specifications, Addenda, Change Orders, Field Orders and written interpretations and clarifications (issued pursuant to paragraph 9.4) in good order and annotated to show all changes made during construction. These record documents together with all approved samples and a counterpart of all approved Shop Drawings will be available to CONSULTANT for reference. Upon completion of the Work, these record documents, samples and Shop Drawings will be delivered to CONSULTANT for OWNER.

5.15 Shop Drawings and Samples

5.15.1 Shop Drawing Submittals

After checking and verifying all field measurements and after complying

with applicable procedures specified, CONTRACTOR shall submit to CONSULTANT for review and approval in accordance with the accepted schedule of Shop Drawing submissions (see paragraph 2.8), or for other appropriate action if so indicated in the Special Conditions, five copies (unless otherwise specified) of all Shop Drawings, which will bear a stamp or specific written indication that CONTRACTOR has satisfied CONTRACTOR'S responsibilities under the Contract Documents with respect to the review of the submission. All submissions will be identified as CONSULTANT may require. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to enable CONSULTANT to review the information as required.

5.15.2 Sample Submittals

CONTRACTOR shall also submit to CONSULTANT for review and approval with such promptness as to cause no delay in Work, all samples required by the Contract Documents. All samples will have been checked by and accompanied by a specific written indication that CONTRACTOR has satisfied CONTRACTOR'S responsibilities under the Contract Documents with respect to the review of the submission and will be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use for which intended.

5.15.3 Review by CONTRACTOR

Before submission of each Shop Drawing or sample CONTRACTOR shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar data with respect thereto and reviewed or coordinated each Shop Drawing or sample with other Shop Drawings and samples and with the requirements of the Work and the Contract Documents.

5.15.4 Notice of Variation

At the time of each submission, CONTRACTOR shall give CONSULTANT specific written notice of each variation that the Shop Drawings or samples may have from the requirements of the Contract Documents, and, in addition, shall cause a specific notation to be made on each Shop Drawing submitted to CONSULTANT for review and approval of each such variation.

5.15.5 CONSULTANT'S Approval

CONSULTANT will review and approve with reasonable promptness Shop Drawings and samples, but CONSULTANT'S review and approval will be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents and shall not extend to means, methods, techniques, sequences or procedures of construction (except where a specific means, method, technique, sequence or

procedure of construction is indicated in or required by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions. CONTRACTOR shall make corrections required by CONSULTANT, and shall return the required number of corrected copies of Shop Drawings and submit, as required, new samples for review and approval. CONTRACTOR shall direct specific attention in writing to revisions other than the corrections called for by CONSULTANT on previous submittals.

5.15.6 Responsibility for Errors and Omissions

CONSULTANT'S review and approval of Shop Drawings or samples shall not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract Documents unless CONTRACTOR has in writing called CONSULTANT'S attention to each such variation at the time of submission as required by paragraph 5.15.4 and CONSULTANT has given written approval of each such variation by a specific written notation thereof incorporated in or accompanying the Shop Drawing or sample approval; nor will any approval by CONSULTANT relieve CONTRACTOR from responsibility for errors or omissions in the Shop Drawings or from responsibility for having complied with the provisions of paragraph 5.15.3.

5.15.7 Cost of Related Work

Where a Shop or sample is required by the Specifications, any related Work performed prior to CONSULTANT'S review and approval of the pertinent submission will be the sole expense and responsibility of CONTRACTOR.

5.16 Continuing the Work

CONTRACTOR shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with OWNER. No Work shall be delayed or postponed pending resolutions of any disputes or disagreements, except as permitted by paragraph 14.5 or as CONTRACTOR and OWNER may otherwise agree in writing.

5.17 Erosion and Sediment Control

5.17.1 General Environmental Requirements

The CONTRACTOR and Subcontractors performing work on projects on behalf of the OWNER shall comply with all applicable federal, state, and local environmental regulations and all requirements and conditions set forth in "special" permits including but not limited to Corp of Engineers 404 permits, 401 Water Quality Certifications, Stream Crossing and Floodplain Encroachment Permits.

Any fines or penalties resulting from the failure to comply with the terms of the federal, state or local permits or perform necessary corrective action are solely the obligation of the CONTRACTOR.

5.17.2 Stormwater Pollution Prevention

A. The CONTRACTOR shall exercise due care to prevent or minimize any damage to any stream or wetland from pollution by debris, sediment or other material. The operation of equipment and/or materials in a jurisdictional wetland is expressly prohibited. Water that has been used for washing or processing, or that contains oils, sediments or other pollutants shall not be discharged from the job site. Such waters shall be collected and properly disposed of by the CONTRACTOR in accordance with applicable local, state and federal law.

B. The CONTRACTOR is solely responsible for securing all required state and local permits associated with stormwater discharges from the project including, but not necessarily limited to the KY Notice of Intent to Disturb (NOI) for Coverage of Storm Water Discharges Associated with Construction Activities under the KPDES Storm Water General Permit KYR100000 and the LFUCG, Land Disturbance Permit. Permit application preparation and all required documentation are the responsibility of the CONTRACTOR. The CONTRACTOR is solely responsible for maintaining compliance with the stormwater pollution prevention plan or erosion and sediment control plan and ensuring the following:

a. That the Stormwater Pollution Prevention Plan (SWPPP) or erosion control plan is current and available for review on site;
b. That any and all stormwater inspection reports required by the permit are conducted by qualified personnel and are available for review onsite; and
c. That all best management practices (BMPs) are adequately maintained and effective at controlling erosion and preventing sediment from leaving the site.

C. The CONTRACTOR shall provide the necessary equipment and personnel to perform any and all emergency measures that may be required to contain any spillage or leakage and to remove materials, soils or liquids that become contaminated. The collected spill material shall be properly disposed at the CONTRACTOR's expense.

D. Upon completion of the work and with the concurrence of the OWNER, the CONTRACTOR must file a Notice of Termination (NOT) of Coverage Under the KPDES General Permit for Storm Water Discharges Associated with Construction Activity with the appropriate local and state authorities.

E. Any fines or penalties resulting from the failure to comply with the terms of the state or local stormwater permits or perform necessary corrective action are solely the obligation of the CONTRACTOR.

6. OTHER WORK

6.1 Related Work at Site

OWNER may perform other work related to the Project at the site by OWNER'S own forces, have other work performed by utility owners or let other direct contracts therefor which shall contain General Conditions similar to these. If the fact that such other work is to be performed was not noted in the Contract Documents, written notice thereof will be given to CONTRACTOR prior to starting any such other work; and, if such performance will involve additional expense to CONTRACTOR or requires additional time, a Change Order to the Contract will be negotiated.

6.2 Other Contractors or Utility Owners

CONTRACTOR shall afford each utility owner and other contractor who is a party to such a direct contract (or OWNER, if OWNER is performing the additional work with OWNER'S employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such work, and shall properly connect and coordinate the Work with theirs. CONTRACTOR shall do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and integrate with such other work. CONTRACTOR shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of CONSULTANT and the others whose work will be affected. The duties and responsibilities of CONTRACTOR under this paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of CONTRACTOR in said direct contracts between OWNER and such utility owners and other contractors.

6.3 Delays Caused by Others

If any part of CONTRACTOR'S Work depends for proper execution or results upon the work of any such other contractor or utility owner (or OWNER), CONTRACTOR shall inspect and promptly report to CONSULTANT in writing any delays, defects or deficiencies in such work that render it unavailable or unsuitable for such proper execution and results. CONTRACTOR'S failure so to report will constitute an acceptance of the other work as fit and proper for integration with CONTRACTOR'S Work except for latent or non-apparent defects and deficiencies in the other work.

6.4 Coordination

If OWNER contracts with others for the performance of other work on the Project at the site, the person or organization who will have authority and responsibility for coordination of the activities among the various prime contractors will be identified in the Special Conditions, and the specific matters to be covered by such authority and

responsibility will be itemized, and the extent of such authority and responsibilities will be provided, in the Special Conditions.

7. OWNER'S RESPONSIBILITIES

7.1 Communications

OWNER shall issue all communications to CONTRACTOR through CONSULTANT.

7.2 Data and Payments

OWNER shall furnish the data required of OWNER under the Contract Documents promptly after they are due.

7.3 Lands, Easements, and Surveys

OWNER'S duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.1 and 4.4. Paragraph 4.2 refers to OWNER'S identifying and making available to CONTRACTOR copies of reports of explorations and tests of subsurface conditions at the site and in existing structures which have been utilized by CONSULTANT in preparing the Drawings and Specifications.

7.4 Change Orders

OWNER is obligated to execute Change Orders as indicated in paragraph 9.4.

7.5 Inspections, Tests and Approvals

OWNER'S responsibility in respect to certain inspections, tests and approvals is set forth in paragraph 13.3.

7.6 Stop or Suspend Work

In connection with OWNER'S right to stop Work or suspend Work, see paragraph 12.4 and 14.1 Paragraph 14.2 deals with OWNER'S rights to terminate services of CONTRACTOR under certain circumstances.

8. CONSULTANT'S STATUS DURING CONSTRUCTION

8.1 OWNER'S Representative

CONSULTANT will be OWNER'S representative during the construction period. The duties and responsibilities and the limitations of authority of CONSULTANT as OWNER'S representative during construction are set forth in the Contract Documents and shall not be extended without written consent of OWNER and CONSULTANT.

8.2 Visits to Site

CONSULTANT will make visits to the site at intervals appropriate to the various stages of construction to observe the progress and quality of the executed Work and to determine, in general, if the Work is proceeding in accordance with the Contract Documents. CONSULTANT will not be required to make exhaustive or

continuous on-site inspections to check the quality or quantity of the Work. CONSULTANT'S efforts will be directed toward providing for OWNER a greater degree of confidence that the completed Work will conform to the Contract Documents. On the basis of such visits and on-site observations, CONSULTANT will keep OWNER informed of the progress of the Work and will endeavor to guard OWNER against defects and deficiencies in the Work.

8.3 Project Representation

CONSULTANT will provide an Inspector to assist CONSULTANT in observing the performance of the Work. If OWNER designates another agent to represent OWNER at the site who is not CONSULTANT'S agent or employee, the duties, responsibilities and limitations of authority of such other person will be as provided in the Special Conditions.

8.4 Clarifications and Interpretations

CONSULTANT will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents (in the form of Drawings or otherwise) as CONSULTANT may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents.

8.5 Authorized Variations in Work

CONSULTANT may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Time and are consistent with the overall intent of the Contract Documents. These may be accomplished by a Field Order.

8.6 Rejecting Defective Work

CONSULTANT will have authority to disapprove or reject Work which CONSULTANT believes to be defective, and will also have authority to require special inspection or testing of the Work as provided in paragraph 12.3, whether or not the Work is fabricated, installed or completed.

8.7 Shop Drawings

In connection with CONSULTANT'S responsibility for Shop Drawings and samples, see paragraphs 5.15.1 through 5.16 inclusive.

8.8 Change Orders

In connection with CONSULTANT'S responsibilities as to Change Orders, see Articles 10, 11 and 12.

8.9 Payments

In connection with CONSULTANT'S responsibilities with respect to Applications for Payment, etc., see Article 13.

8.10 Determinations for Unit Prices

CONSULTANT will determine the actual quantities and classifications of Unit Price Work performed by CONTRACTOR.

CONSULTANT will review with CONTRACTOR CONSULTANT'S preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise).

8.11 Decision on Disputes

CONSULTANT will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes and other matters relating to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the performance and furnishing of the Work and claims under Articles 10 and 11 in respect of changes in the Contract Price or Contract Time will be referred initially to CONSULTANT in writing with a request for a formal decision in accordance with this paragraph, which CONSULTANT will render in writing within a reasonable time. Written notice of each such claim, dispute and other matter will be delivered to CONSULTANT promptly (but in no event later than thirty days) after the occurrence of the event giving rise thereto, and written supporting data will be submitted to CONSULTANT within sixty days after such occurrence unless CONSULTANT allows an additional period of time to ascertain more accurate data in support of the claim.

8.12 Limitations on CONSULTANT's Responsibilities

8.12.1 CONTRACTOR, Supplier, or Surety

Neither CONSULTANTS authority to act under this Article 8 or elsewhere in the Contract Documents nor any decision made by CONSULTANT in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of CONSULTANT to CONTRACTOR, any Subcontractor, any Supplier, or any other person or organization performing any of the Work, or to any surety for any of them.

8.12.2 To Evaluate the Work

Whenever in the Contract Documents the terms "as ordered", "as directed", "as required", "as allowed", "as approved" or terms of like effect or import are used, or the adjectives "reasonable", "suitable", "acceptable", "proper", or "satisfactory" or adjectives or like "effect" or "import" are used to describe a requirement, direction, review or judgment of CONSULTANT as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate the Work for compliance with the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be effective to assign CONSULTANT any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 8.12.3 or 8.12.4.

8.12.3 CONTRACTOR'S Means, Methods, Etc.

CONSULTANT will not be responsible for CONTRACTOR'S means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, and CONSULTANT will not be responsible for CONTRACTOR'S failure to perform or furnish the Work in accordance with the Contract Documents.

8.12.4 Acts of Omissions of CONTRACTOR

CONSULTANT will not be responsible for the acts or omissions of CONTRACTOR or of any Subcontractor, any Supplier, or of any other person or organization performing or furnishing any of the Work.

9. CHANGES IN THE WORK

9.1 OWNER May Order Change

Without invalidating the Agreement and without notice to any surety, OWNER may, at any time or from time to time, order additions, deletions or revisions in the Work; these will be authorized by a Change Order. Upon receipt of such notice, CONTRACTOR shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

9.2 Claims

Claims for an increase or decrease in the Contract Price or an extension or shortening or the Contract Time that should be allowed as a result of a Change Order will be settled as provided for in Article 10 or Article 11.

9.3 Work Not in Contract Documents

CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Time with respect to any Work performed that is not required by the Contract Documents as amended, modified and supplemented as provided in paragraph 3.4, except in the case of an emergency and except in the case of uncovering Work as provided in paragraph 12.3.4.

9.4 Change Orders

OWNER and CONTRACTOR shall execute appropriate Change Orders covering:

9.4.1 changes in the Work which are ordered by OWNER pursuant to paragraph 9.1, are required because of acceptance of defective Work under paragraph 12.7 or corrective defective Work under paragraph 12.8, or are agreed to by the parties;

9.4.2 changes in the Contract Price or Contract Time which are agreed to by the parties; and

9.4.3 changes in the Contract Price or Contract Time which embody the substance of any written decision rendered by CONSULTANT pursuant to paragraph 8.11; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and REGULATIONS, but during any such appeal, CONTRACTOR shall carry on the Work and adhere to the progress schedule as provided in paragraph 5.16.

9.5 Notice of Change

If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Time) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be CONTRACTOR'S responsibility, and the amount of each applicable Bond will be adjusted accordingly.

10. CHANGE OF CONTRACT PRICE

10.1 Total Compensation

The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to CONTRACTOR for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by CONTRACTOR shall be at his expense without change in the Contract Price.

10.2 Claim for Increase or Decrease in Price

The Contract Price may only be changed by a Change Order. Any claim for an increase or decrease in the Contract Price shall be based on written notice delivered by the CONTRACTOR to the CONSULTANT promptly (but in no event later than thirty days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the amount of the claim with supporting data shall be delivered within sixty days after such occurrence (unless CONSULTANT allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by CONTRACTOR'S written statement that the amount claimed covers all known amounts (direct, indirect, and consequential) to which the CONTRACTOR is entitled as a result of the occurrence of said event.

10.3 Value of Work

The value of any Work covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:

10.3.1 Unit Prices

Where the Work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of

the items involved (subject to the provisions of paragraphs 10.9.1. through 10.9.3, inclusive).

10.3.2 Lump Sum
By mutual acceptance of a lump sum (which may include an allowance for overhead and profit not necessarily in accordance with paragraph 10.6.2.1).

10.3.3 Cost Plus Fee
On the basis of the Cost of the Work (determined as provided in paragraphs 10.4 and 10.5) plus a CONTRACTOR'S fee for overhead and profit (determined as provided in paragraphs 10.6 and 10.7).

10.4 Cost of the Work

The term Cost of the Work means the sum of all costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work. Except as otherwise may be agreed to in writing by OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project; shall include only the following items; and shall not include any of the costs itemized in paragraph 10.5:

10.4.1 Payroll Costs
Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by OWNER and CONTRACTOR. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workers' or workmen's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. Such employees shall include superintendents and foremen at the site. The expenses of performing Work after regular working hours, on Saturday, Sunday or legal holidays, shall be included in the above to the extent authorized by OWNER.

10.4.2 Materials and Equipment Costs
Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless OWNER deposits funds with CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to OWNER. All trade discounts, rebates and refunds and all returns from sale of surplus materials and equipment shall accrue to OWNER, and CONTRACTOR shall make provisions so that they may be obtained.

10.4.3 Subcontractor Costs

Payments made by CONTRACTOR to the Subcontractors for Work performed by Subcontractors. If required by OWNER, CONTRACTOR shall obtain competitive bids from Subcontractors acceptable to CONTRACTOR and shall deliver such bids to OWNER who will then determine, with the advice of CONSULTANT, which bids will be accepted. If a subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work Plus a Fee, the Subcontractor's Cost of the Work shall be determined in the same manner as CONTRACTOR'S Cost of the Work. All subcontracts shall be subject to the other provisions of the Contract Documents insofar as applicable.

10.4.4 Special Consultant Costs

Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys and accountants) employed for services specifically related to the Work.

10.4.5 Supplemental Costs

10.4.5.1 The proportion of necessary transportation, travel and subsistence expenses of CONTRACTOR'S employees incurred in discharge of duties connected with the Work.

10.4.5.2 Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost less market value of such items used but not consumed which remain the property of CONTRACTOR.

10.4.5.3 Rentals of all construction equipment and machinery and the parts thereof whether rented from CONTRACTOR or others in accordance with rental agreements approved by OWNER with the advice of CONSULTANT, and the costs of transportation, loading, unloading, installation, dismantling and removal shall be in accordance with terms of said rental agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the Work.

10.4.5.4 Sales, consumer, use or similar taxes related to the Work, and for which CONTRACTOR is liable, imposed by Laws and Regulations.

10.4.5.5 Deposits lost for causes other than negligence of CONTRACTOR, any Subcontractor or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

10.4.5.6 Losses and damages (and related expenses), not compensated by insurance or otherwise, to the Work or otherwise sustained by CONTRACTOR in connection with the performance and furnishing of the Work (except losses and damages within the deductible amounts of property insurance established by OWNER), provided they have resulted from causes other than the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of OWNER. No such losses, damages and expenses shall be included in the Cost of the Work for the purpose of determining CONTRACTOR'S fee. If, however, any such loss or damage requires reconstruction and CONTRACTOR is placed in charge thereof, CONTRACTOR shall be paid a fee proportionate to that stated in paragraph 10.6.2 for services.

10.4.5.7 The cost of utilities, fuel and sanitary facilities at the site.

10.4.5.8 Minor expenses such as telegrams, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the Work.

10.4.5.9 Cost of premiums for additional Bonds and insurance required because of changes in the Work and premiums for property insurance coverage within the limits of the deductible amounts established by OWNER.

10.5 Not to Be Included in Cost of the Work

The term Cost of the Work shall not include any of the following:

10.5.1 Costs of Officers and Executives

Payroll costs and other compensation of CONTRACTOR'S officers, executives, principals (of partnership and sole proprietorships), general

managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in CONTRACTOR'S principal or a branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 10.4.1 or specifically covered by paragraph 10.4.4 - all of which are to be considered administrative costs covered by the CONTRACTOR'S fee.

10.5.2 Principal Office
Expenses of CONTRACTOR'S principal and branch offices other than CONTRACTOR'S office at the site.

10.5.3 Capital Expense
Any part of CONTRACTOR'S capital expenses, including interest on CONTRACTOR'S capital employed for the Work and charges against CONTRACTOR for delinquent payments.

10.5.4 Bonds and Insurance
Cost of premiums for all Bonds and for all insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same (except for the cost of premiums covered by subparagraph 10.4.5.9 above).

10.5.5 Costs Due to Negligence
Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied and making good any damage to property.

10.5.6 Other Costs
Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraph 10.4.

10.6 Contractor's Fee

The CONTRACTOR'S Fee allowed to CONTRACTOR for overhead and profit shall be determined as follows:

10.6.1 a mutually acceptable fixed fee; or if none can be agreed upon,

10.6.2 a fee based on the following percentages of the various portions of the Cost of the Work:

10.6.2.1 for costs incurred under paragraphs 10.4.1 and 10.4.2, the CONTRACTOR'S fee shall be fifteen percent;

10.6.2.2 for costs incurred under paragraph 10.4.3, the CONTRACTOR'S fee shall be five percent; and if a subcontract is on the basis of Cost of the Work Plus a fee, the maximum allowable to CONTRACTOR on account of overhead and profit of all Subcontractors shall be fifteen percent;

10.6.2.3 no fee shall be payable on the basis of costs itemized under paragraphs 10.4.4, 10.4.5 and 10.5;

10.6.2.4 the amount of credit to be allowed by CONTRACTOR to OWNER for any such change which results in a net decrease in cost will be the amount of the actual net decrease plus a deduction in CONTRACTOR'S Fee by an amount equal to ten percent of the net decrease; and

10.6.2.5 when both additions and credits are involved in any one change, the adjustment in CONTRACTOR'S fee shall be computed on the basis of the net change in accordance with paragraphs 10.6.2.1 through 10.6.2.4, inclusive.

10.7 Itemized Cost Breakdown

Whenever the cost of any Work is to be determined pursuant to paragraph 10.4 or 10.5, CONTRACTOR will submit in form acceptable to CONSULTANT an itemized cost breakdown together with supporting data.

10.8 Cash Allowances

It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be done by such Subcontractors or Suppliers and for such sums within the limit of the allowances as may be acceptable to CONSULTANT, CONTRACTOR agrees that:

10.8.1 Materials and Equipment

The allowances include the cost to CONTRACTOR (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the site, and all applicable taxes; and

10.8.2 Other Costs

CONTRACTOR'S costs for unloading and handling on the site, labor, installation costs, overhead, profit and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances. No demand for additional payment on account of any thereof will be valid.

10.8.3 Change Order

Prior to final payment, an appropriate Change Order will be issued as recommended by CONSULTANT to reflect actual amounts due CONTRACTOR on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

10.9 Unit Price Work

10.9.1 General

Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the established unit prices for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by CONTRACTOR will be made by CONSULTANT in accordance with Paragraph 8.10.

10.9.2 Overhead and Profit

Each unit price will be deemed to include an amount considered by CONTRACTOR to be adequate to cover CONTRACTOR'S overhead and profit for each separately identified item.

10.9.3 Claim for Increase in Unit Price

Where the quantity of any item of Unit Price Work performed by CONTRACTOR differs materially and significantly from the estimated quantity of such item indicated in the Agreement and there is no corresponding adjustment with respect to any other item of Work and if CONTRACTOR believes that CONTRACTOR has incurred additional expense as a result thereof, CONTRACTOR may make a claim for an increase in the Contract Price in accordance with Article 10.

11. CHANGE OF CONTRACT TIME

11.1 Change Order

The Contract Time may only be changed by a Change Order. Any claim for an extension or shortening of the Contract Time shall be based on written notice delivered to CONSULTANT promptly (but in no event later than thirty days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within sixty days after such occurrence (unless CONSULTANT allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Time shall be determined by CONSULTANT in accordance with paragraph 8.11. No claim for an adjustment in the Contract Time will be valid if not submitted in accordance with the requirements of this paragraph 11.1.

11.2 Justification for Time Extensions

The Contract Time will be extended in an amount equal to time lost due to delays beyond the control of CONTRACTOR if a claim is made therefore as provided in paragraph 11.1. Such delays shall include, but not be limited to, acts or neglect by OWNER or others performing additional work as contemplated by Article 6, or to fires, floods, labor disputes, epidemics, abnormal weather conditions or acts of God.

11.3 Time Limits

All time limits stated in the Contract Documents are of the essence of the Agreement. The provisions of this Article 11 shall not exclude recovery for damages (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court costs) for delay by either party.

12. WARRANTY AND GUARANTEE; TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

12.1 Warranty and Guarantee

CONTRACTOR warrants and guarantees to OWNER and CONSULTANT that all Work will be in accordance with the Contract Documents and will not be defective. All defective Work, whether or not in place, may be rejected, corrected or accepted as provided in this Article 12.

12.2 Access to Work

CONSULTANT and CONSULTANT'S representatives, other representatives of OWNER, testing agencies and governmental agencies with jurisdictional interests will have access to the Work at reasonable times for their observation, inspecting and testing. CONTRACTOR shall provide proper and safe conditions for such access.

12.3 Tests and Inspections

12.3.1 Timely Notice

CONTRACTOR shall give CONSULTANT timely notice of readiness of the Work for all required inspections, tests or approvals.

12.3.2 Requirements and Responsibilities

The CONSULTANT may require such inspection and testing during the course of the Work as he/she deems necessary to ascertain and assure the integrity and acceptable quality of the materials incorporated and the work performed. Inspection presence may be either full-time or intermittent, and neither the presence nor absence at any time of the CONSULTANT or the INSPECTOR shall relieve the CONTRACTOR of sole responsibility for the acceptability and integrity of the Work or any part thereof.

The costs of sampling, testing, and inspection on-site to ascertain acceptability of the Work and materials will be borne by the OWNER except as otherwise provided. The OWNER will select a testing laboratory to perform such sampling and testing. Sampling and/or testing required by the CONTRACTOR or necessitated by failure of Work or materials to meet the above acceptability test shall be at the expense of the CONTRACTOR.

Inspection services may be performed by the employees of the OWNER or by others selected or designated by the OWNER or the CONSULTANT.

Sampling and/or testing required for manufacturing quality and/or process control, for certification that raw mineral materials or manufactured products are the quality specified in the contract, or to assure the acceptability for incorporation into the Work shall be borne by the CONTRACTOR or the material supplier.

Cost for inspection, sampling, testing, and approvals required by the laws or regulations of any public body having competent jurisdiction shall be borne by the CONTRACTOR or the material supplier.

Sampling and testing will be in accord with pertinent codes and regulations and with appropriate standards of the American Society of Testing Materials or other specified standards.

12.3.3 On-Site Construction Test and Other Testing

All inspections, tests or approvals other than those required by Laws or Regulations of any public body having jurisdiction shall be performed by organizations acceptable to OWNER and CONTRACTOR (or by CONSULTANT if so specified).

12.3.4 Covered Work

If any Work (including the work of others) that is to be inspected, tested or approved is covered without written concurrence of CONSULTANT, it must, if requested by CONSULTANT, be uncovered for observation. Such uncovering shall be at CONTRACTOR'S expense unless CONTRACTOR has given CONSULTANT timely notice of CONTRACTOR'S intention to cover the same and CONSULTANT has not acted with reasonable promptness in response to such notice.

12.3.5 CONTRACTOR'S Obligation

Neither observations by CONSULTANT nor inspections, tests or approvals by others shall relieve CONTRACTOR from CONTRACTOR'S obligations to perform the Work in accordance with the Contract Documents.

12.4 OWNER May Stop the Work

If the Work is defective, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, OWNER may order CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of OWNER to stop the Work shall not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR or any other party.

12.5 Correction or Removal of Defective Work

If required by CONSULTANT, CONTRACTOR shall promptly, as directed, either correct all defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by CONSULTANT, remove it from the site and replace it with non-defective Work. CONTRACTOR shall bear all direct, indirect and consequential costs of such correction or removal (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) made necessary thereby.

12.6 One Year Correction Period

If within one year after the date of Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be defective, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER'S written instructions, either correct such defective Work, or, if it has been rejected by OWNER, remove it from the site and replace it with non-defective Work. If CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the defective Work corrected or the rejected Work removed and replaced, and all direct, indirect and consequential costs of such removal and replacement

(including but not limited to fees and charges of engineers, architects, attorneys and other professionals) will be paid by CONTRACTOR. In special circumstances where a particular item of equipment is placed in continuous service before Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by Change Order.

12.7 Acceptance of Defective Work

If, instead of requiring correction or removal and replacement of defective Work, OWNER prefers to accept it, OWNER may do so. CONTRACTOR shall bear all direct, indirect and consequential costs attributable to OWNER'S evaluation of and determination to accept such defective Work (such costs to be approved by CONSULTANT as to reasonableness and to include but not be limited to fees and charges of engineers, architects, attorneys and other professionals).

12.8 OWNER May Correct Defective Work

If CONTRACTOR fails within a reasonable time after written notice of CONSULTANT to proceed to correct and to correct defective Work or to remove and replace rejected Work as required by CONSULTANT in accordance with paragraph 12.5, or if CONTRACTOR fails to perform the Work in accordance with the Contract Documents, or if CONTRACTOR fails to comply with any other provision of the Contract Documents, OWNER may, after seven days' written notice to CONTRACTOR, correct and remedy any such deficiency. In exercising the rights and remedies under this paragraph OWNER shall proceed expeditiously. To the extent necessary to complete corrective and remedial action, OWNER may exclude CONTRACTOR from all or part of the site, take possession of all or part of the Work, and suspend CONTRACTOR'S services related thereto, take possession of CONTRACTOR'S tools, appliances, construction equipment and machinery at the site and incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere. CONTRACTOR shall allow OWNER, OWNER'S representatives, agents and employees such access to the site as may be necessary to enable OWNER to exercise the rights and remedies under this paragraph. All direct, indirect and consequential costs of OWNER in exercising such rights and remedies will be charged against CONTRACTOR in an amount approved as to reasonableness by CONSULTANT, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price. Such direct, indirect and consequential costs will include but not be limited to fees and charges of engineers, architects, attorneys and other professionals, all court costs and all costs of repair and replacement of work of others destroyed or damaged by correction, removal or replacement of CONTRACTOR'S defective Work. CONTRACTOR shall not be allowed an extension of the Contract Time because of any delay in performance of the Work attributable to the exercise by OWNER of OWNER'S rights and remedies hereunder.

13. PAYMENTS TO CONTRACTOR AND COMPLETION

13.1 Schedule of Values

The schedule of values established as provided in paragraph 2.8 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to CONSULTANT. Progress payments on account of Unit Price Work will be based on the number of units completed.

13.2 Application for Progress Payment

At least ten days before each progress payment is scheduled (but not more often than once a month), CONTRACTOR shall submit to CONSULTANT for review an Application for Payment filled out and signed by CONTRACTOR covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice or other documentation warranting that OWNER has received the materials and equipment free and clear of all liens, charges, security interests and encumbrances (which are hereinafter in these General Conditions referred to as "Liens") and evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect OWNER'S interest therein, all of which will be satisfactory to OWNER. OWNER shall, within thirty (30) calendar days of presentation to him of an approved Application for Payment, pay CONTRACTOR the amount approved by CONSULTANT. Monthly progress payments shall be ninety (90) percent of the sum obtained by applying the respective bid unit prices to the approved estimated quantities of work completed by the Contractor during the preceding month. The remaining ten (10) percent will be held by the Owner, as retainage. At such time as the CONSULTANT deems appropriate - based on the quality of work performed, progress of cleanup, and other pertinent factors - the rate of retainage, or the total amount retained, may be reduced; although, any reduction in retainage, below the ten (10) percent level, is made solely at the CONSULTANT's discretion. All remaining retainage held will be included in the final payment to the Contractor.

13.2.1 Waivers of Mechanic's Lien

With each Application for Payment OWNER may require CONTRACTOR to submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.

13.2.1.1 Requirement for waivers of Mechanic's Lien on Partial Applications for Payment will be determined and communicated at the Preconstruction Conference.

13.2.1.2 Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.

13.2.1.3 When an application shows completion of an item, submit conditional final or full waivers.

13.2.1.4 Owner reserves the right to designate which entities involved in the Work must submit waivers.

13.2.1.5 Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.

13.3 CONTRACTOR'S Warranty of Title

CONTRACTOR warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to OWNER no later than the time of payment free and clear of all Liens.

13.4 Review of Applications for Progress Payment

13.4.1 Submission of Application for Payment

CONSULTANT will, after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to OWNER, or return the Application to CONTRACTOR indicating in writing CONSULTANT'S reasons for refusing to recommend payment. In the latter case, CONTRACTOR may make the necessary corrections and resubmit the Application.

13.4.2 CONSULTANT'S Recommendation

CONSULTANT may refuse to recommend the whole or any part of any payment, if, in CONSULTANT'S opinion, it would be incorrect to make such representations to OWNER. CONSULTANT may also refuse to recommend any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously recommended, to such extent as may be necessary in CONSULTANT'S opinion to protect OWNER from loss because:

13.4.2.1 the Work is defective, or completed Work has been damaged requiring correction or replacement;

13.4.2.2 the Contract Price has been reduced by Written Amendment or Change Order;

13.4.2.3 OWNER has been required to correct defective Work or complete Work in accordance with paragraph 12.8; or

13.4.2.4 of CONSULTANT's actual knowledge of the occurrence of any of the events enumerated in paragraphs 14.2.1 through 14.2.9 inclusive.

13.5 Partial Utilization

OWNER at any time may request CONTRACTOR in writing to permit OWNER to use any such part of the Work which OWNER believes to be ready for its intended use and has been completed. If CONTRACTOR agrees, CONTRACTOR will certify to OWNER that said part of the Work is complete and request that a Certificate of Completion be issued for that part of the Work.

13.6 Final Inspection

Upon written notice from CONTRACTOR that the entire Work or an agreed portion thereof is complete, CONSULTANT will make a final inspection with CONTRACTOR and will notify CONTRACTOR in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. CONTRACTOR shall immediately take such measures as are necessary to remedy such deficiencies.

13.7 Final Application for Payment

After CONTRACTOR has completed all such corrections to the satisfaction of CONSULTANT and delivered all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, marked-up record documents (as provided in paragraph 5.14) and other documents - all as required by the Contract Documents, and after CONSULTANT has indicated that the Work is acceptable (subject to the provisions of paragraph 13.10), CONTRACTOR may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied by all documentation called for in the Contract Documents, together with complete and legally effective releases or waivers (satisfactory to OWNER) of all Liens arising out of or filed in connection with the Work. In lieu thereof and as approved by OWNER, CONTRACTOR may furnish receipts or releases in full; an affidavit of CONTRACTOR that the releases and receipts include all labor, services, material and equipment for which a Lien could be filed, and that all payrolls, material and equipment bills, and other indebtedness connected with the Work for which OWNER or OWNER'S property might in any way be responsible, have been paid or otherwise satisfied; and consent of the surety, if any, to final payment. If any Subcontractor or Supplier fails to

furnish a release or receipt in full, CONTRACTOR may furnish a Bond or other collateral satisfactory to OWNER to indemnify OWNER against any Lien.

13.8 Final Payment and Acceptance

13.8.1 CONSULTANT'S Approval

If, on the basis of CONSULTANT'S observation of the Work during construction and final inspection, and CONSULTANT'S review of the final Application for Payment and accompanying documentation - all as required by the Contract Documents, CONSULTANT is satisfied that the Work has been completed and CONTRACTOR'S other obligations under the Contract Documents have been fulfilled, CONSULTANT will, after receipt of the final Application for Payment, indicate in writing CONSULTANT'S recommendation of payment and present the Application to OWNER for payment. Thereupon CONSULTANT will give written notice to OWNER and CONTRACTOR that the Work is acceptable, subject to the provisions of paragraph 13.10. Otherwise, CONSULTANT will return the Application to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application.

13.8.2 Delay in Completion of Work

If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed, OWNER shall, upon receipt of CONTRACTOR'S final Application for Payment and recommendation of CONSULTANT, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by OWNER for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph 10 of Part II, Information for Bidders, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by CONTRACTOR to CONSULTANT with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

13.9 CONTRACTOR'S Continuing Obligation

CONTRACTOR'S obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. Neither recommendation of any progress or final payment by CONSULTANT, nor the issuance of a certificate of Completion, nor any payment by OWNER to CONTRACTOR under the Contract Documents, nor any use or occupancy of the Work or any part thereof by OWNER, nor any act of acceptance by OWNER nor any failure to do so, nor any review and approval of a Shop Drawing or sample submission, nor any correction of defective Work by OWNER will constitute an acceptance of Work not in accordance with the

Contract Documents or a release of CONTRACTOR'S obligation to perform the Work in accordance with the Contract Documents (except as provided in paragraph 13.10).

13.10 Waiver of Claims

The making and acceptance of final payment will constitute:

13.10.1 a waiver of all claims by OWNER against CONTRACTOR, except claims arising from unsettled Liens, from defective Work appearing after final inspection or from failure to comply with the Contract Documents or the terms of any special guarantees specified therein; however, it will not constitute a waiver by OWNER of any rights in respect of CONTRACTOR'S continuing obligations under the Contract Documents; and

13.10.2 a waiver of all claims by CONTRACTOR against OWNER other than those previously made in writing and still unsettled.

14. SUSPENSION OF WORK AND TERMINATION

14.1 OWNER May Suspend Work

OWNER may, at any time and without cause, suspend the Work or any portion thereof for a period of not more than ninety days by notice in writing to CONTRACTOR and CONSULTANT which will fix the date on which Work will be resumed. CONTRACTOR shall resume the Work on the date so fixed. CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension if CONTRACTOR makes an approved claim therefor as provided in Articles 10 and 11.

14.2 OWNER May Terminate

The OWNER may terminate the Work upon the occurrence of any one or more of the following events:

14.2.1 if CONTRACTOR commences a voluntary case under any chapter of the Bankruptcy Code (Title 11, United States Code), as now or hereafter in effect, or if CONTRACTOR takes any equivalent or similar action by filing a petition or otherwise under any other federal or state law in effect at such time relating to the bankruptcy or insolvency;

14.2.2 if a petition is filed against CONTRACTOR under any chapter of the Bankruptcy Code as now or hereafter in effect at the time of filing, or if a petition is filed seeking any such equivalent or similar relief against CONTRACTOR under any other federal or state law in effect at the time relating to bankruptcy or insolvency;

14.2.3 if CONTRACTOR makes a general assignment for the benefit of creditors;

14.2.4 if a trustee, receiver, custodian or agent of CONTRACTOR is appointed under applicable law or under contract, whose appointment or authority to take charge of property of CONTRACTOR is for the purpose of enforcing a Lien against such property or for the purpose of general administration of such property for the benefit of CONTRACTOR'S creditors;

14.2.5 if CONTRACTOR admits in writing an inability to pay its debts generally as they become due;

14.2.6 if CONTRACTOR persistently fails to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the progress schedule established under paragraph 2.8 as revised from time to time);

14.2.7 if CONTRACTOR disregards Laws or Regulations of any public body having jurisdiction;

14.2.8 if CONTRACTOR disregards the authority of CONSULTANT, or

14.2.9 if CONTRACTOR otherwise violates in any substantial way any provisions of the Contract Documents;

OWNER may, after giving CONTRACTOR (and the surety) seven days' written notice and to the extent permitted by Laws and Regulations, terminate the services of CONTRACTOR, exclude CONTRACTOR from the site and take possession of the Work and of all CONTRACTOR'S tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere, and finish the Work as OWNER may deem expedient. In such case CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds the direct, indirect and consequential costs of completing the Work (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs) such excess will be paid to CONTRACTOR. If such costs exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such costs incurred by OWNER will be approved as to reasonableness by CONSULTANT and incorporated in a Change Order,

but when exercising any rights or remedies under this paragraph OWNER shall not be required to obtain the lowest price for the Work performed.

14.2.10 If safety violations are observed and brought to the Contractors attention and Contractor fails to take immediate corrective measures any repeat of similar safety violations, Owner will order an immediate termination of contract. Note: it is the Contractor's responsibility to know proper safety measures as they pertain to construction and OSHA.

14.2.11 This contract may be canceled by either party thirty (30) days after delivery by canceling party of written notice of intent to cancel to the other contracting party.

14.2.12 This contract may be canceled by the Lexington-Fayette Urban County Government if it is determined that the Bidder has failed to perform under the terms of this agreement, such cancellation to be effective upon receipt of written notice of cancellation by the Bidder.

14.3 CONTRACTOR'S Services Terminated

Where CONTRACTOR'S services have been so terminated by OWNER, the termination will not affect any rights or remedies of OWNER against CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due CONTRACTOR by OWNER will not release CONTRACTOR from liability.

14.4 Payment After Termination

Upon seven days' written notice to CONTRACTOR, OWNER may, without cause and without prejudice to any other right or remedy, elect to abandon the Work and terminate the Agreement. In such case, CONTRACTOR shall be paid for all Work executed and any expense sustained plus reasonable termination expenses, which will include, but not be limited to, direct, indirect and consequential costs (including, but not limited to, fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs).

14.5 CONTRACTOR May Stop Work or Terminate

If, through no act or fault of CONTRACTOR, the Work is suspended for a period of more than ninety days by OWNER or under an order of court or other public authority, or CONSULTANT fails to act on any Application for Payment within sixty days after it is submitted, or OWNER fails for sixty days to pay CONTRACTOR any sum finally determined to be due, then CONTRACTOR may, upon seven days' written notice to OWNER and CONSULTANT, terminate the Agreement and recover from OWNER payment for all Work executed and any expense sustained plus reasonable termination expenses. In addition and in lieu of terminating the Agreement, if CONSULTANT has failed to act on an Application for Payment or OWNER has failed to make any payment as aforesaid, CONTRACTOR may upon seven days' written notice to OWNER and

CONSULTANT stop the Work until payment of all amounts then due. The provisions of this paragraph shall not relieve CONTRACTOR of the obligations under paragraph 5.16 to carry on the Work in accordance with the progress schedule and without delay during disputes and disagreements with OWNER.

15. MISCELLANEOUS

15.1 Claims for Injury or Damage

Should OWNER or CONTRACTOR suffer injury or damage to person or property because of any error, omission or act of the other party or of any of the other party's employees or agents or others for whose acts the other party is legally liable, claim will be made in writing to the other party within a reasonable time of the first observance of such injury or damage. The provisions of this paragraph 15.1 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitations or repose.

15.2 Non-Discrimination in Employment

The CONTRACTOR shall comply with the following requirements prohibiting discrimination:

15.2.1 That no person (as defined in KRS 344.010) shall bid on Lexington-Fayette Urban County Government construction projects, or bid to furnish materials or supplies to the Lexington-Fayette Urban County Government, if, within six months prior to the time of opening of bids, said person shall have been found, by declamatory judgment action in Fayette Circuit Court, to be presently engaging in an unlawful practice, as hereinafter defined. Such declamatory judgment action may be brought by an aggrieved individual or upon an allegation that an effort at conciliation pursuant to KRS 344.200 has been attempted and failed, by the Lexington-Fayette County Human Rights Commission.

15.2.2 That it is an unlawful practice for an employer:

15.2.2.1 to fail or refuse to hire, or to discharge any individual or otherwise to discriminate against an individual, with respect to his compensation, terms, conditions, or privileges of employment, because of such individual's race, color, religion, sex, age, or national origin; or

15.2.2.2 to limit, segregate or classify his employees in any way which would deprive or tend to deprive an individual of employment opportunities or otherwise adversely affect his status as an employee because of such individual's sex, race, color, religion, age, or national origin.

15.2.3 That it is an unlawful practice for an employer, labor organization, or joint-labor management committee controlling apprenticeship or other training or retraining, including on-the-job training programs to discriminate against an individual because of his race, color, religion, sex, age, or national origin in admission to, or employment in, any program established to provide apprenticeship or other training.

15.2.4 That a copy of this Ordinance shall be furnished all suppliers and made a part of all bid specifications.

15.2.5 This Ordinance shall take effect after it is signed, published and recorded, as required by law.

15.3 Temporary Street Closing or Blockage

The CONTRACTOR will notify the CONSULTANT at least 72 hours prior to making any temporary street closing or blockage. This will permit orderly notification to all concerned public agencies. Specific details and restrictions on street closure or blockage are contained in the Special Conditions.

15.4 Percentage of Work Performed by prime CONTRACTOR

The CONTRACTOR shall perform on site, and with its own organization, Work equivalent to at least fifty (50%) percent of the total amount of Work to be performed under the Contract. This percentage may be reduced by a supplemental agreement to this Contract if, during performing the Work, the CONTRACTOR requests a reduction and the CONSULTANT determines that the reduction would be to the advantage of the OWNER.

15.5 Clean-up

Cleanup shall progress, to the greatest degree practicable, throughout the course of the Work. The Work will not be considered as completed, and final payment will not be made, until the right-of-way and all ground occupied or affected by the Contractor in connection with the Work has been cleared of all rubbish, equipment, excess materials, temporary structures, and weeds. Rubbish and all waste materials of whatever nature shall be disposed of, off of the project site, in an acceptable manner. All property, both public and private, which has been damaged in the prosecution of the Work, shall be restored in an acceptable manner. All areas shall be draining, and all drainage ways shall be left unobstructed, and in such a condition that drift will not collect or scour be induced.

15.6 General

The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon CONTRACTOR by paragraphs 12.1, 12.3.5, 13.3, and 15.2 and all of the rights and remedies available to OWNER and CONSULTANT thereunder, are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies

available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply. All representations, warranties and guarantees made in the Contract Documents will survive final payment and termination or completion of the Agreement.

15.7 Debris Disposal

For all LFUCG projects any trash, construction demolition debris, yard waste, dirt or debris of any kind that is removed from the project site must be disposed of in accordance with local, state, and federal regulations. The disposal site or facility must be approved in advance by the LFUCG and disposal documentation is required. The Contractor will be responsible for payment of any fines associated with improper disposal of material removed from the project site.

END OF SECTION

PART V
SPECIAL CONDITIONS
INDEX

1 BLASTING

2 RISK MANAGEMENT PROVISIONS – INSURANCE AND INDEMNIFICATION

3 WEATHER RELATED DELAYS

4 WAGE SCALES

1. **BLASTING** – not applicable.

2. RISK MANAGEMENT PROVISIONS INSURANCE AND INDEMNIFICATION

INDEMNIFICATION AND HOLD HARMLESS PROVISION

(1) It is understood and agreed by the parties that Contractor hereby assumes the entire responsibility and liability for any and all damages to persons or property caused by or resulting from or arising out of any act or omission on the part of Contractor or its employees, agents, servants, owners, principals, licensees, assigns or subcontractors of any tier (hereinafter "CONTRACTOR") under or in connection with this agreement and/or the provision of goods or services and the performance or failure to perform any work required thereby.

(2) CONTRACTOR shall indemnify, save, hold harmless and defend the Lexington-Fayette Urban County Government and its elected and appointed officials, employees, agents, volunteers, and successors in interest (hereinafter "LFUCG") from and against all liability, damages, and losses, including but not limited to, demands, claims, obligations, causes of action, judgments, penalties, fines, liens, costs, expenses, interest, defense costs and reasonable attorney's fees that are in any way incidental to or connected with, or that arise or are alleged to have arisen, directly or indirectly, from or by CONTRACTOR's performance or breach of the agreement and/or the provision of goods or services provided that: (a) it is attributable to personal injury, bodily injury, sickness, or death, or to injury to or destruction of property (including the loss of use resulting therefrom), or to or from the negligent acts, errors or omissions or willful misconduct of the CONTRACTOR; and (b) not caused solely by the active negligence or willful misconduct of LFUCG.

(3) In the event LFUCG is alleged to be liable based upon the above, CONTRACTOR shall defend such allegations and shall bear all costs, fees and expenses of such defense, including but not limited to, all reasonable attorneys' fees and expenses, court costs, and expert witness fees and expenses, using attorneys approved in writing by LFUCG, which approval shall not be unreasonably withheld.

(4) These provisions shall in no way be limited by any financial responsibility or insurance requirements, and shall survive the termination of this agreement.

(5) LFUCG is a political subdivision of the Commonwealth of Kentucky. CONTRACTOR acknowledges and agrees that LFUCG is unable to provide indemnity or otherwise save, hold harmless, or defend the CONTRACTOR in any manner.

FINANCIAL RESPONSIBILITY

BIDDER/CONTRACTOR understands and agrees that it shall, prior to final acceptance of its bid and the commencement of any work, demonstrate the ability to assure compliance with the above Indemnity provisions and these other risk management provisions.

INSURANCE REQUIREMENTS

YOUR ATTENTION IS DIRECTED TO THE INSURANCE REQUIREMENTS BELOW, AAND YOU MAY NEED TO CONFER WITH YOUR INSURANCE AGENTS, BROKERS, OR CARRIERS TO DETERMINE IN ADVANCE OF SUBMISSION OF A RESPONSE THE AVAILABILITY OF THE INSURANCE COVERAGES AND ENDORSEMENTS REQUIRED HEREIN. IF YOU FAIL TO COMPLY WITH THE INSURANCE REQUIREMENTS BELOW, YOU MAY BE DISQUALIFIED FROM AWARD OF THE CONTRACT.

Required Insurance Coverage

BIDDER/CONTRACTOR shall procure and maintain for the duration of this contract the following or equivalent insurance policies at no less than the limits shown below and cause its subcontractors to maintain similar insurance with limits acceptable to LFUCG in order to protect LFUCG against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by CONTRACTOR. The cost of such insurance shall be included in any bid:

Coverage	**Limits**
General Liability aggregate (Insurance Services Office Form CG 00 01)	$1 million per occurrence, $2 million or $2 million combined single limit
Commercial Automobile Liability (Insurance Services Office Form CA 0001)	combined single, $1 million per occurrence
Worker's Compensation	Statutory
Employer's Liability	$100,000.00
Excess/Umbrella Liability	$5 million per occurrence

The policies above shall contain the following conditions:

a. All Certificates of Insurance forms used by the insurance carrier shall be properly filed and approved by the Department of Insurance for the Commonwealth of Kentucky (DOI). LFUCG shall be named as an additional insured in the General Liability Policy and Commercial Automobile Liability Policy using the Kentucky DOI approved forms.

b. The General Liability Policy shall be primary to any insurance or self-insurance retained by LFUCG.

c. The General Liability Policy shall include a Products and Completed Operations endorsement or Premises and Operations Liability endorsement unless it is deemed not to apply by LFUCG.

d. LFUCG shall be provided at least 30 days advance written notice via certified mail, return receipt requested, in the event any of the required policies are canceled or non-renewed.

e. Said coverage shall be written by insurers acceptable to LFUCG and shall be in a form acceptable to LFUCG. Insurance placed with insurers with a rating classification of no less than Excellent (A or A-) and a financial size category of no less than VIII, as defined by the most current Best's Key Rating Guide shall be deemed automatically acceptable.

Renewals

After insurance has been approved by LFUCG, evidence of renewal of an expiring policy must be submitted to LFUCG, and may be submitted on a manually signed renewal endorsement form. If the policy or carrier has changed, however, new evidence of coverage must be submitted in accordance with these Insurance Requirements.

Deductibles and Self-Insured Programs

IF YOU INTEND TO SUBMIT A SELF-INSURANCE PLAN IT MUST BE FORWARDED TO LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DIVISION OF RISK MANAGEMENT, 200 EAST MAIN STREET, LEXINGTON, KENTUCKY 40507 NO LATER THAN A MINIMUM OF FIVE (5) WORKING DAYS PRIOR TO THE RESPONSE DATE. Self-insurance programs, deductibles, and self-insured retentions in insurance policies are subject to separate approval by Lexington-Fayette Urban County Government's Division of Risk Management, upon review of evidence of BIDDER/CONTRACTOR's financial capacity to respond to claims. Any such programs or retentions must provide LFUCG with at least the same protection from liability and defense of suits as would be afforded by first-dollar insurance coverage. If BIDDER/CONTRACTOR satisfies any portion of the insurance requirements through deductibles, self-insurance programs, or self-insured retentions, BIDDER/CONTRACTOR agrees to provide Lexington-Fayette Urban County Government, Division of Risk Management, the following data prior to the final acceptance of bid and the commencement of any work:

a. Latest audited financial statement, including auditor's notes.

b. Any records of any self-insured trust fund plan or policy and related accounting statements.

c. Actuarial funding reports or retained losses.

d. Risk Management Manual or a description of the self-insurance and risk management program.

e. A claim loss run summary for the previous five (5) years.

f. Self-Insured Associations will be considered.

Safety and Loss Control

CONTRACTOR shall comply with all applicable federal, state, and local safety standards related to the performance of its works or services under this Agreement and take necessary action to protect the life, health and safety and property of all of its personnel on the job site, the public, and LFUCG.

Verification of Coverage

BIDDER/CONTRACTOR agrees to furnish LFUCG with all applicable Certificates of Insurance signed by a person authorized by the insurer to bind coverage on its behalf prior to final award, and if requested, shall provide LFUCG copies of all insurance policies, including all endorsements.

Right to Review, Audit and Inspect

CONTRACTOR understands and agrees that LFUCG may review, audit and inspect any and all of its records and operations to insure compliance with these Insurance Requirements.

DEFAULT

BIDDER/CONTRACTOR understands and agrees that the failure to comply with any of these insurance, safety, or loss control provisions shall constitute default and that LFUCG may elect at its option any single remedy or penalty or any combination of remedies and penalties, as available, including but not limited to purchasing insurance and charging BIDDER/CONTRACTOR for any such insurance premiums purchased, or suspending or terminating the work.

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3. WEATHER RELATED DELAYS

A. The Project Completion date shall be established with the understanding that no extension of time will be granted for weather related delays that are within the average temperature or number of rain or snow days within a particular month. The average weather conditions shall be established by referencing the records of the National Oceanic and Atmospheric Administration (NOAA) and as defined herein.

B. Extensions of inclement weather shall be granted only when the work affected must be on schedule at the time of delay. No time will be granted for work which is behind schedule in excess of the actual delay caused by the weather, assuming the work had been on schedule.

C. Time granted for weather delays shall be requested on a monthly basis.

D. The weather experienced at the project site during the contract period must be found to be unusually severe, that is more severe than the adverse weather anticipated for the project location during any given month. The unusually severe weather must actually cause a delay to the completion of the project. The delay must be beyond the control and without the fault or negligence of the contractor.

E. The anticipated adverse weather delays shall be based on the National Oceanic and Atmospheric Administration (NOAA) climatography ten year average for the Lexington Bluegrass Airport KY US location. The Mean Number of Days of daily precipitation using >= 0.10 will determine the base line for monthly anticipated adverse weather evaluations. The contractor's progress schedule must reflect these anticipated adverse weather delays in all weather dependent activities. Upon acknowledgement of the Notice to Proceed (NTP) and continuing throughout the contract, the contractor will record the occurrence of actual adverse weather and resultant impact to normally scheduled work. Actual adverse weather delay days must prevent work on critical path activities for 50 percent or more of the contractor's scheduled work date. The number of actual adverse weather delay days shall be calculated chronologically from the first to the last day of each month, and be recorded as full days. The number of actual adverse weather days greater than the number of anticipated adverse weather days, listed above, shall be the number of unusually severe weather days for the purposes of any contract extensions (actual adverse weather days - anticipated adverse weather days = unusually severe weather days.)

F. Definitions:

1. "Unusually severe weather" - weather that is more severe than the adverse weather anticipated for the season or location involved.

2. "Adverse weather" - atmospheric conditions at a definite time and place that are unfavorable to construction activities.

4. **WAGE SCALES.** Not applicable.

PART VI

CONTRACT AGREEMENT

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PART VI

CONTRACT AGREEMENT

THIS AGREEMENT, made on the _____ day of _____, 20____, by and between **Lexington-Fayette Urban County Government**, acting herein called "OWNER" and **(bidder's name)** _____, doing business as *(an individual) (a partnership) (a corporation) located in the City of _____, County of _____, and State of _____, hereinafter called "CONTRACTOR."

WITNESSETH: That the CONTRACTOR and the OWNER in consideration of _____ Dollars and _____ Cents ($_____) quoted in the proposal by the CONTRACTOR, dated _____, hereby agree to commence and complete the construction described as follows:

1. SCOPE OF WORK

The CONTRACTOR shall furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor, insurance, and other accessories and services necessary to complete the said project in accordance with the conditions and prices stated in the Proposal, General Conditions, Special Conditions of the Contract, the Specifications, Contract Documents, and IonWave Q&A and Addenda, therefore as prepared by GRW Inc.for the LFD Fire Training Academy Phase 1 Site Development Project.

2. TIME OF COMPLETION

The time estimated and authorized by the OWNER for the proper execution of the Work by the Contract, in full, is hereby fixed as four hundred ten (410) calendar days to substantial completion and an additional thirty (30) calendar days to final completion date. The time shall begin in accordance with the Notice to Proceed provided by OWNER.

3. ISSUANCE OF WORK ORDERS

Notice to begin Work will be given in whole or for part of the Work as determined by the OWNER pending the availability of funds. The order of construction will be as determined after consultation between the CONTRACTOR and the OWNER.

4. THE CONTRACT SUM

The OWNER agrees to pay the CONTRACTOR in current funds for the performance of the Contract, as quoted in the proposal, subject to any additions and deductions, as provided therein.

5. PROGRESS PAYMENTS

The OWNER shall make payments on account of the Contract, as provided in accordance with the General Conditions, less the aggregate of previous payments.

6. ACCEPTANCE AND FINAL PAYMENT

Final payment shall be due within ninety (90) days after completion of the Work, provided the Work be then fully completed and the Contract fully accepted.

Before issuance of final certificate, the CONTRACTOR shall submit evidence satisfactory to the Owner that all payrolls, material bills, and other indebtedness connected with the Work has been paid.

If, after the Work has been substantially completed, full completion thereof is materially delayed through no fault of the CONTRACTOR, the OWNER shall without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

7. THE CONTRACT DOCUMENTS

The Advertisement for Bids, Information for Bidders, the General Conditions, Performance and Payment Bonds, Contract Agreement, Special Conditions, Technical Specifications, any and all Addenda, and Proposal, Ion Wave Q&A, and Plan Drawings form the Contract, and they are fully a part of the Contract as if hereto attached or herein repeated.

8. EXTRA WORK

The OWNER, without invalidating the Contract, may order extra work or make changes by altering, adding to or deducting from the Work, the Contract Sum being adjusted accordingly. All such Work shall be executed and paid for in accordance with the General Conditions, which is a part of this Contract.

9. **THE FOLLOWING IS AN ENUMERATION OF THE SPECIFICATIONS AND DRAWINGS (CONTRACT DOCUMENTS):**

SPECIFICATIONS

SECTION NO.	TITLE
I	Advertisement for Bids
II	Information for Bidders
III	Form of Proposal
IV	General Conditions
V	Special Conditions
VI	Contract Agreement
VII	Performance and Payment Bonds
VIII	Addenda
IX	Technical Specifications and Drawings

IN WITNESSETH WHEREOF, the parties hereto have executed this Contract as of the date and year above written.

(Seal)

Lexington-Fayette Urban County Government.
Lexington, Kentucky
(Owner)

ATTEST:

_____
Clerk of the Urban County Council

BY: _____
MAYOR

_____
(Witness)

_____
(Title)

(Seal)

_____
(Contractor)

_____
(Secretary)*

BY: _____

_____
(Witness)

_____
(Title)

_____
(Address and Zip Code)

IMPORTANT: *Strike out any non-applicable terms.

Secretary of the Owner should attest. If the CONTRACTOR is corporation, Secretary should attest. Give proper title of each person-executing Contract.

PART VII

PERFORMANCE AND PAYMENT BONDS

1. PERFORMANCE BOND

2. PAYMENT BOND

PART VII

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that

_____

(Name of CONTRACTOR)

_____

(Address of CONTRACTOR)

a _____, hereinafter
(Corporation, Partnership, or Individual)

called Principal, and _____
(Name of Surety)

_____

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT
200 East Main Street, Third Floor
Lexington, Kentucky 40507

hereinafter called "OWNER" in the penal sum of: _____
Dollars, ($_____), for the payment of whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal by written agreement is entering into a Contract with OWNER for _____**(project name)**_____ in accordance with drawings and specifications prepared by: _____**(the Engineer)**_____ which Contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Principal shall promptly and faithfully perform said Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

The Surety hereby waives notice of any alteration or extension of time made by the OWNER.

Whenever, Principal shall be, and declared by OWNER to be in default under the Contract, the OWNER having performed OWNER'S obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

(1) Complete the Contract in accordance with its terms and conditions or

(2) Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsible bidder, or if the OWNER elects, upon determination by the OWNER and Surety jointly of the lowest responsible bidder, arrange for a Contract between such bidder and OWNER, and make available as Work progresses (even though there may be a default or a succession of defaults under the Contract or Contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the Contract Price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the Contract Price", as used in this paragraph shall mean the total amount payable by OWNER to Principal under the Contract and any amendments thereto, less the amount properly paid by OWNER to Principal.

Any suit under this bond must be instituted before the expiration of two (2) years from the date on which final payment under the Contract falls due.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the OWNER named herein or the heirs, executors, administrators or successors of OWNER.

IN WITNESS WHEREOF, this instrument is executed in _____ each one of which shall be
(number)
deemed an original, this the _____ day of _____, 20_____.

ATTEST:

_____
Principal

_____
(Principal) Secretary

BY: _____(s)

_____
(Address)

_____

_____
Witness as to Principal

_____
(Address)

_____

_____
Surety

ATTEST:

BY: _____
Attorney-in-Fact

_____
(Surety) Secretary

_____
(Address)

_____

(SEAL)

_____
Witness as to Surety

_____
(Address)

_____

TITLE: _____
Surety

_____

_____

BY: _____

TITLE: _____

NOTE: The number of executed counterparts of the bond shall coincide with the number of executed counterparts of the Contract.

PART VII

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENT: that

_____

(Name of Contractor)

_____

(Address of Contractor)

a _____, hereinafter

(Corporation, Partnership or Individual)

called Principal, and _____

(Name of Surety)

_____

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto:

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT
200 East Main Street, Third Floor
Lexington, Kentucky 40507

Obligee, hereinafter called OWNER, for the use and benefit of claimants as hereinafter defined, in the amount of _____ Dollars ($_____) the payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal by written agreement is entering into a Contract with OWNER for **(project name)** in accordance with drawings and specifications prepared by: **(the Engineer)** which Contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Principal shall promptly make payment to all claimants as hereinafter defined for all labor and material used or reasonably required for use in the performance of the Contract, then this obligation shall be void; otherwise it shall remain in full force and effect, subject, however, to the following conditions.

1. A claimant is defined as one having a direct contract with the Principal or with a Subcontractor of the Principal for labor, material, or both, used or reasonably required for use in the performance of the Contract, labor and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental of equipment directly applicable to the Contract.

2. The above named Principal and Surety hereby jointly and severally agree with the OWNER that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work or labor was done or performed, or materials were furnished by such claimant, may sue on this bond for the use of such claimant, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and have execution thereon. The OWNER shall not be liable for the payment of any costs or expenses of any such suit.

3. No suit or action shall be commenced hereunder by any claimant:

   (a) Unless claimant, other than one having a direct contract with the Principal, shall have given written notice to any two of the following: The Principal, the OWNER, or the Surety above named, within ninety (90) days after such claimant did or performed the last of the Work or labor, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the Work or labor was done or performed. Such notice shall be served by mailing the same by registered mail or certified mail, postage prepaid, in an envelope addressed to the Principal, OWNER, or Surety, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the state in which the aforesaid project is located, save that such service need not be made by a public officer.

   (b) After the expiration of one (1) year following the date on which Principal ceased Work on said Contract, it being understood, however, that if any limitation embodied in this bond is prohibited by any law controlling the construction hereof such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.

   (c) Other than in a state court of competent jurisdiction in and for the county or other political subdivision of the state in which the project, or any part thereof, is situated, or in the United States District Court for the district in which the project, or any part thereof, is situated, and not elsewhere.

4. The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment by Surety of mechanics' liens which may be filed of record against aid improvement, whether or not claim for the amount of such lien be presented under and against this bond.

IN WITNESS WHEREOF, this instrument is executed in _____ counterparts, each one of
(number)

which shall be deemed an original, this the _____ day of _____, 20_____.

ATTEST:

_____
(Principal)

_____
(Principal) Secretary

(SEAL) BY: _____(s)

_____
(Address)

_____

_____
(Witness to Principal)

_____
(Address)

_____

_____
(Surety)

ATTEST:

BY: _____
(Attorney-in-Fact)

_____
(Surety) Secretary

(SEAL)

_____ _____
Witness as to Surety (Address)

_____ _____
(Address)

_____ _____

NOTE: The number of executed counterparts of the bond shall coincide with the number of executed counterparts of the Contract.

END OF SECTION

PART VIII

ADDENDA

All addenda issued during the bidding of the Project will be reproduced in the signed Contract Documents, on the pages following this heading sheet.

Addendum Number	Title	Date
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____

IX. TECHNICAL SPECIFICATIONS

Contract Documents and Specifications

Lexington Fayette Urban County Government

Department of General Services

For

Fire Training Academy "Phase 1 Site Development Project"

1375 Old Frankfort Pike, Lexington, KY 40504

Bid No. 1-2026
GRW Project No. 5300-01

Prepared By:

GRW Inc.

January 23, 2026

"Construction Documents"

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015723 – Temporary Storm Water Pollution Control
016000 – Product Requirements
017300 – Execution
017419 – Construction Waste Management and Disposal
017700 – Closeout Procedures
017823 – Operation and Maintenance Data
017839 – Project Record Documents
017900 – Demonstration and Training

DIVISION 03 - CONCRETE

033100 – Cast-In-Place Concrete
036000 – Precision Grouting

DIVISION 10 – SPECIALTIES

101426 – Post and Panel Signage

DIVISION 13 – SPECIAL CONSTRUCTION

133460 – Steel Bridge Systems

DIVISION 26 – ELECTRICAL

260000 – Basic Electrical Materials and Methods
260519 – Conductors and Cables
260526 – Secondary Grounding
260529 – Supporting Devices and Hangers
260530 – Duct Bank Flowable Fill
260533 – Raceway
260534 – Boxes
260542 - Horizontal Directional Drilling
260553 - Electrical Identification
260573 - Electrical Studies and Calculations
260923 – Lighting Controls
262416 – Panelboards
262700 - Wire Connections and Connecting Devices
262726 – Wiring Devices
264313 – Surge Protection Devices
265110 – LED Exterior Lighting

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312000 – Earthwork
312502 – Erosion and Sedimentation Control

316329 – Drilled Piers

DIVISION 32 – EXTERIOR IMPROVEMENTS

321216 – Asphalt Paving
321313 – Concrete Paving
321615 – Sidewalks
329200 – Turf and Grasses
329300 – Plants

DIVISION 33 – UTILITIES

331113 – Water Distribution Piping
331118 – Pipe Insulation and Heat Tracing
331216 – Valves
331219 – Hydrants
332217 – Duplex Grinder Sewage Pumping Station
334113 – Storm Sewage Systems

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LFUCG
Fire Training Academy
Phase 1 Site Development Project
Lexington, Kentucky

Bid #1-2026 January 2026

DOCUMENT 000101 - PROJECT TITLE PAGE

1.1 PROJECT MANUAL

A. VOLUME 1

1. Fire Training Academy – Phase 1 Site Development Project
2. Lexington Fayette Urban County Government.
3. Lexington, KY.
4. Owner Project No. RFB 1-2026.
5. Architect Project No. 5300-01.



6. GRW Engineering Architecture Geospatial. Inc.
7. 801 Corporate Drive.
8. Lexington, KY 40503
9. Phone: 859-223-3999.
10. Website: GRW | engineering | architecture | geospatial.
11. Issued: January 23, 2026.
12. Copyright 2026 GRW Engineering Architecture Geospatial. Inc.

END OF DOCUMENT 000101

LFUCG
Fire Training Academy
Phase 1 Site Development Project
Lexington, Kentucky

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DOCUMENT 000107 - SEALS PAGE

1.1 DESIGN PROFESSIONALS OF RECORD

A. Civil Engineer:

1. Roderick S. Saylor
2. 28004



B. Landscape Architect:

1. Ramona A. Fry
2. 661



C. Structural Engineer:

1. Matthew W. Craig
2. 24113



D. Electrical Engineer:

1. Patrick J. Baisden
2. 22812



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DOCUMENT 000115 - LIST OF DRAWING SHEETS

1.1 LIST OF DRAWINGS

A. Drawings: Drawings that will be enumerated in the Owner/Contractor Agreement as part of the Contract Documents are listed on the Table of Contents page of the separately bound drawing set titled LFUCG Fire Training Academy – Phase 1 Site Development Project, dated January 23, 2026 as modified by subsequent Addenda and Modifications.

1. The words "Resource Drawing" or "For information" after the titles of drawings indicate that those drawings are not intended to be incorporated in the Contract Documents.

END OF DOCUMENT 000115

LFUCG
Fire Training Academy
Phase 1 Site Development Project
Lexington, Kentucky

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DOCUMENT 002600 - PROCUREMENT SUBSTITUTION PROCEDURES

1.1 DEFINITIONS

A. Procurement Substitution Requests: Requests for changes in products, materials, equipment, and methods of construction from those indicated in the Procurement and Contracting Documents, submitted prior to receipt of bids in accordance with Instructions to Bidders.

B. Procurement Prior Approval Requests: Requests for approval of products or manufacturers from those required by the Contract Documents as defined by product selection procedures in Section 016000 "Product Requirements."

1. Procurement prior approval is required when products or manufacturers are listed in specifications under "Sole Product," "Sole Manufacturer," "Limited List of Products," or "Limited List of Manufacturers" introductory paragraphs.
2. Procurement prior approval is not required when products or manufacturers are listed in specifications under "Non-Limited List of Products" or "Non-Limited List of Manufacturers" introductory paragraphs.
3. Where use of "Sole Product," "Sole Manufacturer," "Limited List of Products," or "Limited List of Manufacturers" introductory paragraphs is not allowed by statute, procurement prior approval request is not required.

C. Substitution Requests: Requests for changes in products, materials, equipment, and methods of construction from those indicated in the Contract Documents, submitted following Contract award. See the General Conditions and Section 012500 "Substitution Procedures" for conditions under which Substitution requests will be considered following Contract award.

1.2 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.3 PROCUREMENT SUBSTITUTIONS

A. Procurement Substitutions, General: By submitting a bid, the Bidder represents that its bid is based on materials and equipment described in the Procurement and Contracting Documents, including Addenda. Bidders are encouraged to request approval of qualifying substitute materials and equipment when the Specifications Sections list materials and equipment by product or manufacturer name.

B. Procurement Substitution Requests will be received and considered by Owner when the following conditions are satisfied, as determined by Architect; otherwise requests will be returned without action:

1. Extensive revisions to the Contract Documents are not required.
2. Proposed changes are in keeping with general intent of the Contract Documents, including level of quality of the Work represented by requirements therein.
3. Request is fully documented and properly submitted.

1.4 SUBMITTALS

A. Procurement Substitution Request: Submit to Architect. Procurement Substitution Request must be made in writing **by** prime contract Bidder only in compliance with the following requirements:

1. Requests for substitution of materials and equipment will be considered if received no later than 10 days prior to date of bid opening.
2. Submittal Format, Electronic: Submit Procurement Substitution Request, using format provided on Project web-based bidding management software site.

a. Identify the product or the fabrication or installation method to be replaced in each request. Include related Specifications Sections and Drawing numbers.
b. Provide complete documentation on both the product specified and the proposed substitute, including the following information as appropriate:

1) List of similar installations for completed projects, with project names and addresses as well as names and addresses of architects and owners.
2) Product data, including drawings and descriptions of products and fabrication and installation procedures.
3) Point-by-point comparison of specified and proposed substitute product data, fabrication drawings, and installation procedures.
4) Copies of current, independent third-party test data of salient product or system characteristics.
5) Samples where applicable or when requested by Architect.
6) Detailed comparison of significant qualities of proposed substitute with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
7) Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
8) Research reports, where applicable, evidencing compliance with building code in effect for Project, from ICC-ES
9) Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner

and separate contractors, which will become necessary to accommodate proposed substitute.

c. Provide certification by manufacturer that proposed substitute is equal to or superior to that required by the Procurement and Contracting Documents, and that its in-place performance will be equal to or superior to product or equipment specified in the application indicated.

d. Bidder, in submitting the Procurement Substitution Request, waives the right to additional payment or an extension of Contract Time because of the failure of substitute to perform as represented in the Procurement Substitution Request.

B. Architect's Action:

1. Architect may request additional information or documentation necessary for evaluation of the Procurement Substitution Request. Architect will notify all Bidders of acceptance of proposed substitute by means of an Addendum to the Procurement and Contracting Documents.

C. Architect's approval of substitute during bidding does not relieve Contractor of the responsibility to submit required Shop Drawings and to comply with all other requirements of the Contract Documents.

END OF DOCUMENT 002600

LFUCG
Fire Training Academy
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Lexington, Kentucky

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DOCUMENT 003119 - EXISTING CONDITION INFORMATION

1.1 EXISTING CONDITION INFORMATION

A. This Document with its referenced attachments is part of the Procurement and Contracting Requirements for Project. They provide Owner's information for Bidders' convenience and are intended to supplement rather than serve in lieu of the Bidders' own investigations. They are made available for Bidders' convenience and information. This Document and its attachments are not part of the Contract Documents.

B. Survey information is available for viewing at the office of Architect / Owner.

C. Geotechnical Report is available for viewing at the office of the Architect / Owner.

D. Environmental Report is available for viewing at the office of the Architect / Owner.

END OF DOCUMENT 003119

LFUCG
Fire Training Academy
Phase 1 Site Development Project
Lexington, Kentucky

Bid #1-2026

January 2026

DOCUMENT 003143 - PERMIT APPLICATION

1.1 PERMIT APPLICATION INFORMATION

A. This Document, with its referenced attachments, is part of the Procurement and Contracting Requirements for Project. They provide Owner's information for Bidders' convenience and are intended to supplement rather than serve in lieu of the Bidders' own investigations. This Document and its attachments are not part of the Contract Documents.

B. Permit Application: The building permit for Project has been applied for by Architect. A copy of the Permit Application is appended to this Project Manual.

C. General Contractor shall be responsible for any and all Construction Permits , Inspections, Submittals including payment.

END OF DOCUMENT 003143

LFUCG
Fire Training Academy
Phase 1 Site Development Project
Lexington, Kentucky

Bid #1-2026

January 2026

DOCUMENT 005100 - NOTICE OF AWARD

1.1 BID INFORMATION (Example Form)

A. Bidder: _____

B. Bidder's Address: _____

C. Project Name: LFUCG Fire Training Academy – Phase 1 Site Development.

D. Project Location: 1375 Old Frankfort Pike, Lexington KY, 40504

E. Owner: Lexington Fayette Urban County Government.

F. Owner Project Number: RFP #1-2026

G. Architect: GRW Engineering Architecture Geospatial.

H. Architect Project Number: 5300-01.

1.2 NOTICE OF AWARD OF CONTRACT

A. Notice: The above Bidder is hereby notified that their Bid, dated _____ 2026, for the above Contract has been considered and the Bidder is hereby awarded a Contract for the LFUCG Fire Training Facility – Phase A Site Development.

B. Alternates Accepted: Accepted alternates are indicated in the Owner/Contractor Agreement.

C. Contract Sum: The Contract Sum including accepted alternates is:

1. Indicated in the Owner/Contractor Agreement.

1.3 EXECUTION OF CONTRACT

A. Contract Documents: Executable copies of the Contract Documents will be made available to the Bidder immediately. The Bidder must comply with the following conditions precedent within 10 days of the above date of issuance of the Notice:

1. Deliver to Owner three sets of fully executed copies of the Owner/Contractor Agreement
2. Deliver with the executed Owner/Contractor Agreement the Bonds and Certificates of Insurance required by the Contract Documents.

B. Compliance: Failure to comply with conditions of this Notice within the time specified will entitle Owner to consider the Bidder in default, annul this Notice, and declare the Bidder's Bid security forfeited.

1. Within 10 days after the Bidder complies with the conditions of this Notice, Owner will return to the Bidder one fully executed copy of the Owner/Contractor Agreement.

1.4 NOTIFICATION

A. This Notice is issued by:

1. Owner: Lexington Fayette Urban County Government.

2. Authorized Signature: _____.

3. Signed By: _____.

4. Title: _____.

END OF DOCUMENT 005100

LFUCG
Fire Training Academy
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Lexington, Kentucky

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DIVISION 01

GENERAL REQUIREMENTS

LFUCG
Fire Training Academy
Phase 1 Site Development Project
Lexington, Kentucky

Bid #1-2026

January 2026

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Multiple Work Packages.
4. Future work not part of this Project.
5. Contractor's use of site and premises.
6. Coordination with occupants.
7. Work restrictions.
8. Specification and Drawing conventions.
9. Miscellaneous provisions.

1.3 DEFINITIONS

A. Work Package: A group of specifications, drawings, and schedules prepared by the design team to describe a portion of the Project Work for pricing, permitting, and construction.

1.4 PROJECT INFORMATION

A. Project Identification: LFUCG Fire Training Academy – Phase 1 Site Development.

1. Project Location: 1375 Old Frankfort Pike, Lexington KY, 40504

B. Owner: Lexington Fayette Urban County Government, 200E. Main Street Lexington Ky.

1. Owner's Representative: Josh Ives, AIS, Architect – Capital Project Management, 200 E. Main Street, Lexington Ky, Phone: 859-258-3930.

C. Architect: GRW Engineering, Architecture, Geospatial, 801 Corporate Drive, Lexington KY,

1. Architect's Representative: Aaron Nickerson, AIA, Phone: 859-880-2267.

D. Architect's Consultants: Architect has retained the following design professionals, who have prepared designated portions of the Contract Documents:

1. Landscape Architecture: Element Design.

a. Landscape Architect Representative: Ramona Fry, Phone: 859-389-6533.

E. Web-Based Project Software: Project software will be used for purposes of managing communication and documents during the construction stage.

1. See Section 013100 "Project Management and Coordination." for requirements for using web-based Project software.

1.5 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and includes, but is not limited to, the following:

1. The Construction Project Includes the following scope of work:
   a. Demolition of an Existing Bridge Deck, Utility Building and Utility Structures
   b. Demolition of Existing Asphalt and Surface Improvements
   c. New Site Work Excavation and Grading
   d. New Pre-Fabricated Bridge with Poured-In-Place Foundations
   e. New Asphalt and Concrete Parking, Drives, and Sidewalks
   f. New Site Lighting
   g. New Utility Extension and Service for Gas, Water, Electric
   h. New Landscaping
   i. All incidental Work indicated in the Contract Documents

B. Type of Contract:

1. Project will be constructed under a single prime contract.

1.6 WORK PERFORMED BY OWNER

A. Cooperate fully with Owner, so work may be carried out smoothly, without interfering with or delaying Work under this Contract or work by Owner. Coordinate the Work of this Contract with work performed by Owner.

B. Subsequent Work: Owner will perform the following additional work at site after Substantial Completion. Completion of that work will depend on successful completion of preparatory Work under this Contract.

1. Future Office / Training Building and Vehicle Storage Building.

1.7 CONTRACTOR'S USE OF SITE AND PREMISES

A. Restricted Use of Site: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.

B. Limits on Use of Site: Limit use of Project site to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1. Limits on Use of Site: Confine construction operations to the New Parking, Drives, Bridge, Utility, and Grading scope of work defined in the Contract Documents.
2. Driveways, Walkways and Entrances: Keep driveways, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or for storage of materials.

    a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
    b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

C. Condition of Existing Building: Maintain the existing building conditions throughout construction period. Repair damage caused by construction operations.

D. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

1.8 COORDINATION WITH OCCUPANTS

A. Full Owner Occupancy: Owner will occupy portions of the Project site and existing adjacent building(s) during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.

1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.
2. Notify Owner not less than 72 hours in advance of activities that will affect Owner's operations.

1.9 WORK RESTRICTIONS

A. Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets, work on public streets, rights of way, and other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Limit work to between 7:00 a.m. to 5:00 p.m., Monday through Friday, unless otherwise indicated. Work hours may be modified to meet Project requirements if approved by Owner and authorities having jurisdiction.

1. Weekend Hours: 7:00 a.m. to 5:00 p.m.
2. Early Morning Hours: Insert restrictions or references to regulations by authorities having jurisdiction for restrictions on noisy work.
3. Hours for Utility Shutdowns: Coordinate utility shutdown with owner.

C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging for temporary utility services according to requirements indicated:

1. Notify Architect and Owner not less than two days in advance of proposed utility interruptions.
2. Obtain Owner's written permission before proceeding with utility interruptions.

D. Noise, Vibration, Dust, and Odors: Coordinate operations that may result in high levels of noise and vibration, dust, odors, or other disruption to Owner occupancy with Owner.

1. Notify Architect and Owner not less than two days in advance of proposed disruptive operations.

E. Smoking and Controlled Substance Restrictions: Use of tobacco products and other controlled substances on Owner's property is not permitted.

F. Employee Identification: Provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.

G. Employee Identification: Provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.

1. Maintain list of approved screened personnel with Owner's representative.

1.10 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

2. Text Color: Text used in the Specifications, including units of measure, manufacturer and product names, and other text may appear in multiple colors or underlined as part of a hyperlink; no emphasis is implied by text with these characteristics.
3. Hypertext: Text used in the Specifications may contain hyperlinks. Hyperlinks may allow for access to linked information that is not residing in the Specifications. Unless otherwise indicated, linked information is not part of the Contract Documents.
4. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 00 Contracting Requirements: General provisions of the Contract, including General and Supplementary Conditions, apply to all Sections of the Specifications.

C. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

D. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:

1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings and published as part of the U.S. National CAD Standard.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

B. Related Requirements:

1. Document 002600 "Procurement Substitution Procedures" for requirements for substitution requests prior to award of Contract.
2. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.3 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents.

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 ACTION SUBMITTALS

A. Substitution Requests: Submit documentation identifying product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Substitution Request Form: Use form acceptable to Architect.
2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
b. Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
c. Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes, such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
e. Samples, where applicable or requested.
f. Certificates and qualification data, where applicable or requested.
g. List of similar installations for completed projects, with project names and addresses as well as names and addresses of architects and owners.
h. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
i. Research reports evidencing compliance with building code in effect for Project, from authorities having jurisdiction.
j. Detailed comparison of Contractor's construction schedule using proposed substitutions with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
k. Cost information, including a proposal of change, if any, in the Contract Sum.
l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.
m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.7 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
b. Substitution request is fully documented and properly submitted.
c. Requested substitution will not adversely affect Contractor's construction schedule.
d. Requested substitution has received necessary approvals of authorities having jurisdiction.
e. Requested substitution is compatible with other portions of the Work.
f. Requested substitution has been coordinated with other portions of the Work.
g. Requested substitution provides specified warranty.
h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Architect will consider requests for substitution if received within 60 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Architect.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
b. Requested substitution does not require extensive revisions to the Contract Documents.
c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
d. Substitution request is fully documented and properly submitted.
e. Requested substitution will not adversely affect Contractor's construction schedule.
f. Requested substitution has received necessary approvals of authorities having jurisdiction.
g. Requested substitution is compatible with other portions of the Work.
h. Requested substitution has been coordinated with other portions of the Work.
i. Requested substitution provides specified warranty.
j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012500

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

B. Related Requirements:

1. Section 012500 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.
2. Section 013100 "Project Management and Coordination" for requirements for forms for contract modifications provided as part of web-based Project management software.

1.3 MINOR CHANGES IN THE WORK

A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710.

1.4 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
2. Within time specified in Proposal Request or 20 days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

    a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.

b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
c. Include costs of labor and supervision directly attributable to the change.
d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
e. Quotation Form: Use forms acceptable to Architect.

B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
7. Proposal Request Form: Use form acceptable to Architect.

1.5 ADMINISTRATIVE CHANGE ORDERS

A. Unit-Price Adjustment: See Section 012200 "Unit Prices" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit-price work.

1.6 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Work Change Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701 or Owners desired format.

1.7 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714 or Owners desired format. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Requirements:

1. Document 004373 "Proposed Schedule of Values Form" for requirements for furnishing proposed schedule of values with bid.
2. Section 012200 "Unit Prices" for administrative requirements governing the use of unit prices.
3. Section 012600 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
4. Section 013200 "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

1.3 DEFINITIONS

A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.

1. Coordinate line items in the schedule of values with items required to be indicated as separate activities in Contractor's construction schedule.
2. Submit the schedule of values to Architect at earliest possible date, but no later than seven days before the date scheduled for submittal of initial Applications for Payment.

B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.

1. Identification: Include the following Project identification on the schedule of values:

   a. Project name and location.
   b. Owner's name.
   c. Owner's Project number.
   d. Name of Architect.
   e. Architect's Project number.
   f. Contractor's name and address.
   g. Date of submittal.

2. Arrange schedule of values consistent with format of AIA Document G703.
3. Arrange the schedule of values in tabular form, with separate columns to indicate the following for each item listed:

   a. Related Specification Section or division.
   b. Description of the Work.
   c. Name of subcontractor.
   d. Name of manufacturer or fabricator.
   e. Name of supplier.
   f. Change Orders (numbers) that affect value.
   g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent. Round dollar amounts to whole dollars, with total equal to Contract Sum.

      1) Labor.
      2) Materials.
      3) Equipment.

4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.
5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.

   a. Differentiate between items stored on-site and items stored off-site.

6. Temporary Facilities: Show cost of temporary facilities and other major cost items that are not direct cost of actual work-in-place as separate line items.
7. Closeout Costs. Include separate line items under Contractor and principal subcontracts for Project closeout requirements in an amount totaling five percent of the Contract Sum and subcontract amount.

8. Schedule of Values Revisions: Revise the schedule of values when Change Orders or Construction Change Directives result in a change in the Contract Sum. Include at least one separate line item for each Change Order and Construction Change Directive.

1.5 APPLICATIONS FOR PAYMENT

A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments, as certified by Architect and paid for by Owner.

B. Payment Application Times: Submit Application for Payment to Architect by the first of the month. The period covered by each Application for Payment is one month, ending on the last day of the month.

1. Submit draft copy of Application for Payment seven days prior to due date for review by Architect.

C. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.

D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.

1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.

E. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.

1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment for stored materials.
2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
3. Provide summary documentation for stored materials indicating the following:

a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.

b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.

F. Transmittal: Submit One signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

G. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment

1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
2. When an application shows completion of an item, submit conditional final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
5. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.

H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.
2. Schedule of values.
3. Contractor's construction schedule (preliminary if not final).
4. Certificates of insurance and insurance policies.
5. Performance and payment bonds.
6. Data needed to acquire Owner's insurance.

I. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.

a. Complete administrative actions, submittals, and Work preceding this application, as described in Section 017700 "Closeout Procedures."

2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

J. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.
2. Certification of completion of final punch list items.
3. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
4. Updated final statement, accounting for final changes to the Contract Sum.
5. AIA Document G706.
6. AIA Document G706A.
7. AIA Document G707.
8. Evidence that claims have been settled.
9. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
10. Final liquidated damages settlement statement.
11. Proof that taxes, fees, and similar obligations are paid.
12. Waivers and releases.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project, including, but not limited to, the following:

1. General coordination procedures.
2. Coordination drawings.
3. RFIs.
4. Digital project management procedures.
5. Web-based Project management software package.
6. Project meetings.

B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

C. Related Requirements:

1. Section 013200 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
2. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
3. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

A. RFI: Request for Information. Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, telephone number, and email address of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.

B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses, cellular telephone numbers, and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.

1. Post copies of list in Project meeting room, in temporary field office, and in prominent location in built facility. Keep list current at all times.

1.5 GENERAL COORDINATION PROCEDURES

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

1. Schedule construction operations in sequence required to obtain the best results, where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

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

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

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

1. Preparation of Contractor's construction schedule.
2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.

8. Startup and adjustment of systems.

1.6 (NOT USED)

1.7 REQUEST FOR INFORMATION (RFI)

A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.

1. Architect will return without response those RFIs submitted to Architect by other entities controlled by Contractor.
2. Coordinate and submit RFIs in a prompt manner to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

1. Project name.
2. Owner name.
3. Owner's Project number.
4. Name of Architect.
5. Architect's Project number.
6. Date.
7. Name of Contractor.
8. RFI number, numbered sequentially.
9. RFI subject.
10. Specification Section number and title and related paragraphs, as appropriate.
11. Drawing number and detail references, as appropriate.
12. Field dimensions and conditions, as appropriate.
13. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
14. Contractor's signature.
15. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.

    a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

C. RFI Forms: Software-generated form with substantially the same content as indicated above, acceptable to Architect.

1. Attachments shall be electronic files in PDF format.

D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.

1. The following Contractor-generated RFIs will be returned without action:

   a. Requests for approval of submittals.
   b. Requests for approval of substitutions.
   c. Requests for approval of Contractor's means and methods.
   d. Requests for coordination information already indicated in the Contract Documents.
   e. Requests for adjustments in the Contract Time or the Contract Sum.
   f. Requests for interpretation of Architect's actions on submittals.
   g. Incomplete RFIs or inaccurately prepared RFIs.

2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt by Architect of additional information.
3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."

   a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 5 days of receipt of the RFI response.

E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log Use software log that is part of web-based Project management software. Software log with not less than the following:

1. Project name.
2. Name and address of Contractor.
3. Name and address of Architect.
4. RFI number, including RFIs that were returned without action or withdrawn.
5. RFI description.
6. Date the RFI was submitted.
7. Date Architect's response was received.
8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.

F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within three days if Contractor disagrees with response.

1.8 DIGITAL PROJECT MANAGEMENT PROCEDURES

A. Use of Architect's Digital Data Files: Digital data files of Architect's CAD drawings will be provided by Architect for Contractor's use during construction.

1. Digital data files may be used by Contractor in preparing coordination drawings, Shop Drawings, and Project Record Drawings.
2. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Contract Drawings.
3. Digital Drawing Software Program: Contract Drawings are available in Autodesk 2018.
4. Contractor shall execute a data licensing agreement in the form of AIA Document C106 Digital Data Licensing Agreement.

a. Subcontractors and other parties granted access by Contractor to Architect's digital data files shall execute a data licensing agreement in the form of AIA Document C106.

B. Web-Based Project Management Software Package: Use Architect's web-based Project management software package for purposes of hosting and managing Project communication and documentation until Final Completion.

1. Web-based Project management software includes, at a minimum, the following features:

a. Compilation of Project data, including Contractor, subcontractors, Architect, Architect's consultants, Owner, and other entities involved in Project. Include names of individuals and contact information.
b. Access control for each entity for each workflow process, to determine entity's digital rights to create, modify, view, and print documents.
c. Document workflow planning, allowing customization of workflow between project entities.
d. Creation, logging, tracking, and notification for Project communications required in other Specification Sections, including, but not limited to, RFIs, submittals, Minor Changes in the Work, Construction Change Directives, and Change Orders.
e. Track status of each Project communication in real time, and log time and date when responses are provided.
f. Procedures for handling PDFs or similar file formats, allowing markups by each entity. Provide security features to lock markups against changes once submitted.
g. Processing and tracking of payment applications.
h. Processing and tracking of contract modifications.
i. Creating and distributing meeting minutes.
j. Document management for Drawings, Specifications, and coordination drawings, including revision control.
k. Management of construction progress photographs.
l. Mobile device compatibility, including smartphones and tablets.

C. PDF Document Preparation: Where PDFs are required to be submitted to Architect, prepare as follows:

1. Assemble complete submittal package into a single indexed file, incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.
3. Certifications: Where digitally submitted certificates and certifications are required, provide a digital signature with digital certificate on where indicated.

1.9 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times a minimum of seven days prior to meeting.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.

B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.

1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect progress, including the following:

    a. Responsibilities and personnel assignments.
    b. Tentative construction schedule.
    c. Critical work sequencing and long lead items.
    d. Designation of key personnel and their duties.
    e. Lines of communications.
    f. Use of web-based Project software.
    g. Procedures for processing field decisions and Change Orders.
    h. Procedures for RFIs.
    i. Procedures for processing Applications for Payment.
    j. Distribution of the Contract Documents.
    k. Submittal procedures.
    l. Preparation of Record Documents.
    m. Use of the premises and existing building.
    n. Work restrictions.
    o. Working hours.
    p. Owner's occupancy requirements.

q. Responsibility for temporary facilities and controls.
r. Procedures for moisture and mold control.
s. Procedures for disruptions and shutdowns.
t. Construction waste management and recycling.
u. Parking availability.
v. Office, work, and storage areas.
w. Equipment deliveries and priorities.
x. First aid.
y. Security.
z. Progress cleaning.

3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity when required by other Sections and when required for coordination with other construction.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

a. Contract Documents.
b. Options.
c. Related RFIs.
d. Related Change Orders.
e. Purchases.
f. Deliveries.
g. Submittals.
h. Review of mockups.
i. Possible conflicts.
j. Compatibility requirements.
k. Time schedules.
l. Weather limitations.
m. Manufacturer's written instructions.
n. Warranty requirements.
o. Compatibility of materials.
p. Acceptability of substrates.
q. Temporary facilities and controls.
r. Space and access limitations.
s. Regulations of authorities having jurisdiction.
t. Testing and inspecting requirements.
u. Installation procedures.
v. Coordination with other work.

w. Required performance results.
x. Protection of adjacent work.
y. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to Owner and Architect, but no later than 90 days prior to the scheduled date of Substantial Completion.

1. Conduct the conference to review requirements and responsibilities related to Project closeout.
2. Attendees: Authorized representatives of Owner and Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:

a. Preparation of Record Documents.
b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
c. Procedures for completing and archiving web-based Project software site data files.
d. Submittal of written warranties.
e. Requirements for preparing operations and maintenance data.
f. Requirements for delivery of material samples, attic stock, and spare parts.
g. Requirements for demonstration and training.
h. Preparation of Contractor's punch list.
i. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
j. Submittal procedures.
k. Owner's partial occupancy requirements.
l. Installation of Owner's furniture, fixtures, and equipment.
m. Responsibility for removing temporary facilities and controls.

4. Minutes: Entity conducting meeting will record and distribute meeting minutes.

E. Progress Meetings: Conduct progress meetings at monthly intervals.

1. Coordinate dates of meetings with preparation of payment requests.

2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

    a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

        1) Review schedule for next period.

    b. Review present and future needs of each entity present, including the following:

        1) Interface requirements.
        2) Sequence of operations.
        3) Status of submittals.
        4) Deliveries.
        5) Off-site fabrication.
        6) Access.
        7) Site use.
        8) Temporary facilities and controls.
        9) Progress cleaning.
        10) Quality and work standards.
        11) Status of correction of deficient items.
        12) Field observations.
        13) Status of RFIs.
        14) Status of Proposal Requests.
        15) Pending changes.
        16) Status of Change Orders.
        17) Pending claims and disputes.
        18) Documentation of information for payment requests.

3. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.

    a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting, where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

F. Coordination Meetings: Conduct Project coordination meetings at regular intervals. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.

1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in

planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meetings shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

   a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to combined Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

   b. Schedule Updating: Revise combined Contractor's construction schedule after each coordination meeting, where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.

   c. Review present and future needs of each contractor present, including the following:

      1) Interface requirements.
      2) Sequence of operations.
      3) Status of submittals.
      4) Deliveries.
      5) Off-site fabrication.
      6) Access.
      7) Site use.
      8) Temporary facilities and controls.
      9) Work hours.
      10) Hazards and risks.
      11) Progress cleaning.
      12) Quality and work standards.
      13) Status of RFIs.
      14) Proposal Requests.
      15) Change Orders.
      16) Pending changes.

3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Startup construction schedule.
2. Contractor's Construction Schedule.
3. Construction schedule updating reports.
4. Daily construction reports.
5. Material location reports.
6. Site condition reports.
7. Unusual event reports.

B. Related Requirements:

1. Section 012900 "Payment Procedures" for schedule of values and requirements for use of cost-loaded schedule for Applications for Payment.
2. Section 014000 "Quality Requirements" for schedule of tests and inspections.

1.2 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction Project. Activities included in a construction schedule consume time and resources.

1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
2. Predecessor Activity: An activity that precedes another activity in the network.
3. Successor Activity: An activity that follows another activity in the network.

B. Cost Loading: The allocation of the schedule of values for completing an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum.

C. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine the critical path of Project and when activities can be performed.

D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

E. Event: The starting or ending point of an activity.

F. Float: The measure of leeway in starting and completing an activity.

1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

G. Resource Loading: The allocation of labor and equipment necessary for completing an activity as scheduled.

1.3 INFORMATIONAL SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:

1. Working electronic copy of schedule file.
2. PDF file.

B. Startup construction schedule.

1. Submittal of cost-loaded startup construction schedule will not constitute approval of schedule of values for cost-loaded activities.

C. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

D. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports to contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.

1. Activity Report: List of activities sorted by activity number and then early start date, or actual start date if known.
2. Logic Report: List of preceding and succeeding activities for each activity, sorted in ascending order by activity number and then by early start date, or actual start date if known.
3. Total Float Report: List of activities sorted in ascending order of total float.
4. Earnings Report: Compilation of Contractor's total earnings from the Notice to Proceed until most recent Application for Payment.

E. Construction Schedule Updating Reports: Submit with Applications for Payment.

F. Daily Construction Reports: Submit at weekly intervals.

G. Material Location Reports: Submit at monthly intervals.

H. Site Condition Reports: Submit at time of discovery of differing conditions.

I. Unusual Event Reports: Submit at time of unusual event.

1.4 COORDINATION

A. Coordinate Contractor's Construction Schedule with the schedule of values, submittal schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from entities involved.
2. Coordinate each construction activity in the network with other activities, and schedule them in proper sequence.

1.5 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Computer Scheduling Software: Prepare schedules using current version of a program that is capable of managing construction schedules.

B. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Final Completion.

1. Contract completion date to not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

C. Activities: Treat each floor or separate area as a separate numbered activity for each main element of the Work. Comply with the following:

1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
2. Temporary Facilities: Indicate start and completion dates for the following as applicable:

a. Securing of approvals and permits required for performance of the Work.
b. Temporary facilities.
c. Construction of mock-ups, prototypes and samples.
d. Owner interfaces and furnishing of items.
e. Interfaces with Separate Contracts.
f. Regulatory agency approvals.
g. Punch list.

3. Procurement Activities: Include procurement process activities for the following long lead-time items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.

    a. Pre-Fabricated Bridge.
    b. Electrical Distribution.

4. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with submittal schedule.
5. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
6. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
7. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and Final Completion.

D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.

1. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
2. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
3. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
4. Work Restrictions: Show the effect of the following items on the schedule:

    a. Coordination with existing construction.
    b. Limitations of continued occupancies.
    c. Uninterruptible services.
    d. Partial occupancy before Substantial Completion.
    e. Use-of-premises restrictions.
    f. Provisions for future construction.
    g. Seasonal variations.
    h. Environmental control.

5. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:

    a. Structural completion.
    b. Temporary enclosure and space conditioning.
    c. Permanent space enclosure.

d. Completion of mechanical installation.
e. Completion of electrical installation.
f. Substantial Completion.

E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.

F. Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.

1. See Section 012900 "Payment Procedures" for cost reporting and payment procedures.

G. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:

1. Unresolved issues.
2. Unanswered Requests for Information.
3. Rejected or unreturned submittals.
4. Notations on returned submittals.
5. Pending modifications affecting the Work and the Contract Time.

H. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate Final Completion percentage for each activity.

I. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, equipment required to achieve compliance, and date by which recovery will be accomplished.

J. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.
2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

1.6 STARTUP CONSTRUCTION SCHEDULE

A. Gantt-Chart Schedule: Submit startup, horizontal, Gantt-chart-type construction schedule within seven days of date established for the Notice to Proceed.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

1.7 GANTT-CHART SCHEDULE REQUIREMENTS

A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's Construction Schedule within 30 days of date established for the Notice to Proceed.

1. Base schedule on the startup construction schedule and additional information received since the start of Project.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

1.8 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:

1. List of subcontractors at Project site.
2. List of separate contractors at Project site.
3. Approximate count of personnel at Project site.
4. Equipment at Project site.
5. Material deliveries.
6. High and low temperatures and general weather conditions, including presence of rain or snow.
7. Testing and inspection.
8. Accidents.
9. Meetings and significant decisions.
10. Unusual events.
11. Stoppages, delays, shortages, and losses.
12. Meter readings and similar recordings.
13. Emergency procedures.
14. Orders and requests of authorities having jurisdiction.
15. Change Orders received and implemented.

16. Construction Change Directives received and implemented.
17. Services connected and disconnected.
18. Equipment or system tests and startups.
19. Partial completions and occupancies.
20. Substantial Completions authorized.

B. Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List to be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site. Indicate the following categories for stored materials:

1. Material stored prior to previous report and remaining in storage.
2. Material stored prior to previous report and since removed from storage and installed.
3. Material stored following previous report and remaining in storage.

C. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

D. Unusual Event Reports: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, responses by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

1. Submit unusual event reports directly to Owner within one day(s) of an occurrence. Distribute copies of report to parties affected by the occurrence.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013200

SECTION 013233 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for the following:

1. Preconstruction photographs.
2. Concealed Work photographs.
3. Periodic construction photographs.
4. Final Completion construction photographs.

B. Related Requirements:

1. Section 017700 "Closeout Procedures" for submitting photographic documentation as Project Record Documents at Project closeout.
2. Section 017900 "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.
3. Section 311000 "Site Clearing" for photographic documentation before site clearing operations commence.

1.2 INFORMATIONAL SUBMITTALS

A. Digital Photographs: Submit image files within three days of taking photographs.

1. Submit photos by uploading to web-based Project management software site.
2. Identification: Provide the following information with each image description in web-based Project management software site:

a. Name of Project.
b. Name and contact information for photographer.
c. Name of Architect
d. Name of Contractor.
e. Date photograph was taken.
f. Description of location, vantage point, and direction.

1.3 FORMATS AND MEDIA

A. Digital Photographs: Provide color images in JPG format, produced by a digital camera with minimum sensor size of 12 megapixels, and at an image resolution of not less than 3200 by 2400 pixels. Use flash in low light levels or backlit conditions.

B. Digital Images: Submit digital media as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.

C. Metadata: Record accurate date and time from camera.

D. File Names: Name media files with date and sequential numbering suffix.

1.4 CONSTRUCTION PHOTOGRAPHS

A. Photographer: Engage a qualified photographer to take construction photographs.

B. General: Take photographs with maximum depth of field and in focus.

C. Preconstruction Photographs: Before commencement of the Work, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Architect.

1. Flag construction limits before taking construction photographs.
2. Take 20 photographs to show existing conditions adjacent to property before starting the Work.
3. Take 20 photographs of existing buildings either on or adjoining property, to accurately record physical conditions at start of construction.
4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.

D. Concealed Work Photographs: Before proceeding with installing work that will conceal other work, take photographs sufficient in number, with annotated descriptions, to record nature and location of concealed Work, including, but not limited to, the following:

1. Underground utilities.
2. Underslab services.
3. Piping.
4. Electrical conduit.
5. Waterproofing and weather-resistant barriers.

E. Periodic Construction Photographs: Take 20 photographs weekly coinciding with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.

F. Final Completion Construction Photographs: Take 20 photographs after date of Substantial Completion for submission as Project Record Documents. Architect will inform photographer of desired vantage points.

G. Additional Photographs: Architect may request photographs in addition to periodic photographs specified. Additional photographs will be paid for by Change Order and are not included in the Contract Sum

1. Three days' notice will be given, where feasible.
2. In emergency situations, take additional photographs within 24 hours of request.
3. Circumstances that could require additional photographs include, but are not limited to, the following:

    a. Special events planned at Project site.
    b. Immediate follow-up when on-site events result in construction damage or losses.
    c. Photographs are to be taken at fabrication locations away from Project site. These photographs are not subject to unit prices or unit-cost allowances.
    d. Substantial Completion of a major phase or component of the Work.
    e. Extra record photographs at time of final acceptance.
    f. Owner's request for special publicity photographs.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013233

LFUCG
Fire Training Academy
Phase 1 Site Development Project
Lexington, Kentucky

Bid #1-2026

January 2026

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Submittal schedule requirements.
2. Administrative and procedural requirements for submittals.

B. Related Requirements:

1. Section 012900 "Payment Procedures" for submitting Applications for Payment and the schedule of values.
2. Section 013100 "Project Management and Coordination" for submitting coordination drawings and subcontract list and for requirements for web-based Project software.
3. Section 013200 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
4. Section 013233 "Photographic Documentation" for submitting preconstruction photographs, periodic construction photographs, and Final Completion construction photographs.
5. Section 014000 "Quality Requirements" for submitting test and inspection reports, and schedule of tests and inspections.
6. Section 017700 "Closeout Procedures" for submitting closeout submittals and maintenance material submittals.
7. Section 017823 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
8. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
9. Section 017900 "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

1.3 SUBMITTAL SCHEDULE

A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
2. Final Submittal Schedule: Submit concurrently with the first complete submittal of Contractor's construction schedule.

    a. Submit revised submittal schedule as required to reflect changes in current status and timing for submittals.

3. Format: Arrange the following information in a tabular format:

    a. Scheduled date for first submittal.
    b. Specification Section number and title.
    c. Submittal Category: Action; informational.
    d. Name of subcontractor.
    e. Description of the Work covered.
    f. Scheduled date for Architect's final release or approval.

1.4 SUBMITTAL FORMATS

A. Submittal Information: Include the following information in each submittal:

1. Project name.
2. Date.
3. Name of Architect.
4. Name of Contractor.
5. Name of firm or entity that prepared submittal.
6. Names of subcontractor, manufacturer, and supplier.
7. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier and alphanumeric suffix for resubmittals.
8. Category and type of submittal.
9. Submittal purpose and description.
10. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
11. Drawing number and detail references, as appropriate.
12. Indication of full or partial submittal.
13. Location(s) where product is to be installed, as appropriate.
14. Other necessary identification.
15. Remarks.

16. Signature of transmitter.

B. Options: Identify options requiring selection by Architect.

C. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Architect on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.

D. Electronic Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.

E. Submittals Utilizing Web-Based Project Software: Prepare submittals as PDF files or other format indicated by Project management software.

1.5 SUBMITTAL PROCEDURES

A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Web-Based Project Management Software: Prepare submittals in PDF form, and upload to web-based Project management software website. Enter required data in web-based software site to fully identify submittal.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
4. Coordinate transmittal of submittals for related parts of the Work specified in different Sections, so processing will not be delayed because of need to review submittals concurrently for coordination.

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

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow 15 days for review of each resubmittal.
4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal.

D. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block, and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.

E. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

F. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

1.6 SUBMITTAL REQUIREMENTS

A. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are unsuitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

a. Manufacturer's catalog cuts.
b. Manufacturer's product specifications.
c. Standard color charts.
d. Statement of compliance with specified referenced standards.
e. Testing by recognized testing agency.
f. Application of testing agency labels and seals.
g. Notation of coordination requirements.
h. Availability and delivery time information.

4. For equipment, include the following in addition to the above, as applicable:

a. Wiring diagrams that show factory-installed wiring.

b. Printed performance curves.
c. Operational range diagrams.
d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

5. Submit Product Data before Shop Drawings, and before or concurrently with Samples.

B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

a. Identification of products.
b. Schedules.
c. Compliance with specified standards.
d. Notation of coordination requirements.
e. Notation of dimensions established by field measurement.
f. Relationship and attachment to adjoining construction clearly indicated.
g. Seal and signature of professional engineer if specified.

2. Paper Sheet Size: Except for templates, patterns, and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.

C. Samples: Submit Samples for review of type, color, pattern, and texture for a check of these characteristics with other materials.

1. Transmit Samples that contain multiple, related components, such as accessories together in one submittal package.
2. Identification: Permanently attach label on unexposed side of Samples that includes the following:

a. Project name and submittal number.
b. Generic description of Sample.
c. Product name and name of manufacturer.
d. Sample source.
e. Number and title of applicable Specification Section.
f. Specification paragraph number and generic name of each item.

3. Web-Based Project Management Software: Prepare submittals in PDF form, and upload to web-based Project software website. Enter required data in web-based software site to fully identify submittal.
4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units, showing the full range of colors, textures, and patterns available.

a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.

6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

a. Number of Samples: Submit three sets of Samples. Architect will retain two Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a project record Sample.

1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

D. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
2. Manufacturer and product name, and model number if applicable.
3. Number and name of room or space.
4. Location within room or space.

E. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

F. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.

G. Certificates:

1. Certificates and Certifications Submittals: Submit a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity. Provide a notarized signature where indicated.
2. Installer Certificates: Submit written statements on manufacturer's letterhead, certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
3. Manufacturer Certificates: Submit written statements on manufacturer's letterhead, certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
4. Material Certificates: Submit written statements on manufacturer's letterhead, certifying that material complies with requirements in the Contract Documents.
5. Product Certificates: Submit written statements on manufacturer's letterhead, certifying that product complies with requirements in the Contract Documents.
6. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of AWS B2.1/B2.1M on AWS forms. Include names of firms and personnel certified.

H. Test and Research Reports:

1. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for substrate preparation and primers required.
2. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
3. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
4. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
5. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

6. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

   a. Name of evaluation organization.
   b. Date of evaluation.
   c. Time period when report is in effect.
   d. Product and manufacturers' names.
   e. Description of product.
   f. Test procedures and results.
   g. Limitations of use.

1.7 DELEGATED DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

   1. If criteria indicated are insufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF file paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

   1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

1.8 CONTRACTOR'S REVIEW

A. Action Submittals and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

B. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp indication in web-based Project management software. Include name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

   1. Architect will not review submittals received from Contractor that do not have Contractor's review and approval.

1.9 ARCHITECT'S REVIEW

A. Action Submittals: Architect will review each submittal, indicate corrections or revisions required, and return.

1. PDF Submittals: Architect will indicate, via markup on each submittal, the appropriate action.

2. Submittals by Web-Based Project Management Software: Architect will indicate, on Project management software website, the appropriate action.

B. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.

D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

E. Architect will return without review submittals received from sources other than Contractor.

F. Submittals not required by the Contract Documents will be returned by Architect without action.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013300

LFUCG
Fire Training Academy
Phase 1 Site Development Project
Lexington, Kentucky

Bid #1-2026

January 2026

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and quality-control requirements for individual work results are specified in their respective Specification Sections. Requirements in individual Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.2 DEFINITIONS

A. Experienced: When used with an entity or individual, "experienced," unless otherwise further described, means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

B. Field Quality-Control Tests and Inspections: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, subcontractor, or sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.

1. Use of trade-specific terminology in referring to a Work result does not require that certain construction activities specified apply exclusively to specific trade(s).

D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance

with specified criteria. Unless otherwise indicated, copies of reports of tests or inspections performed for other than the Project do not meet this definition.

E. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) in accordance with 29 CFR 1910.7, by a testing agency accredited in accordance with NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

F. Source Quality-Control Tests and Inspections: Tests and inspections that are performed at the source (e.g., plant, mill, factory, or shop).

G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. The term "testing laboratory" has the same meaning as the term "testing agency."

H. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work, to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

I. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work, to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Architect.

1.3 DELEGATED DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated Design Services Statement: Submit a statement signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

1.4 CONFLICTING REQUIREMENTS

A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements is specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, inform the Architect regarding the conflict and obtain clarification prior to proceeding with the Work. Refer conflicting

requirements that are different, but apparently equal, to Architect for clarification before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified is the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 ACTION SUBMITTALS

A. Mockup Shop Drawings:

1. Include plans, sections, elevations, and details, indicating materials and size of mockup construction.
2. Indicate manufacturer and model number of individual components.
3. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

1.6 INFORMATIONAL SUBMITTALS

A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.

B. Qualification Data: For Contractor's quality-control personnel.

C. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility submitted to authorities having jurisdiction before starting work:

D. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

E. Schedule of Tests and Inspections: Prepare in tabular form and include the following:

1. Specification Section number and title.
2. Entity responsible for performing tests and inspections.
3. Description of test and inspection.
4. Identification of applicable standards.
5. Identification of test and inspection methods.
6. Number of tests and inspections required.
7. Time schedule or time span for tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

F. Reports: Prepare and submit certified written reports and documents as specified.

G. Permits, Licenses, and Certificates: For Owner's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

1.7 CONTRACTOR'S QUALITY-CONTROL PLAN

A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice to Proceed, and not less than five days prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities and to coordinate Owner's quality-assurance and quality-control activities. Coordinate with Contractor's Construction Schedule.

B. Quality-Control Personnel Qualifications: Engage qualified personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.

1. Project quality-control manager may also serve as Project superintendent.

C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.

D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:

1. Contractor-performed tests and inspections, including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections. Distinguish source quality-control tests and inspections from field quality-control tests and inspections.
2. Special inspections required by authorities having jurisdiction and indicated on the Statement of Special Inspections.
3. Owner-performed tests and inspections indicated in the Contract Documents

E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring the Work into compliance with standards of workmanship established by Contract requirements and approved mockups.

F. Monitoring and Documentation: Maintain testing and inspection reports, including log of approved and rejected results. Include Work Architect has indicated as nonconforming or

defective. Indicate corrective actions taken to bring nonconforming Work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.8 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, telephone number, and email address of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample-taking and testing and inspection.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, telephone number, and email address of technical representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement of whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, telephone number, and email address of factory-authorized service representative making report.
2. Statement that equipment complies with requirements.

3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
4. Statement of whether conditions, products, and installation will affect warranty.
5. Other required items indicated in individual Specification Sections.

1.9 QUALITY ASSURANCE

A. Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that is similar in material, design, and extent to those indicated for this Project.

F. Specialists: Certain Specification Sections require that specific construction activities be performed by entities who are recognized experts in those operations. Specialists will satisfy qualification requirements indicated and engage in the activities indicated.

1. Requirements of authorities having jurisdiction supersede requirements for specialists.

G. Testing and Inspecting Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspection indicated, as documented in accordance with ASTM E329, and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect, demonstrate, repair, and perform service on installations of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:

1. Contractor's Responsibilities:

   a. Provide test specimens representative of proposed products and construction.
   b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
   c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.

2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, with copy to Contractor. Interpret tests and inspections, and state in each report whether tested and inspected Work complies with or deviates from the Contract Documents.

1.10 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
2. Costs for retesting and reinspecting construction that replaces or is necessitated by Work that failed to comply with the Contract Documents will be charged to Contractor

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.

1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
2. Engage a qualified testing agency to perform quality-control services.

   a. Contractor will not employ same entity engaged by Owner, unless agreed to in writing by Owner.

3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspection will be performed.
4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
5. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

D. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the locations from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections, and state in each report whether tested and inspected Work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform duties of Contractor.

E. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."

F. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

G. Contractor's Associated Requirements and Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.

3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspection equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Coordinate and submit concurrently with Contractor's Construction Schedule. Update and submit with each Application for Payment.

1. Schedule Contents: Include tests, inspections, and quality-control services, including Contractor- and Owner-retained services, commissioning activities, and other Project-required services paid for by other entities.
2. Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.11 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Owner will engage a qualified special inspector to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, as indicated in the Statement of Special Inspections attached to this Section, and as follows:

1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures, and reviewing the completeness and adequacy of those procedures to perform the Work.
2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
5. Interpreting tests and inspections, and stating in each report whether tested and inspected Work complies with or deviates from the Contract Documents.
6. Retesting and reinspecting corrected Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's and authorities' having jurisdiction reference during normal working hours.

1. Submit log at Project closeout as part of Project Record Documents.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspection, sample-taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

LFUCG
Fire Training Academy
Phase 1 Site Development Project
Lexington, Kentucky

Bid #1-2026 January 2026

SECTION 014001 – SPECIAL INSPECTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for Special Inspection as defined in Chapter 17 of the Kentucky Building Code.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

C. Perform Special Inspection as specified. Special Inspector personnel shall be in addition to the quality control inspections and inspectors required elsewhere in other Specifications.

D. The Owner will contract with an inspection company to provide Special Inspections including: soils construction, concrete construction, and steel construction.

E. Special Inspection is required on the following elements and structures:

1. Pre-Fabricated Bridge - Steel
2. Bridge Abutments – Cast Concrete
3. Driveways and Parking Hardscape – Soils Proofrolling ad Bearing

1.3 SUBMITTALS

A. Overall:

1. Prepare and submit certifications:

a. Contractor's Statement of Responsibility: Submit before the start of construction, acknowledging the following:

1) Awareness of the special requirements contained in the statement of special inspections.
2) Acknowledgement that control will be exercised by the contractor to ensure conformance with the construction documents.

3) Description of the procedures within the contractor's organization to exercise such control.
4) The method by and frequency of which reports are distributed to the persons in the contractor's organization exercising the control.
5) Identification and qualifications of the persons in the contractor's organization exercising such control and their positions within the organization.

b. Special Inspector's Qualifications: Special Inspection Agency shall submit before the start of construction.
c. Special Inspector's Final Certification: Special Inspection Agency shall submit after completion of inspections.

B. Fabricators:

1. Prepare and submit inspection reports:

a. Inspection of Fabricator's Quality Control Procedures

2. Prepare and submit certifications:

a. Quality Control Certification
b. Fabrication Quality Control Procedures
c. Fabricators Certificate of Compliance: stating that the work was performed in accordance with the approved construction documents (submitted at the completion of such work).

C. Soils Construction:

1. Prepare and submit test reports:

a. Soil bearing capacity at foundations, driveways, and parking areas.
b. Prepare and submit inspection reports:
1) Inspection of Placement of Controlled Fill: Prior to each placement of footing concrete.
2) Proof Rolling Reports

D. Concrete Construction:

1. Prepare and submit test reports:

a. Compressive strength, slump, and air content. Concrete shall be tested once per day that concrete is placed plus once for every 100 yards of concrete placed thereafter for each structure.

2. Prepare and submit inspection reports:

a. Inspection of forms, installation of reinforcement and delivery tickets prior to each placement of concrete.

3. Prepare and submit certifications:

a. Cement
b. Aggregate
c. Admixtures
d. Reinforcement

E. Steel Construction:

1. Prepare and submit inspection reports:

a. Inspection of marking and connection details for all members and connections – verify all steel members are installed in the correct locations and are connected in accordance with the construction documents and approved erection drawings.
b. Inspection of bolt pretensioning for each fully-pretensioned bolted connection.
c. Visual inspection of all non-pretensioned bolted connection.
d. Visual inspection of all field welds.

2. Prepare and submit certifications:

a. Certified Mill Test Reports (MTRs) for steel, bolts, nuts, washers and weld filler metal (for field welds).

1.4 QUALIFICATIONS

A. Use a qualified Special Inspector to perform Special Inspections required by this Section.

B. Special Inspector's qualifications shall include information which provides evidence of the knowledge and experience necessary to qualify a person as a Special Inspector for the category of work being certified.

C. The Special Inspector is a person employed by the Owner.

D. Special Inspectors perform their duties independent from the construction quality control staff employed by the Contractor.

E. More than one Special Inspector may be required to provide the varied knowledge and experience necessary to adequately inspect all of the categories of work requiring Special Inspection.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 DUTIES AND RESPONSIBILITIES OF THE SPECIAL INSPECTOR

A. The Special Inspector shall observe the Work and perform tests to ensure conformance with the design drawings and specifications, and the applicable workmanship provisions of the Kentucky Building Code:

1. Reviewed shop drawings may be used only as an aid to inspection.

a. The Special Inspector shall observe activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
b. The Special Inspector shall submit timely inspection reports; weekly at a maximum.

B. The Special Inspector shall obtain from the contractor all certifications required to be submitted as part of the special inspection requirements (e.g. Contractor's Statement of Responsibility, Fabricators' Quality Control Plans, Material Certifications, etc.) and submit them along with the field inspections and tests that the Special Inspector performs. Special Inspection submittals by the Special Inspector include ALL items included above, not just the ones that the Special Inspector prepares.

C. The Special Inspector shall cooperate with the Contractor and provide timely service, keep records of all inspections, and furnish them in a timely manner to the Engineer/Architect, and Contractor as construction progresses.

D. Discrepancies shall be brought to the immediate attention of the Contractor for correction. If discrepancies are not corrected, the discrepancies shall be brought to the attention of the Engineer/Architect prior to the completion of that phase of work.

E. Inspection Reports shall include the following:

1. Name, address, and telephone number of Special Inspector performing the inspection and making the report.
2. Qualifications and Certifications of the Special Inspector performing the inspection and making the report.
3. Dates and locations of samples and tests or inspections, date of report.
4. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
5. Description of the Work, identification of products, Specification Section, tests, and inspection methods.
6. Complete test or inspection data.

7. Test and inspection results and an interpretation of test results.
8. Statement on condition of substrates and their acceptability for installation of the the next phase of work – according to the Construction Documents.
9. Statement that products being installed at site comply with requirements.
10. Comments and professional opinion on whether tested, inspected, or installed Work complies with the Contract Document requirements.
11. Statement whether conditions, products, and installation may affect warranty of any products installed, according to the Construction Documents.
12. Other required inspections and/or tests indicated in individual Specification Sections.

F. Special Inspector's Final Certificates shall state that all items requiring Special Inspection and Testing were fulfilled and are in conformance with the approved design and shop drawings, specifications, approved change orders, and the applicable provisions of the Kentucky Building Code.

1. Items that were not in conformance and any unresolved discrepancies shall be itemized in the report.

   a. Final report shall be bound, divided by construction type, and in chronological order.
   b. Final Report shall be prepared by, sealed, and signed by the Special Inspector.

3.2 DUTIES AND RESPONSIBILITIES OF THE CONTRACTOR

A. Notify the Special Inspector with adequate advance notice when construction is ready to be inspected.

B. Provide Special Inspector access to plans, specifications, shop drawings, and change orders at the jobsite.

C. Submit required certifications (e.g. Contractor's Statement of Responsibility, Fabricators' Quality Control Plans, Material Certifications, etc.) to Special Inspector.

D. Provide Special Inspector access to work, including equipment with operator when necessary. Access to equipment includes, but is not limited to, man lifts, excavation equipment, etc.

E. Provide samples of materials to be tested in required quantities.

F. Provide storage space for Structural Testing/Inspection Agency's exclusive use, such as for storing and curing concrete testing samples. If required by the Special Inspector, Contractor shall provide cure box with electricity, water, and blankets for curing concrete specimens.

G. Provide labor to assist the Structural Testing/Inspection Agency in performing tests/inspections.

H. Retain at the jobsite all Special Inspection records submitted by the Special Inspector and provide these records for review by the Engineer/Architect and Building Inspector upon request.

I. Maintain a discrepancy log on site. Log shall list each discrepancy documented by the Special Inspector, state the date of discovery and Special Inspector's report number. Provide room for the Special Inspector to sign and date when said discrepancy is corrected. No work containing discrepancy shall be covered prior to having reinspection and approval by the Special Inspector.

J. Cooperate with the Special Inspector, Engineer/Architect, and Building Inspector in resolving any Special Inspection related coordination or quality problems.

K. Resolve non-conforming work before additional work is done that would make it difficult to resolve non-conforming work.

L. Costs of additional retesting that are required due to non-conforming work may be charged to the Contractor.

M. Neither the observation of the Engineer/Architect in the administration of the contract, nor tests/inspections by the Testing/Inspection Agency, nor approvals by persons other than the Engineer/Architect shall relieve the Contractor from his obligation to perform the work in accordance with the Contract Documents.

END OF SECTION 014001

SECTION 014200 - REFERENCES

PART 1 - GENERAL

1.1 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.

C. "Directed": A command or instruction by Architect. Other terms, including "requested," "authorized," "selected," "required," and "permitted," have the same meaning as "directed."

D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms, including "shown," "noted," "scheduled," and "specified," have the same meaning as "indicated."

E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.

H. "Provide": Furnish and install, complete and ready for the intended use.

I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.2 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.

1. For standards referenced by applicable building codes, comply with dates of standards as listed in building codes.

C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.3 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States."

B. Industry Organizations, List: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the entities in the following list. The information in this list is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. AABC - Associated Air Balance Council; www.aabc.com.
2. AAMA - American Architectural Manufacturers Association; (see FGIA).
3. AAPFCO - Association of American Plant Food Control Officials; www.aapfco.org.
4. AASHTO - American Association of State Highway and Transportation Officials; www.transportation.org.
5. AATCC - American Association of Textile Chemists and Colorists; www.aatcc.org.
6. ABMA - American Bearing Manufacturers Association; www.americanbearings.org.
7. ABMA - American Boiler Manufacturers Association; www.abma.com.
8. ACI - American Concrete Institute; www.concrete.org.
9. ACP - American Clean Power; (Formerly: American Wind Energy Association); www.cleanpower.org.
10. ACPA - American Concrete Pipe Association; www.concretepipe.org.
11. AEIC - Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.
12. AF&PA - American Forest & Paper Association; www.afandpa.org.
13. AGA - American Gas Association; www.aga.org.
14. AHAM - Association of Home Appliance Manufacturers; www.aham.org.
15. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
16. AI - Asphalt Institute; www.asphaltinstitute.org.
17. AIA - American Institute of Architects (The); www.aia.org.
18. AISC - American Institute of Steel Construction; www.aisc.org.
19. AISI - American Iron and Steel Institute; www.steel.org.

20. AITC - American Institute of Timber Construction; (see PLIB).
21. AMCA - Air Movement and Control Association International, Inc.; www.amca.org.
22. AMPP - Association for Materials Protection and Performance; www.ampp.org.
23. ANSI - American National Standards Institute; www.ansi.org.
24. AOSA/SCST - Association of Official Seed Analysts (The)/Society of Commercial Seed Technologists (The); www.analyzeseeds.com.
25. APA - APA - The Engineered Wood Association; www.apawood.org.
26. APA - Architectural Precast Association; www.archprecast.org.
27. API - American Petroleum Institute; www.api.org.
28. ARMA - Asphalt Roofing Manufacturers Association; www.asphaltroofing.org.
29. ASA - Acoustical Society of America; www.acousticalsociety.org.
30. ASCE - American Society of Civil Engineers; www.asce.org.
31. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (see ASCE).
32. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.
33. ASME - ASME International; American Society of Mechanical Engineers (The); www.asme.org.
34. ASSE - ASSE International; (American Society of Sanitary Engineering); www.asse-plumbing.org.
35. ASSP - American Society of Safety Professionals; www.assp.org.
36. ASTM - ASTM International; www.astm.org.
37. ATIS - Alliance for Telecommunications Industry Solutions; www.atis.org.
38. AVIXA - Audiovisual and Integrated Experience Association; www.avixa.org.
39. AWI - Architectural Woodwork Institute; www.awinet.org.
40. AWMAC - Architectural Woodwork Manufacturers Association of Canada; www.awmac.com.
41. AWPA - American Wood Protection Association; www.awpa.com.
42. AWS - American Welding Society; www.aws.org.
43. AWWA - American Water Works Association; www.awwa.org.
44. BHMA - Builders Hardware Manufacturers Association; www.buildershardware.com.
45. BIA - Brick Industry Association (The); www.gobrick.com.
46. BICSI - BICSI, Inc.; www.bicsi.org.
47. BIFMA - Business and Institutional Furniture Manufacturer's Association; www.bifma.org.
48. BISSC - Baking Industry Sanitation Standards Committee; www.bissc.org.
49. BWF - Badminton World Federation; www.bwfbadminton.com.
50. CARB - California Air Resources Board; www.arb.ca.gov.
51. CDA - Copper Development Association Inc.; www.copper.org.
52. CE - Conformite Europeenne (European Commission); www.ec.europa.eu/growth/single-market/ce-marking.
53. CEA - Canadian Electricity Association; www.electricity.ca.
54. CFFA - Chemical Fabrics and Film Association, Inc.; www.chemicalfabricsandfilm.com.
55. CFSEI - Cold-Formed Steel Engineers Institute; www.cfsei.org.
56. CGA - Compressed Gas Association; www.cganet.com.
57. CIMA - Cellulose Insulation Manufacturers Association; www.cellulose.org.
58. CISCA - Ceilings & Interior Systems Construction Association; www.cisca.org.

59. CISPI - Cast Iron Soil Pipe Institute; www.cispi.org.
60. CLFMI - Chain Link Fence Manufacturers Institute; www.chainlinkinfo.org.
61. CPA - Composite Panel Association; www.compositepanel.org.
62. CRI - Carpet and Rug Institute (The); www.carpet-rug.org.
63. CRRC - Cool Roof Rating Council; www.coolroofs.org.
64. CRSI - Concrete Reinforcing Steel Institute; www.crsi.org.
65. CSA - CSA Group; www.csagroup.org.
66. CSI - Cast Stone Institute; www.caststone.org.
67. CSI - Construction Specifications Institute (The); www.csiresources.org.
68. CSSB - Cedar Shake & Shingle Bureau; www.cedarbureau.org.
69. CTA - Consumer Technology Association; www.cta.tech.
70. CTI - Cooling Technology Institute; www.coolingtechnology.org.
71. DASMA - Door and Access Systems Manufacturers Association; www.dasma.com.
72. DHA - Decorative Hardwoods Association; www.decorativehardwoods.org.
73. DHI - Door and Hardware Institute; www.dhi.org.
74. ECIA - Electronic Components Industry Association; www.ecianow.org.
75. EIMA - EIFS Industry Members Association; www.eima.com.
76. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.
77. EOS/ESD - EOS/ESD Association, Inc.; Electrostatic Discharge Association; www.esda.org.
78. ESTA - Entertainment Services and Technology Association; www.esta.org.
79. EVO - Efficiency Valuation Organization; www.evo-world.org.
80. FCI - Fluid Controls Institute; www.fluidcontrolsinstitute.org.
81. FGIA - Fenestration and Glazing Industry Alliance; https://fgiaonline.org.
82. FIBA - Federation Internationale de Basketball; (The International Basketball Federation); www.fiba.com.
83. FIVB - Federation Internationale de Volleyball; (The International Volleyball Federation); www.fivb.org.
84. FM Approvals - FM Approvals LLC; www.fmapprovals.com.
85. FM Global - FM Global; www.fmglobal.com.
86. FRSA - Florida Roofing and Sheet Metal Contractors Association, Inc.; www.floridaroof.com.
87. FSA - Fluid Sealing Association; www.fluidsealing.com.
88. FSC - Forest Stewardship Council U.S.; www.fscus.org.
89. GA - Gypsum Association; www.gypsum.org.
90. GS - Green Seal; www.greenseal.org.
91. HI - Hydraulic Institute; www.pumps.org.
92. HMMA - Hollow Metal Manufacturers Association; (see NAAMM).
93. IAPSC - International Association of Professional Security Consultants; www.iapsc.org.
94. IAS - International Accreditation Service; www.iasonline.org.
95. ICC - International Code Council; www.iccsafe.org.
96. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.
97. ICPA - International Cast Polymer Association (The); www.theicpa.com.
98. ICRI - International Concrete Repair Institute, Inc.; www.icri.org.
99. IEC - International Electrotechnical Commission; www.iec.ch.
100. IEEE SA - IEEE Standards Association; https://standards.ieee.org.
101. IES - Illuminating Engineering Society; www.ies.org.

102. IEST - Institute of Environmental Sciences and Technology; www.iest.org.
103. IGMA - Insulating Glass Manufacturers Alliance; (see FGIA).
104. IGSHPA - International Ground Source Heat Pump Association; www.igshpa.org.
105. ILI - Indiana Limestone Institute of America, Inc.; www.iliai.com.
106. Intertek - Intertek Group; www.intertek.com.
107. ISA - International Society of Automation (The); www.isa.org.
108. ISFA - International Surface Fabricators Association; www.isfanow.org.
109. ISO - International Organization for Standardization; www.iso.org.
110. ITU - International Telecommunication Union; www.itu.int.
111. KCMA - Kitchen Cabinet Manufacturers Association; www.kcma.org.
112. LPI - Lightning Protection Institute; www.lightning.org.
113. MBMA - Metal Building Manufacturers Association; www.mbma.com.
114. MCA - Metal Construction Association; www.metalconstruction.org.
115. MFMA - Maple Flooring Manufacturers Association, Inc.; www.maplefloor.org.
116. MFMA - Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.
117. MHI - Material Handling Industry; www.mhi.org.
118. MMPA - Moulding & Millwork Producers Association; www.wmmpa.com.
119. MPI - Master Painters Institute; www.paintinfo.com.
120. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry, Inc.; www.msshq.org.
121. NAAMM - National Association of Architectural Metal Manufacturers; www.naamm.org.
122. NACE - NACE International; (National Association of Corrosion Engineers International); (see AMPP).
123. NADCA - National Air Duct Cleaners Association; www.nadca.com.
124. NAIMA - North American Insulation Manufacturers Association; www.insulationinstitute.org.
125. NALP - National Association of Landscape Professionals; www.landscapeprofessionals.org.
126. NBGQA - National Building Granite Quarries Association, Inc.; www.nbgqa.com.
127. NBI - New Buildings Institute; www.newbuildings.org.
128. NCAA - National Collegiate Athletic Association (The); www.ncaa.org.
129. NCMA - National Concrete Masonry Association; www.ncma.org.
130. NEBB - National Environmental Balancing Bureau; www.nebb.org.
131. NECA - National Electrical Contractors Association; www.necanet.org.
132. NeLMA - Northeastern Lumber Manufacturers Association; www.nelma.org.
133. NEMA - National Electrical Manufacturers Association; www.nema.org.
134. NETA - InterNational Electrical Testing Association; www.netaworld.org.
135. NFHS - National Federation of State High School Associations; www.nfhs.org.
136. NFPA - National Fire Protection Association; www.nfpa.org.
137. NFPA - NFPA International; (see NFPA).
138. NFRC - National Fenestration Rating Council; www.nfrc.org.
139. NGA - National Glass Association; www.glass.org.
140. NHLA - National Hardwood Lumber Association; www.nhla.com.
141. NLGA - National Lumber Grades Authority; www.nlga.org.
142. NOFMA - National Oak Flooring Manufacturers Association; (see NWFA).
143. NOMMA - National Ornamental & Miscellaneous Metals Association; www.nomma.org.

144. NRCA - National Roofing Contractors Association; www.nrca.net.
145. NRMCA - National Ready Mixed Concrete Association; www.nrmca.org.
146. NSF - NSF International; www.nsf.org.
147. NSI - Natural Stone Institute; www.naturalstoneinstitute.org.
148. NSPE - National Society of Professional Engineers; www.nspe.org.
149. NSSGA - National Stone, Sand & Gravel Association; www.nssga.org.
150. NTMA - National Terrazzo & Mosaic Association, Inc. (The); www.ntma.com.
151. NWFA - National Wood Flooring Association; www.nwfa.org.
152. NWRA - National Waste & Recycling Association; www.wasterecycling.org.
153. PCI - Precast/Prestressed Concrete Institute; www.pci.org.
154. PDI - Plumbing & Drainage Institute; www.pdionline.org.
155. PLASA - PLASA; www.plasa.org.
156. PLIB - Pacific Lumber Inspection Bureau; www.plib.org.
157. PVCPA - Uni-Bell PVC Pipe Association; www.uni-bell.org.
158. RCSC - Research Council on Structural Connections; www.boltcouncil.org.
159. RFCI - Resilient Floor Covering Institute; www.rfci.com.
160. RIS - Redwood Inspection Service; (see WWPA).
161. SAE - SAE International; www.sae.org.
162. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.
163. SDI - Steel Deck Institute; www.sdi.org.
164. SDI - Steel Door Institute; www.steeldoor.org.
165. SEFA - Scientific Equipment and Furniture Association (The); www.sefalabs.com.
166. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (see ASCE).
167. SIA - Security Industry Association; www.securityindustry.org.
168. SJI - Steel Joist Institute; www.steeljoist.org.
169. SMA - Screen Manufacturers Association; www.smainfo.org.
170. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
171. SMPTE - Society of Motion Picture and Television Engineers; www.smpte.org.
172. SPFA - Spray Polyurethane Foam Alliance; www.sprayfoam.org.
173. SPIB - Southern Pine Inspection Bureau; www.spib.org.
174. SPRI - Single Ply Roofing Industry; www.spri.org.
175. SRCC - Solar Rating & Certification Corporation; www.solar-rating.org.
176. SSINA - Specialty Steel Industry of North America; www.ssina.com.
177. SSPC - SSPC: The Society for Protective Coatings; (see AMPP).
178. STI/SPFA - Steel Tank Institute/Steel Plate Fabricators Association; www.steeltank.com.
179. SWI - Steel Window Institute; www.steelwindows.com.
180. SWPA - Submersible Wastewater Pump Association; www.swpa.org.
181. TCA - Tilt-Up Concrete Association; www.tilt-up.org.
182. TCNA - Tile Council of North America, Inc.; www.tcnatile.com.
183. TEMA - Tubular Exchanger Manufacturers Association, Inc.; www.kbcdco.tema.org.
184. TIA - Telecommunications Industry Association (The); www.tiaonline.org.
185. TMS - The Masonry Society; www.masonrysociety.org.
186. TPI - Truss Plate Institute; www.tpinst.org.
187. TPI - Turfgrass Producers International; www.turfgrasssod.org.
188. TRI - Tile Roofing Industry Alliance; www.tileroofing.org.

189. ULSE - UL Standards & Engagement Inc.; www.ulse.org.
190. UL - UL Solutions Inc.; www.ul.com.
191. USAV - USA Volleyball; www.usavolleyball.org.
192. USGBC - U.S. Green Building Council; www.usgbc.org.
193. USITT - United States Institute for Theatre Technology, Inc.; www.usitt.org.
194. WA - Wallcoverings Association; www.wallcoverings.org.
195. WCLIB - West Coast Lumber Inspection Bureau; (see PLIB).
196. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.
197. WDMA - Window & Door Manufacturers Association; www.wdma.com.
198. WI - Woodwork Institute; www.woodworkinstitute.com.
199. WSRCA - Western States Roofing Contractors Association; www.wsrca.com.
200. WWPA - Western Wood Products Association; www.wwpa.org.

C. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the entities in the following list. This information is believed to be accurate as of the date of the Contract Documents.

1. DIN - Deutsches Institut fur Normung e.V.; www.din.de.
2. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.
3. ICC - International Code Council; www.iccsafe.org.
4. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.

D. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the entities in the following list. Information is subject to change and is up to date as of the date of the Contract Documents.

1. CPSC - U.S. Consumer Product Safety Commission; www.cpsc.gov.
2. DOC - U.S. Department of Commerce; www.commerce.gov.
3. DOD - U.S. Department of Defense; www.defense.gov.
4. DOE - U.S. Department of Energy; www.energy.gov.
5. DOJ - U.S. Department of Justice; www.ojp.usdoj.gov
6. DOS - U.S. Department of State; www.state.gov.
7. EPA - United States Environmental Protection Agency; www.epa.gov.
8. FAA - Federal Aviation Administration; www.faa.gov.
9. GPO - U.S. Government Publishing Office; www.gpo.gov.
10. GSA - U.S. General Services Administration; www.gsa.gov.
11. HUD - U.S. Department of Housing and Urban Development; www.hud.gov.
12. LBNL - Lawrence Berkeley National Laboratory; Energy Technologies Area; www.lbl.gov/.
13. NIST - National Institute of Standards and Technology; www.nist.gov.
14. OSHA - Occupational Safety & Health Administration; www.osha.gov.
15. TRB - Transportation Research Board; National Cooperative Highway Research Program; The National Academies; www.trb.org.
16. USACE - U.S. Army Corps of Engineers; www.usace.army.mil.
17. USDA - U.S. Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; www.ars.usda.gov.

18. USDA - U.S. Department of Agriculture; Rural Utilities Service; www.usda.gov.
19. USP - U.S. Pharmacopeial Convention; www.usp.org.
20. USPS - United States Postal Service; www.usps.com.

E. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the standards and regulations in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. CFR - Code of Federal Regulations; Available from U.S. Government Publishing Office; www.govinfo.gov.
2. DOD - U.S. Department of Defense; Military Specifications and Standards; Available from DLA Document Services; www.dsp.dla.mil/Specs-Standards/.
3. DSCC - Defense Supply Center Columbus; (see FS).
4. FED-STD - Federal Standard; (see FS).
5. FS - Federal Specification; Available from DLA Document Services; www.dsp.dla.mil/Specs-Standards/.
    a. Available from Defense Standardization Program; www.dsp.dla.mil.
    b. Available from U.S. General Services Administration; www.gsa.gov.
    c. Available from National Institute of Building Sciences/Whole Building Design Guide; www.wbdg.org.
6. MILSPEC - Military Specifications and Standards; (see DOD).
7. USAB - United States Access Board; www.access-board.gov.
8. USATBCB - U.S. Architectural & Transportation Barriers Compliance Board; (see USAB).

F. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. BEARHFTI; California Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation; (see BHGS).
2. BHGS; State of California Bureau of Household Goods and Services; (Formerly: California Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation); www.bhgs.dca.ca.gov.
3. CCR; California Code of Regulations; Office of Administrative Law; California Title 24 Energy Code; www.oal.ca.gov/publications/ccr/.
4. CDPH; California Department of Public Health; Indoor Air Quality Program; www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/Main-Page.aspx.
5. CPUC; California Public Utilities Commission; www.cpuc.ca.gov.
6. SCAQMD; South Coast Air Quality Management District; www.aqmd.gov.
7. TFS; Texas A&M Forest Service; Sustainable Forestry and Economic Development; https://tfsweb.tamu.edu/.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 014200

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Requirements:

1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.

1.2 USE CHARGES

A. Installation, removal, and use charges for temporary facilities to be included in the Contract Sum unless otherwise indicated. Allow other entities engaged in the Project to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Architect, testing agencies, and authorities having jurisdiction.

B. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use with metering. Provide connections and extensions of services and metering as required for construction operations.

C. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use with metering. Provide connections and extensions of services and metering as required for construction operations.

1.3 INFORMATIONAL SUBMITTALS

A. Site Utilization Plan: Show temporary facilities, temporary utility lines and connections, staging areas, construction site entrances, vehicle circulation, and parking areas for construction personnel.

B. Implementation and Termination Schedule: Within 15 days of date established for commencement of the Work, submit schedule indicating implementation and termination dates of each temporary utility.

C. Project Identification and Temporary Signs: Show fabrication and installation details, including plans, elevations, details, layouts, typestyles, graphic elements, and message content.

D. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

1.4 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

C. Accessible Temporary Egress: Comply with applicable provisions in the DOJ's "2010 ADA Standards for Accessible Design" and ICC A117.1.

1.5 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Chain-Link Fencing: Minimum 2-inch, 0.148-inch- thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- (42-mm-) OD top rails

B. Fencing Windscreen Privacy Screen: Polyester fabric scrim with grommets for attachment to chain-link fence, sized to height of fence, in color selected by Architect from manufacturer's standard colors.

C. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil minimum thickness, with flame-spread rating of 15 or less in accordance with ASTM E84 and passing NFPA 701 Test Method 2.

2.2 TEMPORARY FACILITIES

A. Field Offices:

1. Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.

B. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.

1. Store combustible materials apart from building.

2.3 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART 3 - EXECUTION

3.1 TEMPORARY FACILITIES, GENERAL

A. Conservation: Coordinate construction and use of temporary facilities with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

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

3.2 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

1. Locate facilities to limit site disturbance as specified in Section 011000 "Summary."

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

C. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.

3.3 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.

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

B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.

1. Connect temporary sewers to municipal system as directed by authorities having jurisdiction.

C. Water Service:

1. Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.

D. Sanitary Facilities: Provide temporary toilets, wash facilities, safety shower and eyewash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

E. Temporary Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

F. Electric Power Service:

1. Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.

G. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

H. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install land-based telephone line(s) for each field office.

1. Provide additional telephone lines for the following:
2. At each telephone, post a list of important telephone numbers.

a. Police and fire departments.
b. Ambulance service.
c. Contractor's home office.
d. Contractor's emergency after-hours telephone number.
e. Architect's office.
f. Engineers' offices.

g. Owner's office.
h. Principal subcontractors' field and home offices.

I. Electronic Communication Service: Provide secure WiFi wireless connection to internet with provisions for access by Architect and Owner.

3.4 SUPPORT FACILITIES INSTALLATION

A. Comply with the following:

1. Provide construction for temporary field offices, shops, and sheds located within construction area or within 30 feet of building lines that is noncombustible in accordance with ASTM E136. Comply with NFPA 241.
2. Utilize designated area within existing building for temporary field offices.
3. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Temporary Use of Planned Permanent Roads and Paved Areas: Locate temporary roads and paved areas in same location as permanent roads and paved areas. Construct and maintain temporary roads and paved areas adequate for construction operations. Extend temporary roads and paved areas, within construction limits indicated, as necessary for construction operations.

1. Coordinate elevations of temporary roads and paved areas with permanent roads and paved areas.
2. Prepare subgrade and install subbase and base for temporary roads and paved areas in accordance with Section 312000 "Earth Moving."
3. Recondition base after temporary use, including removing contaminated material, regrading, proofrolling, compacting, and testing.
4. Delay installation of final course of permanent hot-mix asphalt pavement until immediately before Substantial Completion. Repair hot-mix asphalt base-course pavement before installation of final course in accordance with Section 321216 "Asphalt Paving."

C. Traffic Controls: Comply with requirements of authorities having jurisdiction.

1. Protect existing site improvements to remain, including curbs, pavement, and utilities.
2. Maintain access for fire-fighting equipment and access to fire hydrants.

D. Parking: Use designated areas of Owner's existing parking areas for construction personnel.

E. Storage and Staging: Use designated areas of Project site for storage and staging needs.

F. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
2. Remove snow and ice as required to minimize accumulations.

G. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.

1. Identification Signs: Provide Project identification signs as indicated on Drawings.
2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.

   a. Provide temporary, directional signs for construction personnel and visitors.

3. Maintain and touch up signs, so they are legible at all times.

H. Waste Disposal Facilities:

1. Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
2. Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 017300 "Execution."

3. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

3.5 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

1. Where access to adjacent properties is required in order to affect protection of existing facilities, obtain written permission from adjacent property owner to access property for that purpose.

B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

1. Comply with work restrictions specified in Section 011000 "Summary."

C. Temporary Erosion and Sedimentation Control:

1. Comply with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent and requirements specified in Section 311000 "Site Clearing."

2. Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, in accordance with erosion- and sedimentation-control Drawings requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.

    a. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant-protection zones.
    b. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
    c. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
    d. Remove erosion and sedimentation controls, and restore and stabilize areas disturbed during removal.

D. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

E. Tree and Plant Protection:

1. Comply with requirements specified in Section 015639 "Temporary Tree and Plant Protection."
2. Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

F. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals, so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using materials approved by authorities having jurisdiction.

G. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people from easily entering site except by entrance gates.

1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to Owner.

H. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each workday.

I. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

J. Temporary Egress: Provide temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction. Provide signage directing occupants to temporary egress.

K. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.

3.6 OPERATION, TERMINATION, AND REMOVAL

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

B. Maintenance: Maintain facilities in good operating condition until removal.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

END OF SECTION 015000

SECTION 015639 - TEMPORARY TREE AND PLANT PROTECTION

PART 1 - GENERAL

1.1 SUMMARY

A. The Work of this Section Includes: General protection and pruning of existing trees and plants that are affected by execution of the Work, whether temporary or permanent construction.

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for temporary controls, utilities, support facilities, temporary site fencing, and, if applicable, temporary erosion and sedimentation controls if not specified in Section 311000 "Site Clearing".
2. Section 311000 "Site Clearing" for removing existing trees and shrubs and for temporary erosion- and sedimentation-control measures if not specified in Section 015000 "Temporary Facilities and Controls".

1.2 DEFINITIONS

A. Caliper: Diameter of a trunk measured by a diameter tape or the average of the smallest and largest diameters at a height 6 inches above the ground for trees up to and including 4-inch size at this height and as measured at a height of 12 inches above the ground for trees larger than 4-inch size.

B. Caliper (DBH): Diameter breast height; diameter of a trunk as measured by a diameter tape or the average of the smallest and largest diameters at a height 54 inches above the ground line for trees with caliper of 8 inches or greater as measured at a height of 12 inches above the ground.

C. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction and indicated on Drawings.

D. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction and indicated on Drawings or defined by a circle concentric with each tree with a radius 1.5 times the diameter of the drip line unless otherwise indicated.

E. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to temporary tree and plant protection including, but not limited to, the following:

    a. Tree-service firm's personnel and equipment needed to make progress and avoid delays.
    b. Arborist's responsibilities.
    c. Quality-control program.
    d. Coordination of Work and equipment movement with the locations of protection zones.
    e. Trenching by hand or with air spade within protection zones.
    f. Field quality control.

1.4 ACTION SUBMITTALS

A. Product Data:

1. General protection and pruning of existing trees and plants that are affected by execution of the Work, whether temporary or permanent construction

B. Shop Drawings:

1. Include plans, elevations, and sections showing trees and plants to be protected, locations of protection-zone fencing and signage, and the relationship between equipment-movement routes and material storage locations with protection zones.
2. Detail fabrication and assembly of protection-zone fencing and signage.
3. Indicate extent of utility boring and trenching by hand or with air spade within protection zones.

C. Samples: For each type of the following:

1. Organic Mulch: 1-quart volume of organic mulch; in sealed plastic bags labeled with composition of materials by percentage of weight and source of mulch.
2. Protection-Zone Fencing: Assembled Samples of manufacturer's standard size made from full-size components.
3. Protection-Zone Signage: Full-size Samples of each size and text, ready for installation.

D. Tree-Pruning Schedule: Written schedule detailing scope and extent of pruning of trees to remain that interfere with or are affected by construction.

1. Species and size of tree.
2. Location on site plan. Include unique identifier for each.
3. Reason for pruning.
4. Description of pruning to be performed.
5. Description of maintenance following pruning.

E. Maintenance Recommendations: From arborist, for care and protection of trees affected by construction during and after completing the Work.

F. Mitigation Requirements: As required by jurisdiction or as developed by arborist, for mitigation of damage to trees and other plantings.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Statements: For arborist and tree service firm.

B. Certification: From arborist, certifying that trees indicated to remain have been protected during construction in accordance with recognized standards and that trees were promptly and properly treated and repaired when damaged.

C. Maintenance Recommendations: From arborist, for care and protection of trees affected by construction during and after completing the Work.

D. Existing Conditions: Documentation of existing trees and plantings indicated to remain, which establishes preconstruction conditions that might be misconstrued as damage caused by construction activities.

1. Use sufficiently detailed photographs or video recordings.
2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.

E. Quality-control program.

1.6 QUALITY ASSURANCE

A. Tree-Service Firm Qualifications: An experienced tree-service firm that has successfully completed temporary tree- and plant-protection work similar to that required for this Project and that will assign an experienced, qualified arborist to Project site during execution of the Work.

B. Quality-Control Program: Prepare a written program to systematically demonstrate the ability of personnel to properly follow procedures and handle materials and equipment during the Work without damaging trees and plantings. Include dimensioned diagrams for placement of protection-zone fencing and signage, the arborist's and tree-service firm's responsibilities, instructions given to workers on the use and care of protection zones, and enforcement of requirements for protection zones.

1.7 FIELD CONDITIONS

A. The following practices are prohibited within protection zones:

1. Storage of construction materials, debris, or excavated material.
2. Moving or parking vehicles or equipment.
3. Foot traffic.
4. Erection of sheds or structures.
5. Impoundment of water.
6. Excavation or other digging unless otherwise indicated.
7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

B. Do not direct vehicle or equipment exhaust toward protection zones.

C. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones and organic mulch.

D. Take precautions to protect plants from airborne contaminants, such as paint or fireproofing overspray.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Backfill Soil: Planting soil of suitable moisture content and granular texture for placing around tree; free of stones, roots, plants, sod, clods, clay lumps, pockets of coarse sand, concrete slurry, concrete layers or chunks, cement, plaster, building debris, and other extraneous materials harmful to plant growth.

1. Planting Soil: Planting soil as specified in Section 329113 "Soil Preparation"

B. Organic Mulch: Free from deleterious materials and suitable as a top dressing for trees and shrubs, consisting of one of the following:

1. Type: Shredded hardwood.
2. Size Range: 3 inche maximum, 1/2 inch minimum.
3. Color: Natural.

C. Protection-Zone Fencing: Fencing fixed in position and meeting one of the following requirements: Previously used materials may be used when approved by Architect.

1. Plastic Protection-Zone Fencing: Plastic construction fencing constructed of high-density extruded and stretched polyethylene fabric with 2-inch maximum opening in pattern and weighing a minimum of 0.4 lb/ft.; remaining flexible from minus 60 to plus 200 deg F; inert to most chemicals and acids; minimum tensile yield strength of 2000 psi and ultimate tensile strength of 2680 psi; secured with plastic bands or galvanized-steel or stainless steel wire ties; and supported by tubular or T-shape galvanized-steel posts spaced not more than 96 inches apart.

a. Height: 48 inches.
b. Color: High-visibility orange, nonfading.

2. Gates: Single-swing access gates matching material and appearance of fencing, to allow for maintenance activities within protection zones; leaf width 36 inches.

D. Protection-Zone Signage: Shop-fabricated, rigid plastic or metal sheet with attachment holes prepunched and reinforced; legibly printed with nonfading lettering and as follows:

1. Size and Text: As indicated on Drawings.
2. Lettering: 3-inch high minimum, white characters on red background.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Erosion and Sedimentation Control: Examine the site to verify that temporary erosion- and sedimentation-control measures are in place. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.

B. Prepare written report, endorsed by arborist, listing conditions detrimental to tree and plant protection.

3.2 PREPARATION

A. Locate and clearly identify trees, shrubs, and other vegetation to remain. Tie a 1-inch blue vinyl tape around each tree trunk at 54 inches above the ground.

B. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.

3.3 TREE PROTECTION

A. Tree-Protection Zones: Mulch areas inside tree-protection zones and other areas indicated. Do not exceed indicated thickness of mulch.

1. Apply 2-inch uniform thickness of organic mulch unless otherwise indicated. Do not place mulch within 6 inches of tree trunks.
2. Install temporary root-protection matting over mulch to the extent indicated.

3.4 PROTECTION ZONES

A. Protection-Zone Fencing: Install protection-zone fencing along edges of protection zones before materials or equipment are brought on the site and construction operations begin in a manner that will prevent people from easily entering protected areas except by entrance gates. Construct fencing so as not to obstruct safe passage or visibility at vehicle intersections where fencing is located adjacent to pedestrian walkways or in close proximity to street intersections, drives, or other vehicular circulation.

1. Plastic Fencing: Stretch fabric taut and secure to posts without bows or sags.

B. Protection-Zone Signage: Install protection-zone signage in visibly prominent locations in a manner approved by Architect. Install one sign spaced approximately every 20 ft. on protection-zone fencing, but no fewer than four signs with each facing a different direction.

C. Maintain protection zones free of weeds and trash.

D. Maintain hydration of plants to assure plant survival.

E. Maintain protection-zone fencing and signage in good condition as acceptable to Architect and remove when construction operations are complete and equipment has been removed from the site.

1. Do not remove protection-zone fencing, even temporarily, to allow deliveries or equipment access through the protection zone.
2. Temporary access is permitted subject to preapproval in writing by arborist if a root buffer effective against soil compaction is constructed as directed by arborist. Maintain root buffer so long as access is permitted.

3.5 EXCAVATION

A. General: Excavate at edge of protection zones and for trenches indicated within protection zones in accordance with requirements in Section 312000 "Earth Moving" unless otherwise indicated.

B. Trenching within Protection Zones: Where utility trenches are required within protection zones, excavate under or around tree roots by hand or with air spade, or tunnel under the roots by drilling, auger boring, or pipe jacking. Do not cut main lateral tree roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots as required for root pruning. If excavating by hand, use narrow-tine spading forks to comb soil and expose roots.

3.6 ROOT PRUNING

A. Prune tree roots that are affected by temporary and permanent construction. Prune roots as follows:

1. Cut roots manually by digging a trench and cutting exposed roots with sharp pruning instruments; do not break, tear, chop, or slant the cuts. Do not use a backhoe or other equipment that rips, tears, or pulls roots.
2. Cut Ends: Do not paint cut root ends.
3. Temporarily support and protect roots from damage until they are permanently covered with soil.
4. Cover exposed roots with burlap and water regularly.
5. Backfill as soon as possible in accordance with requirements in Section 312000 "Earth Moving."

B. Root Pruning at Edge of Protection Zone: Prune tree roots 12 inches outside of the protection zone by cleanly cutting all roots to the depth of the required excavation.

C. Root Pruning within Protection Zone: Clear and excavate by hand or with air spade to the depth of the required excavation to minimize damage to tree root systems. If excavating by hand, use narrow-tine spading forks to comb soil to expose roots. Cleanly cut roots as close to excavation as possible.

3.7 CROWN PRUNING

A. Prune branches that are affected by temporary and permanent construction. Prune branches as directed by arborist.

1. Prune to remove only broken, dying, or dead branches unless otherwise indicated. Do not prune for shape unless otherwise indicated.
2. Do not remove or reduce living branches to compensate for root loss caused by damaging or cutting root system.
3. Pruning Standards: Prune trees in accordance with ANSI A300 (Part 1).

    a. Type of Pruning: Cleaning raising reducing and thinning where indicated.
    b. Specialty Pruning: Structural restoration vista espalier pollarding palm and utility where indicated.

B. Unless otherwise directed by arborist and acceptable to Architect, do not cut tree leaders.

C. Cut branches with sharp pruning instruments; do not break or chop.

D. Do not paint or apply sealants to wounds.

E. Provide subsequent maintenance pruning during Contract period as recommended by arborist.

F. Chip removed branches and spread over areas identified by Architect.

3.8 REGRADING

A. Lowering Grade: Where new finish grade is indicated below existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.

B. Lowering Grade within Protection Zone: Where new finish grade is indicated below existing grade around trees, slope grade away from trees as recommended by arborist unless otherwise indicated.

1. Root Pruning: Prune tree roots exposed by lowering the grade. Do not cut main lateral roots or taproots; cut only smaller roots. Cut roots as required for root pruning.

C. Raising Grade: Where new finish grade is indicated above existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.

D. Minor Fill within Protection Zone: Where existing grade is 2 inches or less below elevation of finish grade, fill with backfill soil. Place backfill soil in a single uncompacted layer and hand grade to required finish elevations.

3.9 FIELD QUALITY CONTROL

A. Inspections: Engage a qualified arborist to direct plant-protection measures in the vicinity of trees, shrubs, and other vegetation indicated to remain and to prepare inspection reports.

3.10 REPAIR AND REPLACEMENT

A. General: Repair or replace trees, shrubs, and other vegetation indicated to remain or to be relocated that are damaged by construction operations, in a manner approved by Architect.

1. Submit details of proposed pruning and repairs.
2. Perform repairs of damaged trunks, branches, and roots within 24 hours in accordance with arborist's written instructions.
3. Replace trees and other plants that cannot be repaired and restored to full-growth status, as determined by Architect.

B. Trees: Remove and replace trees indicated to remain that are more than 25 percent dead or in an unhealthy condition or are damaged during construction operations that Architect determines are incapable of restoring to normal growth pattern.

1. Small Trees: Provide new trees of same size and species as those being replaced for each tree that measures 4 inches or smaller in caliper size.
2. Large Trees: Provide one new tree(s) of 4-inch caliper size for each tree being replaced that measures more than 6 inches in caliper size.

a. Species: As selected by Architect.

3. Plant and maintain new trees as specified in Section 329300 "Plants."

C. Soil Aeration: Where directed by Architect, aerate surface soil compacted during construction. Aerate 10 ft beyond drip line and no closer than 36 inches to tree trunk. Drill 2-inch diameter holes a minimum of 12 inches deep at o.c. Backfill holes with an equal mix of augered soil and sand.

END OF SECTION 015639

SECTION 015723 - TEMPORARY STORM WATER POLLUTION CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Temporary stormwater pollution controls.

1.3 STORMWATER POLLUTION PREVENTION PLAN

A. The Stormwater Pollution Prevention Plan (SWPPP) is part of the Contract Documents and is bound into this Project Manual.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, and earthwork subcontractor.
2. Review requirements of the SWPPP, including permitting process, worker training, and inspection and maintenance requirements.

1.5 INFORMATIONAL SUBMITTALS

A. Stormwater Pollution Prevention Plan (SWPP): Within 15 days of date established for commencement of the Work, submit completed SWPPP.

B. EPA authorization under the EPA's "2017 Construction General Permit (CGP)."

C. Stormwater Pollution Prevention (SWPP) Training Log: For each individual performing Work under the SWPPP.

D. Inspection reports.

1.6 QUALITY ASSURANCE

A. Stormwater Pollution Prevention Plan (SWPPP) Coordinator: Experienced individual or firm with a record of successful water pollution control management coordination of projects with similar requirements.

1. SWPPP Coordinator shall complete and finalize the SWPPP form.
2. SWPPP Coordinator shall be responsible for inspections and maintaining of all requirements of the SWPPP.

B. Installers: Trained as indicated in the SWPPP.

PART 2 - PRODUCTS

2.1 TEMPORARY STORMWATER POLLUTION CONTROLS

A. Provide temporary stormwater pollution controls as required by the SWPPP.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with all best management practices, general requirements, performance requirements, reporting requirements, and all other requirements included in the SWPPP.

B. Locate stormwater pollution controls in accordance with the SWPPP.

C. Conduct construction as required to comply with the SWPPP and that minimize possible contamination or pollution or other undesirable effects.

1. Inspect, repair, and maintain SWPPP controls during construction.

a. Inspect all SWPPP controls not less than every seven days, and after each occurrence of a storm event, as outlined in the SWPPP.

D. Remove SWPPP controls at completion of construction and restore and stabilize areas disturbed during construction.

END OF SECTION 015723

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. The Work of This Section Includes: Administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

B. Related Requirements:

1. Section 011000 "Summary" for Contractor requirements related to Owner-furnished products.
2. Section 012500 "Substitution Procedures" for requests for substitutions.
3. Section 014200 "References" for applicable industry standards for products specified.
4. Section 017700 "Closeout Procedures" for submitting warranties.

1.2 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility. Salvaged items or items reused from other projects are not considered new products. Items that are manufactured or fabricated to include recycled content materials are considered new products unless otherwise indicated.
3. Comparable Product: Product by named manufacturer that is demonstrated and approved through the comparable product submittal process described in "Comparable Products" Article, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. Published attributes and characteristics of basis-of-design product establish salient characteristics of products.

1. Evaluating Comparable Products: In addition to the basis-of-design product description, product attributes and characteristics may be listed to establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special features and requirements for purposes of evaluating comparable products of additional manufacturers named in the specification. Manufacturer's published attributes and characteristics of basis-of-design product also establish salient characteristics of products for purposes of evaluating comparable products.

C. Subject to Compliance with Requirements: Where the phrase "Subject to compliance with requirements" introduces a product selection procedure in an individual Specification Section, provide products qualified under the specified product procedure. In the event that a named product or product by a named manufacturer does not meet the other requirements of the specifications, select another named product or product from another named manufacturer that does meet the requirements of the specifications; submit a comparable product request or substitution request, if applicable.

D. Comparable Product Request Submittal: An action submittal requesting consideration of a comparable product, including the following information:

1. Identification of basis-of-design product or fabrication or installation method to be replaced, including Specification Section number and title and Drawing numbers and titles.
2. Data indicating compliance with the requirements specified in "Comparable Products" Article.

E. Basis-of-Design Product Specification Submittal: An action submittal complying with requirements in Section 013300 "Submittal Procedures."

F. Substitution: Refer to Section 012500 "Substitution Procedures" for definition and limitations on substitutions.

1.3 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1. Resolution of Compatibility Disputes between Multiple Contractors:

a. Contractors are responsible for providing products and construction methods compatible with products and construction methods of other contractors.
b. If a dispute arises between the multiple contractors over concurrently selectable but incompatible products, Architect will determine which products will be used.

B. Identification of Products: Except for required labels and operating data, do not attach or imprint manufacturer or product names or trademarks on exposed surfaces of products or equipment that will be exposed to view in occupied spaces or on the exterior.

1. Labels: Locate required product labels and stamps on a concealed surface, or, where required for observation following installation, on a visually accessible surface that is inconspicuous.
2. Equipment Nameplates: Provide a permanent nameplate on each item of service- or power-operated equipment. Locate on a visually accessible but inconspicuous surface. Include information essential for operation, including the following:

    a. Name of product and manufacturer.
    b. Model and serial number.
    c. Capacity.
    d. Speed.
    e. Ratings.

3. See individual identification Sections in Divisions 21, 22, 23, and 26 for additional equipment identification requirements.

1.4 COORDINATION

A. Modify or adjust affected work as necessary to integrate work of approved comparable products and approved substitutions.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products, using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to determine compliance with the Contract Documents and that products are undamaged and properly protected.

C. Storage:

1. Provide a secure location and enclosure at Project site for storage of materials and equipment.
2. Store products to allow for inspection and measurement of quantity or counting of units.
3. Store materials in a manner that will not endanger Project structure.
4. Store products that are subject to damage by the elements under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation and with adequate protection from wind.
5. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.
8. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.6 PRODUCT WARRANTIES

A. Warranties specified in other Sections are to be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Written standard warranty form furnished by individual manufacturer for a particular product and issued in the name of Owner or endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner and issued in the name of Owner or endorsed by manufacturer to Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included in the Project Manual, prepare a written document, using indicated form properly executed.
3. See other Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Descriptive, performance, and reference standard requirements in Specifications establish salient characteristics of products.
6. Or Equal: For products specified by name and accompanied by the term "or equal," "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.

    a. Submit additional documentation required by Architect in order to establish equivalency of proposed products. Unless otherwise indicated, evaluation of "or equal" product status is by Architect, whose determination is final.

B. Product Selection Procedures:

1. Sole Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.

    a. Sole product may be indicated by the phrase "Subject to compliance with requirements, provide the following."

2. Sole Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.

    a. Sole manufacturer/source may be indicated by the phrase "Subject to compliance with requirements, provide products by the following."

3. Limited List of Products: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with

requirements. Comparable products or substitutions for Contractor's convenience will be considered unless otherwise indicated.

a. Limited list of products may be indicated by the phrase "Subject to compliance with requirements, provide one of the following."

4. Non-Limited List of Products: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed or an unnamed product that complies with requirements.

a. Non-limited list of products is indicated by the phrase "Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to, the following."
b. Provision of an unnamed product is not considered a substitution, if the product complies with requirements.

5. Limited List of Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered unless otherwise indicated.

a. Limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, provide products by one of the following."

6. Non-Limited List of Manufacturers: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed or a product by an unnamed manufacturer that complies with requirements.

a. Non-limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, available manufacturers whose products may be incorporated in the Work include, but are not limited to, the following."
b. Provision of products of an unnamed manufacturer is not considered a substitution, if the product complies with requirements.

7. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications may additionally indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

a. For approval of products by unnamed manufacturers, comply with requirements in Section 012500 "Substitution Procedures" for substitutions for convenience.

C. Visual Matching Specification: Where Specifications require the phrase "match Architect's sample," provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.

1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 012500 "Substitution Procedures" for proposal of product.

D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or a similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

A. Conditions for Consideration of Comparable Products: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with the following requirements:

1. Evidence that proposed product does not require revisions to the Contract Documents, is consistent with the Contract Documents, will produce the indicated results, and is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those of the named basis-of-design product. Significant product qualities include attributes such as type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other specific features and requirements.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects, with project names and addresses and names and addresses of architects and owners, if requested.
5. Samples, if requested.

B. Architect's Action on Comparable Products Submittal: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for a comparable product. Architect will notify Contractor of approval or rejection of proposed comparable product within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

1. Architect's Approval of Submittal: Marked with approval notation from Architect's action stamp. See Section 013300 "Submittal Procedures."
2. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

C. Submittal Requirements, Two-Step Process: Approval by Architect of Contractor's request for use of comparable product is not intended to satisfy other submittal requirements. Comply with specified submittal requirements.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

SECTION 017300 - EXECUTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work, including, but not limited to, the following:

1. Construction layout.
2. Field engineering.
3. Installation.
4. Cutting and patching.
5. Coordination of Owner's portion of the Work.
6. Progress cleaning.
7. Starting and adjusting.
8. Protection of installed construction.
9. Correction of the Work.

B. Related Requirements:

1. Section 011000 "Summary" for coordination of Owner-furnished products, and limits on use of Project site.
2. Section 013300 "Submittal Procedures" for submitting surveys.
3. Section 017700 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, replacing defective work, and final cleaning.

1.2 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of subsequent work.

B. Patching: Fitting and repair work required to restore construction to original conditions after installation of subsequent work.

1.3 PREINSTALLATION MEETINGS

A. Cutting and Patching Conference: Conduct conference at Project site.

1. Prior to commencing work requiring cutting and patching, review extent of cutting and patching anticipated and examine procedures for ensuring satisfactory result from cutting

and patching work. Inform Architect of scheduled meeting. Require representatives of each entity directly concerned with cutting and patching to attend, including the following:

a. Contractor's superintendent.
b. Trade supervisor responsible for cutting operations.
c. Trade supervisor(s) responsible for patching of each type of substrate.
d. Mechanical, electrical, and utilities subcontractors' supervisors, to the extent each trade is affected by cutting and patching operations.

2. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

B. Layout Conference: Conduct conference at Project site.

1. Prior to establishing layout of new and existing perimeter and structural column grid(s), review building location requirements. Review benchmark, control point, and layout and dimension requirements. Inform Architect of scheduled meeting. Require representatives of each entity directly concerned with Project layout to attend, including the following:

a. Contractor's superintendent.
b. Contractor's personnel responsible for performing Project surveying and layout.
c. Professional surveyor responsible for performing site survey serving as basis for Project design.

2. Review meanings and intent of dimensions, notes, terms, graphic symbols, and other layout information indicated on the Drawings.
3. Review requirements for including layouts on Shop Drawings and other submittals.
4. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For land surveyor.

B. Certified Surveys: Submit two copies signed by land surveyor.

C. Certificates: Submit certificate signed by land surveyor, certifying that location and elevation of improvements comply with requirements.

D. Cutting and Patching Plan: Submit plan describing procedures at least 10 days prior to the time cutting and patching will be performed. Include the following information:

1. Extent: Describe reason for and extent of each occurrence of cutting and patching.

2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
3. Products: List products to be used for patching and firms or entities that will perform patching work.
4. Dates: Indicate when cutting and patching will be performed.
5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted.

    a. Include description of provisions for temporary services and systems during interruption of permanent services and systems.

E. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

1.5 CLOSEOUT SUBMITTALS

A. Final Property Survey: Submit 2 copies showing the Work performed and record survey data.

1.6 QUALITY ASSURANCE

A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

B. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.

1. Structural Elements: When cutting and patching structural elements, or when encountering the need for cutting and patching of elements whose structural function is not known, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include the following:

    a. Primary operational systems and equipment.
    b. Fire separation assemblies.
    c. Plumbing piping systems.
    d. Mechanical systems piping and ducts.

e. Control systems.
f. Communication systems.
g. Electrical wiring systems.

3. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of specified products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials. Use materials that are not considered hazardous.

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

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, gas service piping, and water-service piping; underground electrical services; and other utilities.

2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

1. Description of the Work, including Specification Section number and paragraph, and Drawing sheet number and detail, where applicable.
2. List of detrimental conditions, including substrates.
3. List of unacceptable installation tolerances.
4. Recommended corrections.

D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect in accordance with requirements in Section 013100 "Project Management and Coordination."

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks and existing conditions. If discrepancies are discovered, notify Architect promptly.

B. Engage a land surveyor experienced in laying out the Work, using the following accepted surveying practices:

1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
2. Establish limits on use of Project site.
3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
4. Inform installers of lines and levels to which they must comply.
5. Check the location, level and plumb, of every major element as the Work progresses.
6. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and layout site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.

D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

3.4 FIELD ENGINEERING

A. Identification: Owner will identify existing benchmarks, control points, and property corners.

B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.
2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

C. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

D. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.

E. Final Property Survey: Engage a land surveyor to prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by land surveyor, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.

1. Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.
2. Recording: At Substantial Completion, have the final property survey recorded by or with authorities having jurisdiction as the official "property survey."

3.5 INSTALLATION

A. Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb, and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
4. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces, unless otherwise indicated on Drawings.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure satisfactory results as judged by Architect. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations, so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy of type expected for Project.

E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on-site and placement in permanent locations.

F. Tools and Equipment: Select tools or equipment that minimize production of excessive noise levels.

G. Templates: Obtain and distribute to the parties involved templates for Work specified to be factory prepared and field installed. Check Shop Drawings of other portions of the Work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

H. Joints: Make joints of uniform width. Where joint locations in exposed Work are not indicated, arrange joints for the best visual effect, as judged by Architect. Fit exposed connections together to form hairline joints.

3.6 CUTTING AND PATCHING

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

C. Temporary Support: Provide temporary support of Work to be cut.

D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

E. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

F. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
6. Proceed with patching after construction operations requiring cutting are complete.

G. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as practicable, as judged by Architect. Provide materials and comply with installation requirements specified in other Sections, where applicable.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

    a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    b. Restore damaged pipe covering to its original condition.

H. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.7 PROGRESS CLEANING

A. Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, in accordance with regulations.

    a. Use containers intended for holding waste materials of type to be stored.

4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where Work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces in accordance with written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 015000 "Temporary Facilities and Controls." And Section 017419 "Construction Waste Management and Disposal."

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.8 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements."

3.9 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.

C. Comply with manufacturer's written instructions for temperature and relative humidity.

3.10 CORRECTION OF THE WORK

A. Repair or remove and replace damaged, defective, or nonconforming Work. Restore damaged substrates and finishes.

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Repair Work previously completed and subsequently damaged during construction period. Repair to like-new condition.

C. Restore permanent facilities used during construction to their specified condition.

D. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

E. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

F. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 017300

LFUCG
Fire Training Academy
Phase 1 Site Development Project
Lexington, Kentucky

Bid #1-2026 January 2026

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for the following:

1. Salvaging nonhazardous demolition and construction waste.
2. Recycling nonhazardous demolition and construction waste.
3. Disposing of nonhazardous demolition and construction waste.

B. Related Requirements:

1. Section 011200 "Multiple Contract Summary" for coordination of responsibilities for waste management.
2. Section 042000 "Unit Masonry" for disposal requirements for masonry waste.
3. Section 044313.13 "Anchored Stone Masonry Veneer" for disposal requirements for excess stone and stone waste.
4. Section 044313.16 "Adhered Stone Masonry Veneer" for disposal requirements for excess stone and stone waste.
5. Section 311000 "Site Clearing" for disposition of waste resulting from site clearing and removal of above- and below-grade improvements.

1.3 DEFINITIONS

A. Construction Waste: Building, structure, and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building, structure, and site improvement materials resulting from demolition operations.

C. Disposal: Removal of demolition or construction waste and subsequent salvage, sale, recycling, or deposit in landfill, incinerator acceptable to authorities having jurisdiction, or designated spoil areas on Owner's property.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.4 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition and construction waste becomes property of Contractor.

B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.5 ACTION SUBMITTALS

A. Waste Management Plan: Submit plan within 30 days of date established for the Notice to Proceed.

1.6 INFORMATIONAL SUBMITTALS

A. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit report. Use Form CWM-7 for construction waste and Form CWM-8 for demolition waste. Include the following information:

1. Material category.
2. Generation point of waste.
3. Total quantity of waste in tons.
4. Quantity of waste salvaged, both estimated and actual in tons.
5. Quantity of waste recycled, both estimated and actual in tons.
6. Total quantity of waste recovered (salvaged plus recycled) in tons.
7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.

B. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.

C. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.

D. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.

E. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

F. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

G. Qualification Data: For waste management coordinator and refrigerant recovery technician.

H. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

I. Refrigerant Recovery: Comply with requirements in Section 024116 "Structure Demolition" Section 024119 "Selective Demolition" for refrigerant recovery submittals.

1.7 QUALITY ASSURANCE

A. Waste Management Coordinator Qualifications: Experienced firm, or individual employed and assigned by General Contractor, with a record of successful waste management coordination of projects with similar requirements. Superintendent may serve as Waste Management Coordinator.

B. Regulatory Requirements: Comply with transportation and disposal regulations of authorities having jurisdiction.

C. Waste Management Conference(s): Conduct conference(s) at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:

1. Review and discuss waste management plan including responsibilities of each contractor and waste management coordinator.
2. Review requirements for documenting quantities of each type of waste and its disposition.
3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
5. Review waste management requirements for each trade.

1.8 WASTE MANAGEMENT PLAN

A. General: Develop a waste management plan according to requirements in this Section. Plan shall consist of waste identification, waste reduction work plan, and cost/revenue analysis. Distinguish between demolition and construction waste. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.

B. Waste Identification: Indicate anticipated types and quantities of demolition site-clearing and construction waste generated by the Work. Use Form CWM-1 for construction waste and Form CWM-2 for demolition waste. Include estimated quantities and assumptions for estimates.

C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Use Form CWM-3 for construction waste and Form CWM-4 for demolition waste. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.

1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work in compliance with Section 024116 "Structure Demolition." Section 024119 "Selective Demolition."
2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
3. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
5. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
6. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location where materials separation will be performed.

D. Cost/Revenue Analysis: Indicate total cost of waste disposal as if there were no waste management plan and net additional cost or net savings resulting from implementing waste management plan. Use Form CWM-5 for construction waste and Form CWM-6 for demolition waste. Include the following:

1. Total quantity of waste.
2. Estimated cost of disposal (cost per unit). Include transportation and tipping fees and cost of collection containers and handling for each type of waste.
3. Total cost of disposal (with no waste management).
4. Revenue from salvaged materials.
5. Revenue from recycled materials.
6. Savings in transportation and tipping fees by donating materials.
7. Savings in transportation and tipping fees that are avoided.
8. Handling and transportation costs. Include cost of collection containers for each type of waste.

9. Net additional cost or net savings from waste management plan.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General: Achieve end-of-Project rates for salvage/recycling of 50 percent by weight of total nonhazardous solid waste generated by the Work. Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials including the following:

1. Demolition Waste:

   a. Asphalt paving.
   b. Concrete.
   c. Concrete reinforcing steel.
   d. Brick.
   e. Concrete masonry units.
   f. Structural and miscellaneous steel.
   g. Rough hardware.
   h. Plumbing fixtures.
   i. Piping.
   j. Electrical conduit.
   k. Copper wiring.
   l. Electrical devices.
   m. Switchgear and panelboards.
   n. Transformers.

2. Construction Waste:

   a. Masonry and CMU.
   b. Lumber.
   c. Wood sheet materials.
   d. Wood trim.
   e. Metals.
   f. Piping.
   g. Electrical conduit.
   h. Packaging: Regardless of salvage/recycle goal indicated in "General" Paragraph above, salvage or recycle 100 percent of the following uncontaminated packaging materials:

      1) Paper.
      2) Cardboard.
      3) Boxes.

4) Plastic sheet and film.
5) Polystyrene packaging.
6) Wood crates.
7) Wood pallets.
8) Plastic pails.

i. Construction Office Waste: Regardless of salvage/recycle goal indicated in "General" Paragraph above, salvage or recycle 100 percent of the following construction office waste materials:

1) Paper.
2) Aluminum cans.
3) Glass containers.

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.

1. Comply with operation, termination, and removal requirements in Section 015000 "Temporary Facilities and Controls."

B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan

C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.

1. Distribute waste management plan to everyone concerned within three days of submittal return.
2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.

D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged and recycled.
2. Comply with Section 015000 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 SALVAGING DEMOLITION WASTE

A. Comply with requirements in Section 024116 "Structure Demolition" and Section 024119 "Selective Demolition" for salvaging demolition waste.

B. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
3. Store items in a secure area until installation.
4. Protect items from damage during transport and storage.
5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.

C. Salvaged Items for Sale and Donation: Not permitted on Project site.

D. Salvaged Items for Owner's Use: Salvage items for Owner's use and handle as follows:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

E. Lighting Fixtures: Separate lamps by type and protect from breakage.

F. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

3.3 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

A. General: Recycle paper and beverage containers used by on-site workers.

B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to Contractor.

C. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.

D. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan.

1. Provide appropriately marked containers or bins for controlling recyclable waste until removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.

    a. Inspect containers and bins for contamination and remove contaminated materials if found.

2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
4. Store components off the ground and protect from the weather.
5. Remove recyclable waste from Owner's property and transport to recycling receiver or processor as often as required to prevent overfilling bins.

3.4 RECYCLING DEMOLITION WASTE

A. Asphalt Paving: Grind asphalt to maximum 1-1/2-inch size.

1. Crush asphaltic concrete paving and screen to comply with requirements in Section 312000 "Earth Moving" for use as general fill.

B. Asphalt Paving: Break up and transport paving to asphalt-recycling facility.

C. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.

1. Pulverize concrete to maximum 1-1/2-inch size.
2. Crush concrete and screen to comply with requirements in Section 312000 "Earth Moving" for use as satisfactory soil for fill or subbase.

D. Masonry: Remove metal reinforcement, anchors, and ties from masonry and sort with other metals.

1. Pulverize masonry to maximum 1-1/2-inch size.

E. Metals: Separate metals by type.

F. Piping: Reduce piping to straight lengths and store by material and size. Separate supports, hangers, valves, sprinklers, and other components by material and size.

G. Conduit: Reduce conduit to straight lengths and store by material and size.

H. Lamps: Separate lamps by type and store according to requirements in 40 CFR 273.

3.5 RECYCLING CONSTRUCTION WASTE

A. Packaging:

1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
2. Polystyrene Packaging: Separate and bag materials.
3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Wood Materials:

1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.

C. Paint: Seal containers and store by type.

3.6 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged or recycled, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

END OF SECTION 017419

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for Contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.
2. Final Completion procedures.
3. List of incomplete items.
4. Submittal of Project warranties.
5. Final cleaning.

B. Related Requirements:

1. Section 012900 "Payment Procedures" for requirements for Applications for Payment for Substantial Completion and Final Completion.
2. Section 013233 "Photographic Documentation" for submitting Final Completion construction photographic documentation.
3. Section 017823 "Operation and Maintenance Data" for additional operation and maintenance manual requirements.
4. Section 017839 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
5. Section 017900 "Demonstration and Training" for requirements to train Owner's maintenance personnel to adjust, operate, and maintain products, equipment, and systems.

1.2 DEFINITIONS

A. List of Incomplete Items: Contractor-prepared list of items to be completed or corrected, prepared for the Architect's use prior to Architect's inspection, to determine if the Work is substantially complete.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of cleaning agent.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.4 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items required by other Sections.

1.6 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's "punch list"), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction, permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
2. Submit closeout submittals specified in other Division 01 Sections, including Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number.
5. Submit testing, adjusting, and balancing records.
6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Owner of pending insurance changeover requirements.
2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
3. Complete startup and testing of systems and equipment.

4. Perform preventive maintenance on equipment used prior to Substantial Completion.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 017900 "Demonstration and Training."
6. Advise Owner of changeover in utility services.
7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
9. Complete final cleaning requirements.
10. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.7 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining Final Completion, complete the following:

1. Submit a final Application for Payment in accordance with Section 012900 "Payment Procedures."
2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list will state that each item has been completed or otherwise resolved for acceptance.
3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report.
5. Submit Final Completion photographic documentation.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection

or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.8 LIST OF INCOMPLETE ITEMS

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, starting with exterior areas first and [proceeding from lowest floor to highest floor, listed by room or space number.
2. Organize items applying to each space by major element, including categories for ceilings, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:

    a. Project name.
    b. Date.
    c. Name of Architect.
    d. Name of Contractor.
    e. Page number.

4. Submit list of incomplete items in the following format:

    a. PDF Electronic File: Architect, will return annotated file.
    b. Web-Based Project Software Upload: Utilize software feature for creating and updating list of incomplete items (punch list).

1.9 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.

D. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

1. Submit on digital media acceptable to Architect.

E. Warranties in Paper Form:

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

F. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

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

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:

a. Clean Project site of rubbish, waste material, litter, and other foreign substances.
b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
c. Rake grounds that are not planted, mulched, or paved to a smooth, even-textured surface.
d. Remove tools, construction equipment, machinery, and surplus material from Project site.
e. Remove snow and ice to provide safe access to building.
f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
g. Remove debris and surface dust from limited-access spaces.
h. Clean flooring, removing debris, dirt, and staining; clean in accordance with manufacturer's instructions.
i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean in accordance with manufacturer's instructions if visible soil or stains remain.
j. Remove labels that are not permanent.
k. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
l. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
m. Clean luminaires, lamps, globes, and reflectors to function with full efficiency.
n. Clean strainers.
o. Leave Project clean and ready for occupancy.

C. Pest Control: Comply with pest control requirements in Section 015000 "Temporary Facilities and Controls." Prepare written report.

D. Construction Waste Disposal: Comply with waste-disposal requirements in Section 015000 "Temporary Facilities and Controls." and Section 017419 "Construction Waste Management and Disposal."

3.2 CORRECTION OF THE WORK

A. Complete repair and restoration operations required by "Correction of the Work" Article in Section 017300 "Execution" before requesting inspection for determination of Substantial Completion.

END OF SECTION 017700

LFUCG
Fire Training Academy
Phase 1 Site Development Project
Lexington, Kentucky

Bid #1-2026

January 2026

SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

1. Operation and maintenance documentation directory manuals.
2. Emergency manuals.
3. Systems and equipment operation manuals.
4. Systems and equipment maintenance manuals.
5. Product maintenance manuals.

B. Related Requirements:

1. Section 013300 "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.

1.2 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.3 CLOSEOUT SUBMITTALS

A. Submit operation and maintenance manuals indicated. Provide content for each manual as specified in individual Specification Sections, and as reviewed and approved at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.

1. Architect will comment on whether content of operation and maintenance submittals is acceptable.
2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.

B. Format: Submit operation and maintenance manuals in the following format:

1. Submit on digital media acceptable to Architect. Enable reviewer comments on draft submittals.

C. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing demonstration and training. Architect will comment on whether general scope and content of manual are acceptable.

D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect will return copy with comments.

1. Correct or revise each manual to comply with Architect's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's comments and prior to commencing demonstration and training.

E. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

1.4 FORMAT OF OPERATION AND MAINTENANCE MANUALS

A. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.

1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
2. File Names and Bookmarks: Bookmark individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

B. Manuals, Paper Copy: Submit manuals in the form of hard-copy, bound and labeled volumes.

1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents, and indicate Specification Section number on bottom of spine. Indicate volume number for multiple-volume sets.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment. Enclose title pages and directories in clear plastic sleeves.
4. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.

    a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
    b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

1.5 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

A. Organization of Manuals: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual to contain the following materials, in the order listed:

1. Title page.
2. Table of contents.
3. Manual contents.

B. Title Page: Include the following information:

1. Subject matter included in manual.
2. Name and address of Project.
3. Name and address of Owner.
4. Date of submittal.
5. Name and contact information for Contractor.
6. Name and contact information for Construction Manager.
7. Name and contact information for Architect.
8. Name and contact information for Commissioning Authority.
9. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
10. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation in accordance with ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

1.6 EMERGENCY MANUALS

A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

B. Content: Organize manual into a separate section for each of the following:

1. Type of emergency.
2. Emergency instructions.
3. Emergency procedures.

C. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:

1. Fire.
2. Flood.
3. Gas leak.
4. Water leak.
5. Power failure.
6. Water outage.
7. System, subsystem, or equipment failure.
8. Chemical release or spill.

D. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

E. Emergency Procedures: Include the following, as applicable:

1. Instructions on stopping.
2. Shutdown instructions for each type of emergency.

3. Operating instructions for conditions outside normal operating limits.
4. Required sequences for electric or electronic systems.
5. Special operating instructions and procedures.

1.7 SYSTEMS AND EQUIPMENT OPERATION MANUALS

A. Systems and Equipment Operation Manual: Assemble a complete set of data indicating operation of each system, subsystem, and piece of equipment not part of a system. Include information required for daily operation and management, operating standards, and routine and special operating procedures.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

B. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:

1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
2. Performance and design criteria if Contractor has delegated design responsibility.
3. Operating standards.
4. Operating procedures.
5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

C. Descriptions: Include the following:

1. Product name and model number. Use designations for products indicated on Contract Documents.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

D. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

E. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

F. Piped Systems: Diagram piping as installed, and identify color coding where required for identification.

1.8 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

A. Systems and Equipment Maintenance Manuals: Assemble a complete set of data indicating maintenance of each system, subsystem, and piece of equipment not part of a system. Include manufacturers' maintenance documentation, preventive maintenance procedures and frequency, repair procedures, wiring and systems diagrams, lists of spare parts, and warranty information.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

B. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranties and bonds as described below.

C. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

D. Manufacturers' Maintenance Documentation: Include the following information for each component part or piece of equipment:

1. Standard maintenance instructions and bulletins; include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format,

identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

a. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.

E. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

1. Test and inspection instructions.
2. Troubleshooting guide.
3. Precautions against improper maintenance.
4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
5. Aligning, adjusting, and checking instructions.
6. Demonstration and training video recording, if available.

F. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

G. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

I. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.

1. Do not use original project record documents as part of maintenance manuals.

1.9 PRODUCT MAINTENANCE MANUALS

A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

B. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

C. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

D. Product Information: Include the following, as applicable:

1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

E. Maintenance Procedures: Include manufacturer's written recommendations and the following:

1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

F. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

G. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 017823

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for Project Record Documents, including the following:

1. Record Drawings.
2. Record specifications.
3. Record Product Data.
4. Miscellaneous record submittals.

B. Related Requirements:

1. Section 017300 "Execution" for final property survey.
2. Section 017700 "Closeout Procedures" for general closeout procedures.
3. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.3 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:

1. Number of Copies: Submit one set(s) of marked-up record prints.

B. Record Specifications: Submit annotated PDF electronic files and one paper copies of Project's Specifications, including addenda and Contract modifications.

C. Record Product Data: Submit annotated PDF electronic files and directories and one paper copies of each submittal.

1.4 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

1. Preparation: Mark record prints to show the actual installation, where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

    a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    b. Accurately record information in an acceptable drawing technique.
    c. Record data as soon as possible after obtaining it.
    d. Record and check the markup before enclosing concealed installations.
    e. Cross-reference record prints to corresponding photographic documentation.

2. Content: Types of items requiring marking include, but are not limited to, the following:

    a. Dimensional changes to Drawings.
    b. Revisions to details shown on Drawings.
    c. Depths of foundations.
    d. Locations and depths of underground utilities.
    e. Revisions to routing of piping and conduits.
    f. Revisions to electrical circuitry.
    g. Actual equipment locations.
    h. Changes made by Change Order or Construction Change Directive.
    i. Changes made following Architect's written orders.
    j. Details not on the original Contract Drawings.
    k. Field records for variable and concealed conditions.
    l. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
4. Mark record prints with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:

1. Format: Same digital data software program, version, and operating system as for the original Contract Drawings.
2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
3. Refer instances of uncertainty to Architect for resolution.

4. Architect will furnish Contractor with one set of digital data files of the Contract Drawings for use in recording information.

    a. See Section 013100 "Project Management and Coordination" for requirements related to use of Architect's digital data files.
    b. Architect will provide data file layer information. Record markups in separate layers.

C. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Format: Annotated PDF electronic file with comment function enabled.
3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
4. Identification: As follows:

    a. Project name.
    b. Date.
    c. Designation "PROJECT RECORD DRAWINGS."
    d. Name of Architect.
    e. Name of Contractor.

1.5 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation, where installation varies from that indicated in Specifications, addenda, and Contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
5. Note related Change Orders, Record Product Data, and Record Drawings where applicable.

B. Format: Submit record specifications as scanned PDF electronic file(s) of marked-up paper copy of Specifications.

1.6 RECORD PRODUCT DATA

A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and revisions to Project Record Documents as they occur; do not wait until end of Project.

B. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, Record Specifications, and Record Drawings where applicable.

C. Format: Submit Record Product Data as scanned PDF electronic file(s) of marked-up paper copy of Product Data.

1. Include Record Product Data directory organized by Specification Section number and title, electronically linked to each item of Record Product Data.

1.7 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

B. Format: Submit miscellaneous record submittals as scanned PDF electronic file(s) of marked-up miscellaneous record submittals.

1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

1.8 MAINTENANCE OF RECORD DOCUMENTS

A. Maintenance of Record Documents: Store Record Documents in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 017839

SECTION 017900 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:

1. Instruction in operation and maintenance of systems, subsystems, and equipment.
2. Demonstration and training video recordings.

1.2 INFORMATIONAL SUBMITTALS

A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.

1. Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.

B. Qualification Data: For instructor.

C. Attendance Record: For each training module, submit list of participants and length of instruction time.

1.3 CLOSEOUT SUBMITTALS

A. Demonstration and Training Video Recordings: Submit two copies within seven days of end of each training module.

1. Identification: On each copy, provide an applied label with the following information:

a. Name of Project.
b. Name and address of videographer.
c. Name of Architect.
d. Name of Construction Manager.
e. Name of Contractor.
f. Date of video recording.

2. Transcript:

a. Prepared in PDF electronic format. Include a cover sheet with same label information as the corresponding video recording and a table of contents with links to corresponding training components. Include name of Project and date of video recording on each page.

3. At completion of training, submit complete training manual(s) for Owner's use prepared in same paper and PDF file format required for operation and maintenance manuals specified in Section 017823 "Operation and Maintenance Data."

1.4 QUALITY ASSURANCE

A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.

B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 014000 "Quality Requirements," experienced in operation and maintenance procedures and training.

1.5 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data have been reviewed and approved by Architect.

1.6 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:

    a. System, subsystem, and equipment descriptions.
    b. Performance and design criteria if Contractor is delegated design responsibility.
    c. Operating standards.
    d. Regulatory requirements.
    e. Equipment function.
    f. Operating characteristics.
    g. Limiting conditions.
    h. Performance curves.

2. Documentation: Review the following items in detail:

    a. Emergency manuals.
    b. Systems and equipment operation manuals.
    c. Systems and equipment maintenance manuals.
    d. Product maintenance manuals.
    e. Project Record Documents.
    f. Identification systems.
    g. Warranties and bonds.
    h. Maintenance service agreements and similar continuing commitments.

3. Emergencies: Include the following, as applicable:

    a. Instructions on meaning of warnings, trouble indications, and error messages.
    b. Instructions on stopping.
    c. Shutdown instructions for each type of emergency.
    d. Operating instructions for conditions outside of normal operating limits.
    e. Sequences for electric or electronic systems.
    f. Special operating instructions and procedures.

4. Operations: Include the following, as applicable:

    a. Startup procedures.
    b. Equipment or system break-in procedures.
    c. Routine and normal operating instructions.
    d. Regulation and control procedures.
    e. Control sequences.
    f. Safety procedures.
    g. Instructions on stopping.
    h. Normal shutdown instructions.
    i. Operating procedures for emergencies.
    j. Operating procedures for system, subsystem, or equipment failure.
    k. Seasonal and weekend operating instructions.
    l. Required sequences for electric or electronic systems.
    m. Special operating instructions and procedures.

5. Adjustments: Include the following:

   a. Alignments.
   b. Checking adjustments.
   c. Noise and vibration adjustments.
   d. Economy and efficiency adjustments.

6. Troubleshooting: Include the following:

   a. Diagnostic instructions.
   b. Test and inspection procedures.

7. Maintenance: Include the following:

   a. Inspection procedures.
   b. Types of cleaning agents to be used and methods of cleaning.
   c. List of cleaning agents and methods of cleaning detrimental to product.
   d. Procedures for routine cleaning.
   e. Procedures for preventive maintenance.
   f. Procedures for routine maintenance.
   g. Instruction on use of special tools.

8. Repairs: Include the following:

   a. Diagnosis instructions.
   b. Repair instructions.
   c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
   d. Instructions for identifying parts and components.
   e. Review of spare parts needed for operation and maintenance.

1.7 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 017823 "Operation and Maintenance Data."

B. Set up instructional equipment at instruction location.

1.8 INSTRUCTION

A. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

B. Scheduling: Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

1. Schedule training with Owner, through Architect, with at least seven days' advance notice.

C. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.

D. Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 017900

SECTION 033100 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Provide all labor, materials, equipment and services required to furnish and install all cast-in-place concrete as indicated on the Drawings and specified herein.

B. All concrete construction shall conform to all applicable requirements of ACI 301 (latest), Specifications for Structural Concrete for Buildings, except as modified by the supplemental requirements specified herein.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Earthwork:

C. Precision Grouting:

1.3 ACTION SUBMITTALS

The Contractor shall submit the following data for Engineer's review in accordance with Section "Submittals".

A. Product Data: For each type of product indicated.

B. Design Mixtures: For each concrete mixture. Submit alternative design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

1. Indicate amounts of mixing water to be withheld for later addition at the Project site.
2. Submit copies of laboratory test reports showing that the mix has been successfully tested to produce concrete with the properties specified and that mix must be suitable for the job conditions. This shall include at least 3 tests each for 7 day and 28 day compressive strengths for test cylinders made and cured in accordance with ASTM C192/C192M and tested in accordance with ASTM C39/C39M. Include mill test and all other tests for cement, fly ash, aggregates, and admixtures in the laboratory test reports. Provide maximum nominal aggregate size, gradation analysis, percentage retained and passing

sieve, and a graph of percentage retained versus sieve size. Submit test reports along with the concrete mix design. Obtain approval before concrete placement.

3. Use a qualified independent testing agency for non-special inspection testing for preparing and reporting proposed mixture designs based on laboratory trial mixtures. Structures requiring special inspection testing shall follow instruction in Special Inspection Specification.

C. Concrete Placement and Construction Joint Layout Drawings: Layout plans specifically detailing methods and sequences of concrete placements for concrete and/or any proposed deviations. Indicate proposed construction joints required to construct the structure. Location of construction joints is subject to approval of the Architect/Engineer.

D. Form Ties: Submit product data and dimensions and details of form ties for approval.

E. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement. Shop drawings shall conform to the latest edition ACI detail manual SP-66. Shop drawings shall be prepared under the direct supervision of a professional engineer licensed in the state in which the project is located and shall include plans, elevations, sections, details, and attachments to other work.

F. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements.

1. Cementitious materials.
2. Aggregates: Test results showing compliance with required standards, i.e. sieve analysis, aggregate soundness tests, petrographic analysis per ASTM C295/C295M, alkali-aggregate reactivity per ASTM C1260, mortar bar expansion testing per ASTM C1567, etc. Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity. Submit Certification of Compliance for freeze-thaw resistant concrete aggregate.
3. Admixtures: Include the chloride ion content of each admixture and certification from the admixture manufacturer that all admixtures utilized in the design mix are compatible with one another and properly proportioned prior to mix design review by the Engineer.

    a. Fly Ash: Submit test results in accordance with ASTM C618 for fly ash. Submit test results performed within 6 months of submittal date. Submit manufacturer's policy statement on fly ash use in concrete.

4. Curing Compounds.
5. Trial Batches: For each of the preliminary concrete mix designs and shall include slump per ASTM C143, air content per ASTM C231, unit weight per ASTM C138 and compressive strength tests.
6. Steel Reinforcement: Submit test results.
7. Field Test of Fresh Concrete: Shall be tested with the frequency and procedures required by ACI 301. Submit copies of Delivery Tickets of concrete.

G. Field Quality-Control Reports.

H. Manufacturer Certification: Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities".

I. Testing Reports: For all required tests.

1.4 QUALITY ASSURANCE

A. Qualification Data: Comply with the following including all sub-references contained herein unless modified by requirements in the Contract Documents:

1. ACI 301, "Specifications for Structural Concrete".
2. ACI 318, "Building Code Requirements for Structural Concrete".
3. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials".
4. CRSI 10MSP, "Manual of Standard Practice"
5. ASTM E329, "Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction".

B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products that complies with ASTM C94/C94M requirements for production facilities and equipment and is certified according to NRMCA CPMB 100.

C. Welding Procedure Qualifications: Must be in accordance with AWS D1.4/D1.4M.

D. Welder Qualifications: Provide certificates in accordance with AWS D1.4/D1.4M or under an equivalent qualification test approved in advance. Welders are permitted to do only the type of welding for which each is specifically qualified.

E. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from a single source, and obtain admixtures from single source from single manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING/PROJECT CONDITIONS

A. Reinforcing Steel:

1. All reinforcing shall be neatly bundled and tagged for placement when delivered to the job site. Bundles shall be properly identified for coordination with mill test reports.
2. Reinforcing steel shall be stored above ground on platforms or other supports and shall be protected from the weather at all times by suitable covering. It shall be stored in an orderly manner and plainly marked to facilitate identification.
3. Reinforcing steel shall at all times be protected from conditions conducive to corrosion until concrete is placed around it.

4. The surfaces of all reinforcing steel and other metalwork to be in contact with concrete shall be thoroughly cleaned of all dirt, grease, loose scale and rust, grout, mortar, and other foreign substances immediately before the concrete is placed. Where there is a delay in depositing concrete, reinforcing shall be reinspected and, if necessary, recleaned.

B. Joint Sealers:
1. Do not proceed with installation of joint sealers when ambient and substrate temperature conditions are outside the limits permitted by the joint sealer manufacturer. Do not install joint sealers when joint substrates are wet due to rain, frost, condensation or other causes.
2. Do not proceed with installation of joint sealers when joint widths are less than allowed by joint sealer manufacturer for application indicated.

PART 2 - PRODUCTS

2.1 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A615/A615M, Grade 60, deformed, ASTM A706 Grade 60 where required to be welded.

B. All bar reinforcing shall be from domestic mills and shall have the manufacturer's mill marking rolled into the bar which shall indicate the producer, size, type, and grade.

C. Joint Dowel Bars: ASTM A615/A615M, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs. Dowels shall be installed at right angles to construction joints and expansion joints. Dowels shall be accurately aligned parallel to the finished surface, and shall be rigidly held in place and supported during placing of the concrete. One end of dowels shall be oiled or greased or dowels shall be coated with high density polyethylene with a minimum thickness of 14 mils.

2.2 ANCHOR RODS

A. Unheaded Anchor Rods: ASTM F1554, Grade 36.

1. Configuration: Straight, threaded each end with three sets nut and washer each as indicated.
2. Nuts: ASTM A563 heavy-hex carbon steel.
3. Washers: ASTM F436, Type 1, hardened carbon steel plus A 36 plate washers where indicated.
4. Finish: As indicated.

2.3 REINFORCEMENT ACCESSORIES

A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice", of greater compressive strength than concrete and as follows:

1. Reinforcement supports and other accessories in contact with the forms for members which will be exposed to view in the finished work shall be of stainless steel or shall be plastic. Supports for reinforcement, when in contact with the ground or stone fill, shall be precast stone concrete blocks or plastic. Particular attention is directed to the requirement of Paragraph 3.3.2.4 of ACI Standard 301. These requirements apply to all reinforcement, whether in walls or other vertical elements, inclined elements or flatwork.
2. Particular care shall be taken to bend tie wire ends away from exposed faces of beams, slabs and columns. In no case shall ends of tie wires project toward or touch formwork.

B. Concrete blocks (dobies), used to support and position bottom reinforcing steel shall have the same or higher compressive strength as specified for the concrete in which it is located.

C. Mechanical couplers shall develop a tensile strength which exceeds 125 percent of the yield strength of the reinforcing bars being spliced at each splice. The reinforcing steel and coupler used shall be compatible for obtaining the required strength of the connection.

2.4 FORMWORK

A. Formwork shall conform to ACI SP-4.

B. Forms for exposed concrete surfaces shall be exterior grade, high-density overlay plywood, steel, or wood forms with smooth tempered hard-board form-liners.

C. All forms shall be smooth surface forms unless otherwise specified.

D. Forms and falsework shall be designed for total dead load, plus all construction live loads as outlined in ACI 347. Design and engineering of formwork and safety considerations during construction shall be the responsibility of the Contractor.

E. Forms shall be of sufficient strength and rigidity to maintain their position and shape under the loads and operations incident to placing and vibrating the concrete. The maximum deflection of facing materials reflected in concrete surfaces exposed to view shall be 1/600 of the span between structural members.

F. Form-Release Agents: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

G. Formulate form-release agent with rust inhibitor for steel form-facing materials.

H. Form Ties: Shall be one of the following:

1. Taper ties that can be removed from the concrete wall after the forms have been stripped, and that have an elastomeric plug seal to place in the hole after the tie is removed.
2. Snap ties that remain in the wall and he ends can be snapped off at least 1½ inches below the surface of the concrete. Snap ties shall have integral water stops.
3. She-bolts with ends at least 1½ inches below the surface of the concrete.
4. Coil ties with ends at least 1½ inches below the surface of the concrete.

I. Flat or strap ties are not permitted.

2.5 HYDRAULIC CEMENT

A. Portland Cement: ASTM C150, Type I/II or Type IL. Type III may only be used upon Engineer's approval.

B. When potentially reactive aggregates are to be used in the concrete mix, cement shall meet the following requirements:

1. The total alkalis in the cement (calculated as the percentage of NA2O plus 0.658 times the percentage of K20) shall not exceed 0.40%.
2. For concrete mixed with Portland Cement and an appropriate amount of fly ash the total alkalis in the Portland Cement (calculated as the percentage of NA20 plus 0.658 times the percentage of K20) shall not exceed 0.85%.
3. When non-reactive are used in the concrete mix, total alkalis in the cement shall not exceed 1.0%.
4. The proposed Portland Cement shall not contain more than 8% tricalcium aluminate and more than 12% tetracalcium aluminoferrite.

2.6 FLY ASH

A. Fly Ash: ASTM C618, Class F with a maximum LOI of 6%, a maximum free carbon content of 3.0% and a maximum available alkali content (as Na_2O) of 1.5%.

B. Where reactive aggregates are used in concrete mix, the fly ash constituent shall be between 15% and 25% of the total weight of the combined Portland Cement and fly ash.

2.7 WATER

A. Water: ASTM C94/C94M

B. Water used for mixing concrete shall be clear, potable, and free from deleterious substances such as objectionable quantities of silty organic matter, alkali, salts, and other impurities.

2.8 AGGREGATES

A. Normal-Weight Aggregates: ASTM C33.

B. Fine aggregate (sand) in the various concrete mixes shall consist of natural or manufactured sand, clean and free of deleterious substances, and conforming to ASTM C33.

C. Coarse aggregates shall consist of hard, clean, durable gravel, crushed gravel or crushed rock. Coarse aggregate shall be size #57 conforming to ASTM C33.

1. Supplier shall certify that coarse aggregate source has a demonstrated history of not causing alkali silica reaction in concrete.

D. Provide aggregates from a single source.

E. Aggregates shall be tested for gradation by sieve analysis tests in conformance with ASTM C136.

F. Aggregates shall be tested for soundness in accordance with ASTM C88. The loss resulting after five cycles shall not exceed 10 percent for fine or coarse aggregate when using magnesium sulfate.

G. Non-reactive aggregates shall meet the following requirements:

1. Fine and coarse aggregates shall be tested and evaluated for alkali-aggregate reactivity in accordance with ASTM C1260. The fine and coarse aggregates shall be evaluated separately and in combination, which matches the Contractor's proposed mix design proportioning. All results for the separate and combination testing shall have a measured expansion less than 0.008 percent at 16 days after casting. Should the test data indicate an expansion of 0.08 percent or greater, the aggregate shall be rejected or additional testing using ASTM C1260 and ASTM C1567 shall be performed. The additional testing using ASTM C1260 and ASTM C1567 shall be performed using the low alkali Portland cement in combination with Class F fly ash. Class F fly ash shall be used in the range of 25 to 40 percent of the total cementitious material by mass.

2. Non-reactive aggregates shall meet the following limitations:

a. Optically strained, microfractured, or microcrystalline quartz, 2.0% maximum.
b. Chert or chalcedony, 1.0% maximum.
c. Tridymite or cristobalite, 0.5% maximum.
d. Opal, 0.5% maximum.
e. Natural volcanic glass in volcanic rocks, 0.5% maximum.

3. Proposed concrete mix including proposed aggregates shall be evaluated by ASTM C1567. Mean mortar bar expansions at 16 days shall be less than 0.08%. Tests shall be

made using exact proportion of all materials proposed for use on the job in design mix submitted.

H. All aggregates shall be considered reactive unless they meet the requirements above for non-reactive aggregates. Aggregates with a lithology essentially similar to sources in the same region found to be reactive in service shall be considered reactive regardless of the results of the tests above.

~~I.~~ Contractor shall submit form certifying that all aggregates used for this Project meet the Kentucky Department of Highways' requirements for freeze-thaw resistance.

J. Contractor shall submit a new trial mix design to the Engineer for approval whenever a different aggregate or gradation is proposed.

2.9 ADMIXTURES

A. Air-Entraining Admixture: ASTM C260.

B. Air entraining agent shall be added to all concrete unless noted otherwise. The agent shall consist of a neutralized vinsol resin solution or a purified hydrocarbon with a cement catalyst which will provide entrained air in the concrete. The admixture proposed shall be selected in advance so that adequate samples may be obtained and the required tests made. Air content of concrete, when placed, shall be within the ranges given in the concrete mix design.

C. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete.

1. Water-Reducing Admixture: ASTM C494/C494M, Type A.
2. Retarding Admixture: ASTM C494/C494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C1017/C1017M, Type II.

D. The admixture manufacturer, when requested, shall provide a qualified concrete technician employed by the manufacturer to assist in proportioning concrete for optimum use. He shall also be available when requested to advise on proper addition of the admixture to the concrete and on adjustment of the concrete mix proportions to meet changing job conditions.

E. Admixtures containing calcium chloride, thiocyanate or more than 0.05 percent chloride ions are not permitted.

F. The addition of admixtures to prevent freezing is not permitted.

G. The use of admixtures to retard setting of the concrete during hot weather, to accelerate setting during cold weather, and to reduce water content without impairing workability will be permitted if the following conditions are met:

The admixture shall conform to ASTM C494, except that the durability factor for concrete containing the admixture shall be at least 100 percent of control, the water content a maximum of 90 percent of control and length change shall not be greater than control, as defined in ASTM C 494.

1. Where the Contractor finds it impractical to employ fully the recommended procedures for hot weather concreting, the Engineer may at his discretion, require the use of a set retarding admixture for mass concrete 2.5 feet or more thick for all concrete whenever the temperature at the time concrete is cast exceeds 80oF. The admixture shall be selected by the Contractor subject to the review of the Engineer. The admixture and concrete containing the admixture shall meet all the requirements of these Specifications. Preliminary tests of this concrete shall be required at the Contractor's expense.

2.10 CLASSES OF CONCRETE AND USAGE

A. Structural concrete of the various classes required shall be proportioned by either Method 1 or Method 2 of ACI 301 to produce the following 28-day compressive strengths:

1. Selection of Proportions for Class A Concrete:

   a. 4,500 psi compressive for strength at 28 days.
   b. Type I/II or IL cement plus supplementary cementitious materials.
   c. Max. water-cementitious materials ratio = 0.45.
   d. Min. cement content = 564 lbs.
   e. Nominal max. size coarse aggregate = No. 67 (3/4" max.) or No. 57 (1" max.). Walls with architectural treatment shall use #67 stone.
   f. Air content = 6% plus or minus 1% by volume for exterior concrete, except interior smooth finished slabs shall have 2% plus or minus 1% by volume.
   g. Fly Ash = 25% maximum.
   h. Slump = 3" - 4" when tested in accordance with ASTM C 143/C 143M. Slump shall not exceed 8 inches when high-range water-reducers are used.

2. Selection of Proportions for Class B Concrete:

   a. 3,500 psi compressive strength at 28 days.
   b. Type I/II or IL cement plus supplementary cementitious materials.
   c. Max. water-cementitious materials ratio = 0.50.
   d. Min. cement content = 470 lbs. (5.0 bags)/cu. yd. concrete.
   e. Nominal max. size coarse aggregate = No. 67 (3/4" max.) or No. 57 (1" max). Walls with architectural treatment shall use No. 67 (3/4" max.).
   f. Air content = 6% plus or minus 1% by volume if exposed to freezing and thawing.

g. Slump = 3" - 4" when tested in accordance with ASTM C 143/C 143M. Slump shall not exceed 8 inches when high-range water-reducers are used.

3. CLSM (Controlled Low Strength Material)

a. 350 psi compressive strength
b. 50-100 lb Type IL Cement
c. 200-350 lb Class F Fly Ash
d. 2500-3000 lb Fine Aggregate (Sand)
e. 400-500 lb Water for a W/C ratio of between 0.45 and 0.50
f. Etrapped air 2%-5%
g. CLSM shall be proportioned to be flowable

B. Concrete shall be used as follows:

1. Class A concrete for all concrete work except as noted below.
2. Class B concrete for footings (but not foundation walls) fill concrete, thrust blocks, and where indicated on the Drawings.
3. CLSM for abutment backfill as indicated.

2.11 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

B. Absorptive Cover: AASHTO M182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.

C. Moisture-Retaining Cover: ASTM C171, polyethylene film or white burlap-polyethylene sheet.

D. Water: Potable.

E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type I, Class B, dissipating.

2.12 RELATED MATERIALS

A. Bonding Agents: ASTM C1059-C1059M, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

B. Expansion Joint Filler: Preformed, compressible, resilient, non-waxing, non-extruding strips of plastic foam of material and size, shape and density to control sealant depth and otherwise contribute to producing optimum sealant performance. Provide either flexible, open cell polyurethane foam or non-gassing, closed-cell polyethylene foam, unless otherwise indicated, subject to approval of sealant manufacturer.

C. Joint Sealants: ASTM C920, Type M, Class 25, Use T, M, A, I. Use non-sag type on vertical surfaces.

D. Polyvinyl Chloride (PVC) Waterstops:

1. PVC waterstops for construction joints shall have width and shape as indicated on the drawings with a minimum thickness at any point of 3/8 inches.
2. Waterstops for expansion joints shall have width and shape as indicated on the drawings with a minimum thickness at any point of 3/8 inches.
3. The required minimum physical characteristics for this material are:
   a. Tensile Strength = 1750 psi (ASTM D638)
   b. Ultimate Elongation = not less than 280% (ASTM D638)
4. No reclaim PVC shall be used for the manufacturing of the waterstops. The Contractor shall furnish certification that the proposed waterstops meet the above requirements.
5. Waterstops shall be securely wired into place to maintain proper position during placement of fresh concrete, as shown on the Drawings. Care shall be taken in the installation of the waterstop and the placing of the concrete to avoid "folding" while concrete is being placed, and to prevent voids in the concrete surrounding the waterstop.

E. Penetrating Liquid Floor Treatment: Concrete liquid sealer/densifier shall be a high performance, deeply penetrating concrete densifier. Product shall be odorless, colorless, VOC-compliant, non-yellowing siliconate based solution designed to harden, dustproof and protect concrete floors subjected to heavy vehicular traffic and to resist black rubber tire marks on concrete surfaces. The product must contain a minimum solids content of 20% of which 50% is siliconate.

F. Chamfer strips shall be ¾ inch, polyvinyl chloride strips by Gateway Building Products, Saf-T-Grip Specialties Corp., Vinylex Corp., or equal.

PART 3 - EXECUTION

3.1 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

D. Reinforcement bars shall not be straightened or rebent in a manner that will injure the material. Heating of bars is not permitted.

E. Tie wires shall be bent away from the forms in order to provide the specified concrete coverage.

3.2 FORMWORK

A. No falsework or forms shall be used which are not clean and suitable. Deformed, broken or defective falsework and forms shall be removed from the work.

B. Forms shall be smooth and free from surface irregularities. Joints between the forms shall be sealed to eliminate any irregularities. The arrangement of the facing material shall be orderly and symmetrical, with the number of seams kept to a practical minimum.

C. Forms shall be true to line and grade, and shall be sufficiently rigid to prevent displacement and sagging between supports. Forms shall be properly braced or tied together to maintain their position and shape under a load of freshly-placed concrete.

D. Forms shall be mortar tight so as to prevent the loss of water, cement and fines during placing and vibrating of the concrete.

E. All forms shall be constructed in such a manner that they can be removed without hammering or prying against the concrete. Forms shall not be disturbed until the concrete has attained sufficient strength. Forms shall be removed in such manner as not to impair safety and serviceability of the structure. Care shall be taken to prevent chipping of corners or other damage to concrete when forms are removed. Exposed corners and other surfaces which may be damaged by ensuing operations shall be protected from damage by boxing, corner boards or other approved means until construction is completed.

F. Forms shall be coated with an approved release agent before initial pour and between subsequent pours, in accordance with the manufacturer's printed instructions. Form boards shall not be wet prior to placing concrete.

3.3 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect/Engineer.

1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
2. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
3. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

4. Construction joints shall be positioned so as not to adversely affect the structural performance.
5. All joints in water bearing structures shall have a waterstop. All joints below grade in walls or slabs which enclose an accessible area shall have a waterstop.

C. Expansion Joints: All expansion joints in water-bearing structures shall have a center-bulb type waterstop. All expansion joints below grade in walls or slabs which enclose an accessible area shall have a center-bulb type waterstop.

D. Contraction Joints in Slabs: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:

1. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

E. Isolation Joints in Slabs: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated:

1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.
2. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

F. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.4 CONCRETE MIXING

A. All concrete shall be machine mixed. Hand mixing of concrete will not be permitted. The Contractor may supply concrete from a ready-mix plant or from a site mixed plant. In selecting the source for concrete production, the Contractor shall carefully consider its capability for providing quality concrete at a rate commensurate with the requirements of the placements so that well bonded, homogenous concrete, free of cold joints, is assured.

B. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C94, and furnish batch ticket information.

1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

2. Any truck delivering concrete to the job site, which is not accompanied by a delivery ticket showing the following information will be rejected and such truck shall immediately depart from the job site:

   a. Date and truck number
   b. Ticket number
   c. Mix designation of concrete
   d. Cubic yards of concrete
   e. Cement brand, type, and weight in pounds
   f. Weight in pounds of fine aggregate
   g. Weight in pounds of coarse aggregate
   h. Air entraining agent, brand, and weight in pounds and ounces
   i. Admixtures, brand and weight in pounds and ounces
   j. Water, in gallons, stored in attached tank
   k. Water, in gallons, maximum that can be added without exceeding design water/cement ratio
   l. Time of loading
   m. Time of delivery to job (by truck driver)

C. Project Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C94. Mix concrete materials in appropriate drum-type batch machine mixer.

1. Scales for weighing concrete ingredients shall be accurate when in use within +/- 0.04 percent of their total capacities. Standard test weights shall be available to permit checking scale accuracy.
2. The concrete shall be mixed in a batch mixer capable of thoroughly combining the aggregates, cement, and water into a uniform mass within he specified mixing time, and of discharging the concrete without harmful segregation. The mixer shall bear a manufacturer's rating plate indicating the rate capacity and the recommended revolutions per minute and shall be operated in accordance within.
3. The interior of the mixer shall be free of accumulations that will interfere with mixing action. Mixing blades shall be replaced when they have lost 10% if their original height.
4. For mixer capacity of 1 cu. yd. or smaller, continue mixing at lease 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
5. For mixer capacity larger than 1 cu. Yd. (0.76 cu. m), increase mixing time by 15 seconds for each additional 1 cu. yd.
6. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.
7. Concrete shall be mixed only in quantities for immediate use and within the time and mixing requirements of ASTM C94.

3.5 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.

B. If concrete is placed by pumping, no aluminum shall be used in any parts of the pumping system which contact or might contaminate the concrete. Aluminum chutes and conveyors shall not be used.

C. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Engineer.

D. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.

E. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation:

1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

F. All construction joints shall be prepared for bonding by roughening the surface of the concrete in an acceptable manner which will expose the aggregate uniformly and will not leave laitance, loosened particles of aggregate or damaged concrete at the surface. Joints in walls and columns shall be maintained level. Concrete shall be placed in layers not over 18 inches deep and each layer shall be compacted by mechanical internal-vibrating equipment supplemented by hand spading, rodding and tamping as directed. Vibrators shall not be inserted into lower courses that have begun to set.

G. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

H. The Contractor shall submit for review drawings separate from the steel reinforcing drawings, showing the location of all proposed construction joints. All construction joints shall be

prepared for bonding by roughening the surface of the concrete in an acceptable manner which will expose the aggregate uniformly and will not leave laitance, loosened particles of aggregate or damaged concrete at the surface. Joints in walls and columns shall be maintained level. Concrete shall be placed in layers not over 18 inches deep and each layer shall be compacted by mechanical internal vibrating equipment supplemented by hand spading, rodding and tamping as directed. Vibrators shall not be inserted into lower courses that have begun to set.

3.6 FINISHES

A. Exposed to Public View Concrete Surfaces:

1. All concrete exposed to view in the completed structure shall be produced using materials and workmanship to such quality that only nominal finishing will be required.

2. All formed exposed to view concrete surfaces shall have a "smooth rubbed finish". Exterior vertical surfaces shall be rubbed to one foot below grade. Interior exposed to public view vertical surfaces of liquid containers shall be rubbed to one (1) foot below the minimum liquid level that will occur during normal operations.

B. All vertical surfaces in liquid containing structures shall have a "smooth form" finish.

1. All "smooth form" concrete vertical surfaces shall be a true plane within 1/4 inch in ten (10) feet as determined by a ten (10) foot straightedge placed anywhere on the surface in any direction. Abrupt irregularities shall not exceed 1/8 inch.

C. Exterior slabs (bridge deck), walkways, steps and landings, shall be given a "broom" finish. "Broom" finish shall be applied to surfaces which have been steel-troweled to an even, smooth finish. The troweled surface shall then be broomed with a fiber-bristle brush in the direction transverse to that of the main traffic.

3.7 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Foundations: Provide foundations as shown on Drawings.

1. Unless otherwise directed by the Engineer, the vertical surfaces of footings shall be formed. Excavations and reinforcement for all footings shall have been inspected by the Engineer before any concrete is placed.

D. The installation of underground and embedded items shall be inspected before slabs are placed. Pipes and conduits shall be installed below the concrete unless otherwise indicated. Fill required to raise the subgrade shall be placed as specified in Section "Earthwork". Porous fill not less than 6 inches in compacted thickness shall be installed under all structures. The fill shall be leveled and uniformly compacted to a reasonably true and even surface. The surfaces shall be clean, free from frost, ice, mud and water.

E. Concrete shall be placed in layers not over 18 inches deep and each layer shall be compacted by mechanical internal-vibrating equipment supplemented by hand spading, rodding and tamping as directed. Vibrators shall not be inserted into lower courses that have begun to set.

F. Concrete Walks and Curbs:

1. Subgrade shall be true and well compacted at the required grades. Spongy and otherwise unsuitable material shall have been removed and replaced with approved material. Concrete walks shall be placed upon porous fill.

2. Concrete walks on grade shall be not less than 4 inches in thickness. Walks on grade shall have contraction joints every 5 linear feet in each groove in the top surface of the slab to a depth of at least one-fourth the slab thickness with a jointing tool. Transverse expansion joints shall be installed at all returns, driveways, and opposite expansion joints in adjacent curbs. Where curbs are not adjacent, transverse expansion joints shall be installed at intervals of approximately forty (40) feet. Sidewalks shall receive a "broomed" finish. Scoring shall be in a transverse direction. Edges of the sidewalks and joints shall be edged with a tool having a radius not greater than 1/6 inch. Sidewalks adjacent to curbs shall have a slope of 1/4 inch per foot toward the curb. Sidewalks not adjacent to curbs shall have a slope of 1/4 inch per foot. The surface of the concrete shall show no variation in cross section in excess of 1/4 inch in 5 feet. Concrete walks shall be reinforced with 6 x 6-W1.4xW1.4 welded wire reinforcement.

G. Column base plates, bearing plates for beams and similar structural members, machinery and equipment bases shall, after being plumbed and properly positioned, be provided with full bearing with nonshrink grout. Concrete surfaces shall be rough, clean, free of oil, grease, and laitance and shall be moistened thoroughly immediately before grout is placed. Metal surfaces shall be clean and free of oil, grease and rust. Mixing and placing shall be in conformance with the material manufacturer's printed instructions. After the grout has set, exposed surfaces shall be cut back one (1) inch and covered with a parge coat of mortar consisting of one (1) part Portland cement, two (2) parts sand and sufficient water to make the mixture placeable. Parge coat shall have a smooth dense finish. Exposed surfaces of grout and parge coat shall be water cured with wet burlap for seven (7) days.

3.8 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.

D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.

E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

    a. Water.
    b. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

    a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
    b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
    c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies will not interfere with bonding of floor covering used on Project.

3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound will not interfere with bonding of floor covering used on Project.

3.9 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer's written instructions.

1. Defer joint filling until concrete has aged at least one month(s). Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.10 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Engineer. Remove and replace concrete that cannot be repaired and patched to Engineer's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete. Limit cut depth to 3/4 inch. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
2. Repair defects on surfaces exposed to view by blending white portland cement and standard Portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.

3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Engineer.

D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
2. After concrete has cured at least 14 days, correct high areas by grinding.
3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish blending with adjacent finished concrete. Cure in same manner as adjacent concrete.
7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of damaged or defective concrete, subject to Engineer's approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Architect's approval.

END OF SECTION 033100

SECTION 036000-PRECISION GROUTING

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Provide all labor, material, equipment and services required for grouting of equipment, machinery, structural steel, handrails, anchor bolts and other items or work for which grouting is specified or required.

B. The object of these Specifications is to obtain grout which can be mixed to a flowable consistency (i.e., thinner than plastic consistency), placed in leakproof forms, with a minimum of strapping, without bleed water exceeding Specification requirements. The requirement of 24 hour presoak of existing concrete is of prime importance and must be adhered to. Trade name of grout shall be submitted to Engineer for review well in advance of preparation for grouting.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Cast-in-place Concrete is included in Section 03300.

B. Review all divisions and sections for equipment, machinery, and other items to be grouted.

1.03 DESCRIPTION OF WORK

A. High strength, precision support of machine bases and soleplates, setting anchor bolts, including equipment subject to thermal movement and repetitive dynamic loading.

B. Work includes providing a non-shrink, ready-to-use, fluid precision grout material; proportioned, pre-mixed and packaged at the factory; delivered to the job-site to place with only the addition of water; forming, placing and curing as specified in this section.

1.04 QUALITY ASSURANCE

Comply with the following codes, standards, tests and recommended practices for foundation concrete as applies to precision grouting.

A. ACI 304R-85 " Guide for Measuring, Mixing, Transporting and Placing Concrete."

B. ACI 305R-77 (Revised 1982) "Recommended Practice for Hot Weather Concreting."

C. ACI 306R-78 (Revised 1983) "Recommended Practice for Cold Weather Concreting."

D. ACI 347-78 "Recommended Practice for Concrete Formwork."

E. ASTM C 309-74 "Standard Specifications for Liquid Membrance Forming Compounds for Curing Concrete."

F. Manufacturer's Information Use of Grout: Attached to each bag of grout.

G. Corps of Engineers CRD C-79 Method of Test for Flow of Grout Mixtures (Flow-Cone method).

H. ASTM C 109-73 "Tentative Method of Test for Compressive Strength of Hydraulic Cement Mortars."

1.05 SUBMITTALS

A. Purchase Orders: Furnish copies of purchase orders relating to materials in this Section to the Engineer prior to delivery.

PART 2 - PRODUCTS

2.01 GROUT

A. Precision-support grout shall consist of a cementitious system, special graded and processed ferrous metallic internal reinforcing aggregate, carefully graded natural fine aggregate and additional technical components.

B. Grouts which depend upon aluminum powders, chemicals or other agents which produce gas for expansion are not acceptable.

1. Free of gas producing agents.

2. Free of oxidizing catalysts.

3. Free of inorganic accelerators, including chlorides.

C. Provide Performance Characteristics when mixed to fluid consistency, 25 to 30 seconds (Flow Cone Method CRD C-79), as follows:

1. No visible bleeding and/or settlement up to 2 hours on 1/4 to 2 gal. grout poured into gallon can, covered with glass plate to prevent evaporation. Grout shall meet the requirements of Paragraph 4.1 of Corps of Engineers CRD C 588-76.

2. Maintain firm, full contact with underside of 4'x 4' x 2" steel plate firmly bolted to supports at quarter points at 1, 7 and 14 days, evidenced by tapping of plate and visual observation after stripping. Grout shall be cured in accordance with manufacturer's printed instructions.

3. Provide strengths as specified in Paragraph 3.05 (2" x 2" cubes). Prepare specimens and test in accordance with ASTM C 109-73.

2.02 MEMBRANE CURING COMPOUND

A. Membrane forming curing compound shall be in accordance with ASTM C 309-74.

2.03 WATER

A. Water shall be suitable for drinking.

PART 3 - EXECUTION

3.01 PREPARATION FOR GROUTING

A. Remove laitance down to sound concrete.

B. Surface to receive grout shall be rough and reasonably level.

C. Surface shall be properly wet cured. DO NOT USE CURING COMPOUNDS. (See Section 03300).

D. Clean surface of oil, grease, dirt, and loose particles.

E. Clean bolt holes, bolts and underside of bed plate.

F. Saturate concrete including bolt holes for 24 hours prior to grouting. Blow out excess water with oil free compressed air, or siphon prior to grouting.

3.02 FORMWORK

Formwork shall be compatible with proposed method of placing grout. Design for rapid, continuous and complete filling of space to be grouted.

A. Build strong, tight forms braced so they will not leak or buckle under weight of fluid grout. On placing side, slant form at 45° angle and pour grout directly on slanted face. On other sides, place form 2" or more from base of bed plate and 1" or more higher than underside of the plate.

B. Caulk forms with grouting material being used on inside or a sand-cement mortar outside to prevent leakage and loss of "head." Use expanded polystyrene or other means to caulk between foundation and portions of the bed plate and equipment to seal off areas where grout is not desired.

3.03 PREPARATION OF GROUT

Preparation of grout shall be in paddle-type mortar mixer suitable mechanical mixer. DO NOT MIX BY HAND.

A. Mix grout adjacent to area being grouted, have sufficient manpower and equipment available for rapid and continuous mixing and placing. DO NOT ADD CEMENT, SAND OR PEA GRAVEL ADDITIVES.

B. Avoid a consistency that produces bleeding. Mix materials for a minimum of 3 minutes and place immediately. DO NOT RETEMPER. DO NOT USE MIXING WATER ABOVE 80°F. (27°C.).

3.04 PLACING

Placing of grout shall be at a temperature of 65-75 degrees F. (18-24 degrees C.) for foundation, bed plate and grout material. Maintain for 24 hours following installation, hereafter above 40 degrees F. (4 degrees C.) until strength exceed 4,000 psi (280 kg/cm^2.) DO NOT USE COKE-FIRED SALAMANDERS.

A. Place grout quickly and continuously; avoid surface of overworking material and segregation. DO NOT VIBRATE GROUT. DO NOT OVERWORK GROUT.

B. Field service representative of the manufacturer shall be available during initial planning for installation to suggest recommended procedures and at start of placement for further suggestions.

1. A minimum of three (3) days notice shall be given by the Contractor to the manufacturer prior to use of the product.

3.05 FINISHING AND CURING

Follow manufacturer's printed instructions for the brand and type of grout being used.

A. The grout shall meet the following strengths:

	Plastic Mix	Flowable Mix
1-day	4,000 psi	2,000 psi

3-days	6,000 psi	3,000 psi
7-days	8,000 psi	5,000 psi
28-days	10,000 psi	7,000 psi

END OF SECTION

LFUCG
Fire Training Academy
Phase 1 Site Development Project
Lexington, Kentucky

Bid #1-2026

January 2026

SECTION 101426 – EXTERIOR POST AND PANEL SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Nonilluminated post and panel signs.

B. Related Sections include the following:

1. Division 01 Section "Temporary Facilities and Controls" for temporary Project identification signs and for temporary informational and directional signs.
2. Division 03 Section "Cast-in-Place Concrete" for concrete foundations and concrete fill.
3. Division 10 Section "Signage" for wall-mounted signs and dimensional characters.

1.3 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide post and panel signs capable of withstanding the effects of gravity loads determined according to SEI/ASCE 7, "Minimum Design Loads for Buildings and Other Structures" and the applicable provisions of the "Kentucky Building Code", whichever is more restrictive.

B. Seismic Performance: Provide post and panel signs capable of withstanding the effects of earthquake motions determined according to SEI/ASCE 7, "Minimum Design Loads for Buildings and Other Structures" and the applicable provisions of the "Kentucky Building Code", whichever is more restrictive.

C. Thermal Movements: Provide post and panel signsthat allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

1.4 DEFINITIONS

A. ADA-ABA Accessibility Guidelines: U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines."

1.5 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show fabrication and installation details for post and panel signage.

1. Include plans, elevations, sections, details, and attachments to other work.
2. Provide message list, typestyles, graphic elements, and layout for each sign at least half size and full-size details of graphics.
3. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

C. Samples for Initial Selection: Manufacturer's color charts consisting of actual units or sections of units showing the full range of colors available for the following:

1. Aluminum.
2. Die-cut vinyl characters and graphic symbols. Include representative samples of available typestyles and graphic symbols.

D. Samples for Verification: For each of the following products and for the full range of color, texture, and sign material indicated, of sizes indicated:

1. Aluminum: For each form, finish, and color, on 6-inch- long sections of extrusions and squares of sheet at least 4 by 4 inches.
2. Trim and Frame: 6-inch-- long sections of each profile.
3. Accessories: Manufacturer's full-size unit.

E. Sign Schedule: Use same designations indicated on Drawings.

F. Qualification Data: For Installer and fabricator.

G. Maintenance Data: For signs to include in maintenance manuals.

H. Warranty: Special warranty specified in this Section.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by manufacturer.

B. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

C. Source Limitations for Signs: Obtain each sign type indicated from one source from a single manufacturer.

D. Regulatory Requirements: Comply with applicable provisions in ADA-ABA Accessibility Guidelines.

1.7 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit installation of signs to be performed according to manufacturers' written instructions and warranty requirements.

B. Field Measurements: Indicate measurements on Shop Drawings.

1.8 COORDINATION

A. Coordinate installation of anchorages for post and panel signage. Furnish setting drawings, templates, and directions for installing anchorages and other items that are to be embedded in concrete.

1.9 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of post and panel signsthat fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Deterioration of metal and polymer finishes beyond normal weathering.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Aluminum Sheet and Plate: ASTM B 209, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with at least the strength and durability properties of Alloy 5005-H32.

B. Aluminum Extrusions: ASTM B 221, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with at least the strength and durability properties of Alloy 6063-T5.

C. Steel:

1. Hot-Rolled Structural-Steel Shapes: ASTM A 36/A 36M or ASTM A 529/A 529M.
2. Steel Tubing or Pipe: ASTM A 500, Grade B.
3. Steel Members Fabricated from Plate or Bar Stock: ASTM A 529/A 529M or ASTM A 572/A 572M, 42,000-psi minimum yield strength.
4. Bolts for Steel Framing: ASTM A 307 or ASTM A 325 as necessary for design loads and connection details.

D. Applied Vinyl: Die-cut characters from vinyl film of nominal thickness of 3 mils with pressure-sensitive adhesive backing, suitable for exterior applications.

E. Color: As selected by Architect from manufacturer's full range.

2.2 POST AND PANEL SIGNS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Allen Industries Architectural Signage.
2. APCO Graphics, Inc.
3. Best Sign Systems Inc.
4. Bunting Graphics, Inc.
5. Charleston Industries, Inc.
6. Nelson-Harkins Industries.
7. Signature Signs, Incorporated.
8. Supersine Company (The).
9. Vomar Products, Inc.
10. Integrated Signage, Inc.

2.3 PANEL SIGNS

A. Sign Message Panels: Provide smooth sign panel surfaces constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch measured diagonally from corner to corner.

1. Coordinate dimensions and attachment methods to produce message panels with closely fitting joints. Align edges and surfaces with one another in the relationship indicated.
2. Increase metal thickness or reinforce with concealed stiffeners or backing materials as needed to produce surfaces without distortion, buckles, warp, or other surface deformations.

3. Continuously weld joints and seams unless other methods are indicated; grind, fill, and dress welds to produce smooth, flush, exposed surfaces with welds invisible after final finishing.

B. Message Panel Materials:

1. Aluminum Sheet: 0.125 inch thick.

   a. Panel Finish: High performance organic coating.
   b. Color: As selected by Architect from manufacturer's full range.

2. Acrylic Sheet: Translucent 0.250 inch thick.

   a. Color: As selected by Architect from manufacturer's full range.

3. Edge Condition: Bullnose.
4. Corner Condition: Square.
5. Color: As selected by Architect from manufacturer's full range.

2.4 POSTS

A. General: Fabricate posts to lengths required for mounting method indicated.

B. Aluminum Posts: Manufacturer's standard 0.125-inch- thick, extruded-aluminum tubing, with vertical slots to engage sign panels. Provide stop blocks in slots to hold panels in position. Include post caps, fillers, spacers, junction boxes, access panels, and related accessories required for complete installation.

1. Square Posts: 2 inches square.
2. Post Finish: Match sign panel face.
3. Color: As selected by Architect from manufacturer's full range.

2.5 ACCESSORIES

A. Anchors and Inserts: Provide nonferrous-metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion-bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

2.6 FABRICATION

A. General: Provide manufacturer's standard post and panel signsof configurations indicated.

1. Welded Connections: Comply with AWS standards for recommended practices in shop welding. Provide welds behind finished surfaces without distortion or discoloration of exposed side. Clean exposed welded surfaces of welding flux and dress exposed and contact surfaces.
2. Mill joints to tight, hairline fit. Form joints exposed to weather to exclude water penetration.
3. Preassemble signs in the shop to greatest extent possible. Disassemble signs only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation, in location not exposed to view after final assembly.
4. Conceal fasteners if possible; otherwise, locate fasteners where they will be inconspicuous.

2.7 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.8 ALUMINUM FINISHES

A. High-Performance Organic Finish (2-Coat Fluoropolymer): AA-C12C40R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: conversion coating; Organic Coating: manufacturer's standard 2-coat, thermocured system consisting of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with AAMA 2604 and with coating and resin manufacturers' written instructions.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.

B. Verify that items, including anchor inserts, and electrical power are sized and located to accommodate signs.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Excavation: Excavate for sign foundation to elevations and dimensions indicated. Reconstruct subgrade that is not firm, undisturbed, or compacted soil, or that is damaged by freezing temperatures, frost, rain, accumulated water, or construction activities by excavating a further 12 inches, backfilling with satisfactory soil, and compacting to original subgrade elevation.

1. Excavate hole depths approximately 39 inches below finished grade.

B. Set anchor bolts and other embedded items required for installation of signs. Use templates furnished by suppliers of items to be attached.

1. Protect portion of posts, inserts and pylons above ground from concrete splatter.

C. Locate signs and accessories where indicated, using mounting methods of types described and complying with manufacturer's written instructions.

1. Install signs level, plumb, and at heights indicated, with sign surfaces free of distortion and other defects in appearance.
2. Mechanical Fasteners: Use nonremovable mechanical fasteners placed through predrilled holes. Attach signs with fasteners and anchors suitable for secure attachment to substrate as recommended in writing by sign manufacturer.

3.3 CLEANING AND PROTECTION

A. After installation, clean soiled sign surfaces according to manufacturer's written instructions. Protect signs from damage until acceptance by Owner.

END OF SECTION 101426

LFUCG
Fire Training Academy
Phase 1 Site Development Project
Lexington, Kentucky

Bid #1-2026

January 2026

SECTION 133460 – STEEL BRIDGE SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Pre-engineered & prefabricated steel bridge system designed and manufactured by a steel bridge system manufacturer, delivered to site, and installed by a competent, qualified erector.

1.2 RELATED SECTIONS

A. Specification Section "Submittals" for additional submittal requirements for fabricated items.

B. Specification Section "Cast-In-Place Concrete" for concrete abutments to support steel bridge system.

C. Specification Section "Miscellaneous Metal Fabrication" for steel accessories not part of steel bridge system.

1.3 DELEGATED DESIGN

A. The design of the steel bridge system is hereby delegated.

B. The design of the steel bridge system and preparation of the steel bridge system drawings and calculations shall be performed under the direct supervision of a professional engineer licensed in the state in which the project is located.

C. The steel bridge system design drawings and calculations for submittal and for construction shall bear the seal of the professional engineer under whose direct supervision they were prepared.

1.4 COORDINATION

A. Coordinate dimensions of cast-in-place concrete abutments with final, for-construction drawings of steel bridge system that is purchased.

B. Communicate any dimensional changes to the abutments necessitated by the final, for-construction steel bridge system drawings to the affected suppliers and trades for coordination on their shop drawings – particularly the steel reinforcement supplier.

C. Notify Architect/Engineer of any discrepancies between the final, for-construction steel bridge system and the construction documents.

1.5 QUALITY ASSURANCE

A. Steel Bridge System Manufacturer: Steel bridge system manufacturer shall be competent, qualified, and experienced, and shall possess the following qualifications:
   1. AISC Certified Bridge Fabricator with Fracture Critical and Complex Coating Endorsement.
   2. Employment of at least two Certified Weld Inspectors with AWS QC1 endorsement.

B. Steel Bridge System Designer: Licensed Professional Engineer
   1. A professional engineer, licensed in the state in which the project is located, with at least 5 years' experience in the design of similar kinds of bridges.

C. Steel Bridge System Erector:
   1. A firm that provides steel erection services with at least 5 years' experience in erecting similar kinds of assembled steel structures of similar size, weight, and reach as this project.
   2. Welders performing field welds during erection shall be qualified and use welding procedures according to AWS D1.5.

1.6 ACTION SUBMITTALS

A. Manufacturer Quality Certificates: Submit the steel bridge system manufacturer's certificate of compliance with the applicable industry-recognized QA/QC organization(s), such certification being in effect at the time and location of the manufacture of the steel bridge system for this project.

B. Product Data: Submit steel bridge system product data for the particular model of steel bridge being delivered to the project and for any individual manufactured components or accessories of the bridge system.

C. Design Data: Submit calculations prepared under the direct supervision of a professional engineer supporting the structural design, including resistance to buoyancy, uplift and wheel loads in accordance with requirements and references indicated. The calculations shall be sealed by a professional engineer licensed in the state in which the project is located.

D. Shop Drawings: Submit design, fabrication & erection drawings including the following information:
   1. The criteria and loads used in the design of the steel bridge.
   2. All materials used, their specifications and their design strengths.
   3. Layout, piecemark, dimensions, reinforcing, and connection details of each steel bridge assembly shipped.

4. Details and instructions for lifting, rigging, erection, and installation of each steel bridge system component.
5. Lists and descriptions of all loose accessory materials supplied.
6. Instructions on field placement of concrete deck on the erected steel bridge.
7. Professional engineer's seal.

1.7 INFORMATIONAL SUBMITTALS (Issued at each step of construction before proceeding to the next).

A. Field-use Erection drawings: Submit the field-use erection drawings based on comments of the Architect/Engineer's review of the shop drawings.

B. Installation Instructions: Submit detailed installation instructions for the steel bridge system.

C. Plant QA/QC Reports: Submit in-plant inspection reports generated during the manufacture/fabrication of the steel bridge.

D. Compliance Statement: Submit statement signed by the Manufacturer's/Fabricator's in-house QA/QC manager that the bridge was fabricated in accordance with the approved shop fabrication drawings and all applicable codes and standards.

E. Field QA/AC Reports: Submit reports of field inspections by Contractor's QA / QC personnel of inspection of field erection of bridge components – see Part 3 Execution for required inspections & reports.

F. Erector's field welder qualification certificates if required.

1.8 CLOSEOUT SUBMITTALS

A. Warranty: Manufacturer's 5-year warranty of bridge against defects in materials, manufacture, fabrication, and design.

B. As-built Drawings: Drawings reflecting all approved field modifications & repairs (if applicable).

C. Erector's list of all field-made connections indicating that all such connections were made and tightened as required by the installation instructions. List shall be itemized with each field connection numbered and located on a plan of the bridge with initials of the person who made the connection and the person who inspected that it was complete. This is performed solely by the erector – the owner may elect to inspect field connections separately as a check on the erector's performance and self-inspection.

PART 2 - PRODUCTS

2.1 MANUFACTURED STEEL BRIDGE SYSTEM

A. MANUFACTURERS: Steel bridge system shall be obtained from one manufacturer, limited to the following:
1. Contech Engineered Solutions, West Chester, OH
2. Pioneer Bridges, Ft Payne, AL
3. Bridge Brothers, Pickens, SC

B. SYSTEM DESCRIPTION
1. The steel bridge system shall be nominally 75 foot span, of 6 straight hot-rolled girders approximately 33 inches deep spaced at nominally 7 feet on center with hot-rolled diaphragms and steel stay-in-place forms for a concrete slab placed after erection.
2. The steel bridge system shall be designed, manufactured, and installed to conform to the version of the AASHTO Bridge Specification in effect in the jurisdiction where the project is located.
3. Splices in main girders are not permitted without express written permission from Architect/Engineer.
4. The steel bridge system shall include a vehicle guardrail on one side and a vehicle / pedestrian rail on the other, both to be anchored to concrete curbs placed on the stay-in-place steel deck forms after erection.
5. The bridge shall be nominally 37.5 feet wide with two 13 foot wide traffic lanes and an eight foot wide sidewalk nominally 9 inches high on one side of the bridge.
6. All steel components of the bridge system shall be hot-dipped galvanized.

C. PERFORMANCE REQUIREMENTS
1. Design Live Loading: The design vehicle loading for the bridge shall be AASHTO HL-93 plus 100 lb/ft service-level live load on the pedestrian walkway.
2. Other Loads: All other loads shall be calculated in accordance with the 10th edition of the AASHTO LRFD Bridge Design Specifications.
3. Live Load Deflection: The maximum deflection of the bridge girders under the Service I AASHTO loading shall be less than 1/1100 of the girder span but not greater than required by AASHTO.

D. MATERIALS
1. Steel framing members: As permitted by the AASHTO bridge design specification.
2. Steel Deck: As permitted by the AASHTO bridge design specification.
3. Headed Studs: As permitted by the AASHTO bridge design specification.
4. Bolts, nuts, & washers: As permitted by the AASHTO bridge design specification.
5. Anchor Rods: As permitted by the AASHTO bridge design specification.
6. Bearing Pads: As permitted by the AASHTO bridge design specification.

E. FINISHES
1. Steel Framing Members: All steel framing members shall be hot-dipped-galvanized for the most severe service rating in the AASHTO bridge design specification.

2. Stay-in-Place Form: The stay in place deck form shall be galvanized in accordance with ASTM A 653 type G185 or equivalent.

2.2 DECK CONCRETE

A. See Specification Section "Cast-in-Place Concrete" for material requirements for concrete and welded-wire reinforcement to be used for bridge deck.

PART 3 - EXECUTION

3.1 FABRICATION & INSPECTION

A. Fabricate the bridge system according to the shop fabrication drawings with as little amount of field assembly required.

B. Follow the manufacturer/fabricator's approved QA/QC procedures at all times during fabrication.

C. Inspect fabrication according to the QA/QC procedures and keep accurate records of such. Retain records for time period required by the applicable QA/QC certification authority. Make QA/QC records available for submittal to Architect/Engineer upon request without additional charge for a period of five years after delivery of bridge.

3.2 DELIVERY, STORAGE, & HANDLING

A. Deliver framing members, stay-in-place form sheets, loose erection material, and other manufactured items so as not to be damaged or deformed. Package small loose material to keep it together and protected during transportation and handling.

B. Store delivered materials on site as recommended by manufacturer/fabricator and so as to prevent damage from the weather, contact with the ground, and damage from construction operations. Place steel members on dunnage for temporary storage to keep them off the ground.

3.3 EXAMINATION & PREINSTALLATION CONFERENCE

A. Examine constructed abutments carefully for correct locations and correct dimensions of anchor bolts before the preinstallation conference.

B. Submit any discrepancies to Architect/Engineer and actions taken to rectify unsatisfactory conditions prior to and for discussion in the preinstallation conference.

C. Any modifications to anchor bolts after they are cast in the abutment to correct for fit of the bridge must submitted in writing and approved by the Archtiect/Engineer prior to being undertaken.

D. Preinstallation conference shall be scheduled by the General Contractor and shall be attended by the General Contractor's representative, the erector's representative, and the Architect/Engineer's representative.

E. The preinstallation conference shall consist of the Erector and General Contractor outlining their erection plan to the Architect/Engineer's representative prior to beginning erection. This shall include details such as Crane type and capacity, crane location and reach, crane entry and exit procedures, and general safety procedures during erection. Any substantial changes to the plan outlined shall be submitted in writing or by an additional preinstallation conference prior to erection.

3.4 ERECTION

A. Place bearing pads and survey them well in advance of starting erection operations.

B. Perform erection in accordance with erection plan outlined in the preinstallation conference.

C. Pay particular attention to crane location with regard to soft ground, crane leveling, and reach. Do not exceed safe limits of crane.

D. Use taglines and other safe means to guide structural members and assemblies into place.

E. Use fall protection as required, where required.

F. Check for true lines, grade, and plumb as erection proceeds, adjusting and shimming as erection proceeds.

G. Tighten erection bolts and nuts as required as erection proceeds and check all field connections once erection is complete.

3.5 CONCRETE DECK PLACEMENT

A. See Section "Cast-in-Place Concrete" for additional deck concrete execution requirements.

B. Verification: Verify that steel structure has been erected properly and is true to line and grade prior to placing deck concrete.

C. Place concrete reinforcement

3.6 FIELD QUALITY CONTROL

A. Inspection and Reports to be performed by Contractor's Quality Assurance Personnel:
   1. Inspect & Report that anchor bolts are installed in concrete properly
   2. Inspect & Report that bridge girders are properly installed on bearing pads and connections are installed properly.
   3. Inspect & report that bridge field bolted connections are installed properly.
   4. Inspect & report that bridge stay-in-place concrete deck forms are installed properly.
   5. Inspect & report that bridge pour stops are installed properly.
   6. Inspect & report that bridge expansion joints are installed properly.
   7. Inspect & report that bridge railing posts are installed properly
   8. Inspect & report that bridge railing horizontal members are installed properly.

3.7 PROTECTION

A. Protect bridge during construction from damage due to construction operations.

B. Report any damage immediately to Architect/Engineer.

END OF SECTION

LFUCG
Fire Training Academy
Phase 1 Site Development Project
Lexington, Kentucky

Bid #1-2026

January 2026

DIVISION 26

ELECTRICAL

SECTION 260000 - BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.1 CONTRACTOR'S UNDERSTANDING

A. Contractors bidding work under this Contract shall read and understand Division 00 and Division 01 - General Requirements. If any discrepancies are discovered between the Basic Electrical Materials and Methods and General Requirements, the above-mentioned documents shall overrule this section. The Basic Electrical Materials and Methods are intended as a supplement to the above-mentioned documents.

B. The Contractor shall bid as outlined in the above-mentioned Specifications and shall be governed by any alternates or unit prices called for in the form of proposal.

C. Each Contractor bidding on the work included in these Specifications shall view the building site and carefully examine the contract Drawings and Specifications, so that he/she may fully understand what is to be done, and to document existing conditions.

D. The electrical design depicted in the Contract Drawings, is a concept. As the Contractor and Subcontractors layout the job in the field and submit Shop Drawings, it is likely that minor changes will need to be made to the layout, field control wiring, or branch circuits/feeders, from what is shown on the Contract Drawings. These changes will be indicated by Engineer review comments on Shop Drawings or issuance of field orders. It is the Contractors job to coordinate these changes among Subcontractors and equipment vendors, to assure a complete and fully operational electrical system at completion of construction. The Contractor shall not layout the job from the Contract Drawings, but rather from accepted Shop Drawings. Electrical rough-in shall be done based on templates provided from the electrical switchgear and MCC manufacturers showing allowable conduit entry locations. Do not submit electrical panelboard Shop Drawings, Motor Control Center Shop Drawings, Switchboard or Switchgear Shop Drawings until all utilization equipment submittals have been made and accepted. Short Circuit, Coordination and Arc Flash studies must be accepted prior to submittal of Shop Drawings for panelboards, MCC's, switchboards or switchgear.

E. The Contractor shall perform the work of this contract in a "neat and workmanlike manner" as required by NEC Article 110.12, and further delineated in ANSI/NECA 1, latest edition, "Standard for Good Workmanship in Electrical Construction".

1.2 SCOPE OF WORK

A. Work included in this section of the Specifications shall include the furnishing of all labor, material, tools, approvals, utility connection fees, excavation, backfill, and other equipment necessary to install the electrical system as shown on the Contract Drawings and as specified herein.

B. It also includes installation and connection of all electrical utilization equipment included in this Contract but furnished by other contractors or suppliers.

C. It is the general intent that all motors shall be furnished with the particular object of equipment it drives, except where a new motor is to be provided for an item of existing equipment (a replacement motor), then it shall be provided under this Division of the Specifications.

D. The Contractor shall furnish and install all conduit, wire, disconnect switches and miscellaneous material to make all electrical connections to all items of utilization equipment or wiring devices except as otherwise specified.

E. Equipment connections shall be made with flexible or rigid conduit as required. Controllers for motors, disconnect switches, and all control, protective and signal devices for motor circuits, except where such apparatus is furnished mounted and connected integrally with the motor driven equipment, shall be installed, connected and left in operating condition. The number and size of conductors between motors and control or protective apparatus shall be as required to obtain the operation described in these Specifications, and/or by the Contract Documents, and/or as shown in manufacturer furnished, Engineer reviewed Shop Drawings.

F. All devices and items of electrical equipment, including those shown on the Contract Drawings but not specifically mentioned in the Specifications or those mentioned in the Specifications but not shown on the Contract Drawings, are to be furnished under this section of the specifications. Any such device or item of equipment, if not defined in quality, shall be equal to similar Equipment and/or devices specified herein.

G. All devices and items of equipment mentioned in this section of the Specifications whether electrical or not or whether furnished under this or other Division of the Specifications, shall be installed under this Division of the Specifications, unless specifically indicated otherwise.

H. Where wiring diagrams are not shown on the Contract Drawings, they are to be provided by the supplier of the equipment served and such diagrams shall be adhered to except as herein modified.

I. The following is a list of items that may not be defined clearly on the Contract Drawings or in other parts of these Specifications. The list is meant to be an aid to the Contractor and is not necessarily a complete list of all work to be performed under this Contract:

1. Furnish, install, and connect outdoor lighting.
2. Furnish, install, and connect all electrical conduit, duct and cables.
3. Furnish, install, and connect all power distribution equipment.
4. Abandon and remove all existing wiring and materials not to be reused, as shown on the Contract Drawings.
5. Furnish and install all fiber optic system cables, conduits and accessories.

J. All raceways and wiring shall be fire stopped where required by code and/or indicated in the Contract Drawings.

1.3 SHOP DRAWINGS, DESCRIPTIVE LITERATURE, INSTALLATION, OPERATION AND MAINTENANCE INFORMATION

A. Shop Drawings including descriptive literature and/or installation, operation and maintenance instructions shall be submitted for this Division.

B. Shop Drawings shall be submitted on the following materials specified in this Division:

1. Conduit - all types and sizes, including liquid-tight flexible.
2. Boxes - all types and sizes.
3. Coal tar epoxy paint.
4. Wiring devices.
5. Device plates.
6. Metal framing system (Strut type channel).
7. Conduit fittings, expansion joints, support hardware.
8. Power distribution equipment - including individually mounted items.
9. Miscellaneous spare parts and hardware.
10. Wire - all types and sizes.
11. Luminaires - all types.
12. Wire markers, signs and labels.
13. Lightning/transient suppressors.
14. Lighting controls.
15. Communications equipment.

C. The Engineer reserves the right to make modifications to motor control and power distribution equipment ratings after Shop Drawing review, if the Shop Drawings are submitted prematurely (prematurely meaning submitted before all utilization equipment has been reviewed and accepted). Cost of modifications shall be the Contractor's responsibility.

1.4 SYMBOLS AND ABBREVIATIONS

A. The symbols and abbreviations generally follow standard electrical and architectural practice; however, exceptions to this shall be as shown on the Contract Drawings.

1.5 COORDINATION WITH OTHER TRADES

A. The Contractor shall coordinate the electrical work with that of other trades to ensure proper final location of all electrical equipment and/or connections. The Contractor shall verify door swings to see that light switches are located properly.

1.6 CODES

A. The minimum standard for all work shall be the latest revision of the Kentucky Building Code (KBC), and the National Electrical Code (NEC). Whenever and wherever state and/or local

laws or ordinances and/or regulations and/or the Engineer's design require a higher standard that the current NEC or KBC, then these laws and/or regulations and/or the design shall be followed.

B. Following is a list of other applicable Standards and Codes:

1.	Kentucky Building Code	KBC
2.	National Electrical Code	NEC
3.	National Electrical Safety Code	NESC
4.	Underwriters Laboratories, Inc.	UL
5.	Factory Mutual System	FM
6.	National Fire Protection Association	NFPA
7.	National Electrical Manufacturers Association	NEMA
8.	Occupational Safety and Health Administration	OSHA
9.	Insulated Cable Engineers Association, Inc.	ICEA
10.	Illuminating Engineering Society of North America	IES
11.	Instrument Society of America	ISA
12.	Institute of Electrical and Electronic Engineers, Inc.	IEEE
13.	Certified Ballast Manufacturers Association	CBM
14.	American National Standards Institute, Inc.	ANSI
15.	Anti-Friction Bearing Manufacturers Association, Inc.	AFBMA
16.	Joint Industry Council	JIC
17.	American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc.	ASHRAE
18.	Federal Communications Commission	FCC
19.	American Society for Testing and Materials	ASTM
20.	American Wood Preservers Association	AWPA
21.	Rural Electrification Association	REA

1.7 INSPECTIONS AND PERMITS

A. Inspection of the electrical system on all construction projects is required. If the local government has appointed a state licensed inspector, the Contractor shall be required to use that person to perform the inspections. If a locally mandated inspector does not exist, the Contractor shall select and hire a state licensed inspector, who has jurisdiction before any work is concealed. The Contractor shall notify the electrical inspector in writing, immediately upon notice to proceed, and a copy of the notice shall be submitted to the Engineer.

B. At the time of completion of the project, there shall be furnished to the Owner a certificate of compliance, from the agency having jurisdiction pursuant to all electrical work performed. The Engineer shall also receive a copy.

C. All costs incurred by the Contractor to execute the above-mentioned requirements shall be paid by the Contractor at no extra cost to the Owner.

D. All permits necessary for the complete electrical system shall be obtained by the Contractor from the authorities governing such work. For further information, see Division 01.

1.8 STORAGE

A. All work, equipment, and materials shall be protected against dirt, water, or other injury during the period of construction.

B. Sensitive electrical equipment such as light fixtures, motor starters, controls, and panel boards, delivered to the job site, shall be protected against injury or corrosion due to atmospheric conditions or physical damage by other means. Protection is interpreted to mean that equipment shall be stored under roof, in a structure properly heated in cold weather and ventilated in hot weather. Provision shall be made to control the humidity in the storage area to 50 percent relative. The stored equipment shall be inspected periodically, and if it is found that the protection is inadequate, further protective measures shall be employed. Electrical equipment other than boxes and conduit shall not be installed until the structure is under roof with doors and windows installed.

C. No light fixtures or device plates shall be hung or installed until after painting is completed; however, temporary lighting shall be provided by the Contractor.

1.9 MATERIALS

A. All materials used shall be new and at least meet the minimum standards as established by the NEC and/or National Electrical Manufacturers Association (NEMA). All materials shall be UL listed for the application, where a listing exists. Additional requirements are found in Division 01. All equipment shall meet applicable FCC requirements and restrictions.

B. The material and equipment described herein has been specified according to a particular trade name or make to set quality standards. However, each Contractor has the right to substitute other material and equipment in lieu of that specified, other than those specifically mentioned at matching or for standardization, providing such material and equipment meets all of the requirements of those specified and is accepted, in writing by the Engineer.

C. The reuse of salvaged electrical equipment and/or wiring will not be permitted unless specified herein or indicated on the Contract Drawings.

D. All salvaged or abandoned electrical materials shall become the property of the Contractor and shall be removed from the job site upon completion of the project, unless otherwise noted on the Contract Drawings or specified herein.

1.10 ERRORS, CORRECTIONS, AND/OR OMISSIONS

A. Should a piece of utilization equipment be supplied of a different size or horsepower than shown on the Contract Drawings, the Contractor shall be responsible for installing the proper size wiring, conduit, starters, circuit breakers, etc., for proper operation of that unit and the complete electrical system at no extra cost to the Owner.

B. It is the intent of these Specifications to provide for an electrical system installation complete in every respect, to operate in the manner and under conditions as shown in these Specifications and on the Contract Drawings. The Contractor shall notify the Engineer, in writing, of any omission or error at least 10 days prior to opening of bids. In the event of the Contractor's failure to give such notice, he/she may be required to correct work and/or furnish items omitted without additional cost. Further requirements on this subject may be found in the General Requirements, Division 01.

C. Necessary changes or revisions in electrical work to meet any code or power company requirement shall be made by the Contractor without additional charge.

1.11 GUARANTEES AND WARRANTIES

A. The Contractor shall guarantee all work including equipment, materials, and workmanship. This guarantee shall be against all defects of any of the above and shall run for a period of 1 year from the date of acceptance of the work, concurrent with the one-year guarantee period designated for the general construction contract under which electrical work is performed. Date of acceptance shall be the date on which all "punch list" items are completed ("punch list" is defined to be the written listing of work that is incomplete or deficient that must be finished or replaced/repaired before the Contractor receives final payment).

B. Repair and maintenance for the guarantee period is the responsibility of the Contractor and shall include all repairs and maintenance other than that which is considered as routine. (That is oiling, greasing, etc.) The Engineer shall be the judge of what shall be considered as routine maintenance.

1.12 TESTING

A. After the wiring system is complete, and at such time as the Engineer may direct, the Contractor shall conduct an operating test for acceptance. The equipment shall be demonstrated to operate in accordance with the requirements of these Specifications and the Contract Drawings. The test shall be performed in the presence of the Engineer or his authorized representative. The Contractor shall furnish all instruments and personnel required for the tests, as well as the necessary electrical power.

B. Before energizing the system, the Contractor shall check all connections and set all relays and instruments for proper operation. He shall obtain all necessary clearances, approvals, and

instructions from the serving utility company and/or equipment manufacturers prior to placing power on the equipment.

C. Tests may be performed by the Engineer to determine integrity of insulation on wiring circuits selected by the Engineer at random.

D. Cost of utilities for testing done prior to beneficial occupancy by the Owner shall be borne by the Contractor.

1.13 CLEANUP

A. Cleanup shall be completed as soon as possible after the electrical installation is complete. All light fixtures, outlets, switches, starters, motor control centers, disconnect switches and other electrical equipment shall be free of shipping tags, stickers, etc. All painted equipment shall be left free of scratches or other blemishes, such as splattered or blistered paint, etc. All light fixture diffusers shall be clean and the interior of all motor controls, etc., shall be free of dust, dirt, wire strippings, etc. Surplus material, rubbish and equipment resulting from the work shall be removed from the job site by the Contractor upon completion of the work.

B. During construction, cover all Owner equipment and furnishings subject to mechanical damage or contamination in any way.

1.14 CUTTING AND PATCHING

A. Cutting and patching shall be held to an absolute minimum and such work shall be done only under the direction of the Engineer or Owner. The Contractor shall be responsible for and shall pay for all openings that may be required in the floors or walls, and he shall be responsible for putting said surfaces back in their original condition. Every attempt shall be made to avoid cutting reinforcing steel bars when an opening is required in a reinforced concrete wall or floor slab.

1.15 EXCAVATION AND BACKFILL

A. Excavation

1. Excavation for conduits shall be of sufficient width to allow for proper jointing and alignment of the type conduit used. Conduit shall be bedded on original ground. Where conduit is in solid rock, a 6-inch earth cushion must be provided. Conduit shall be laid in straight lines between pull boxes and/or structures unless otherwise noted on the Contract Drawings. The cost of solid rock excavation shall be included in the lump sum bid with no extra pay allowed (unclassified).

B. Backfill

1. Backfill shall be hand placed, loose granular earth for a height of 6 inches above the top of the largest conduit. This material shall be free of rocks over 2 inches in diameter. Above this, large rocks may be included but must be mixed with sufficient earth to fill all voids.

1.16 SLEEVES, CHASES AND OPENINGS

A. Sleeves shall be required at all points where exposed conduits pass through new concrete walls, slabs, or masonry walls. Sleeves that must be installed below grade or where subject to high water conditions must be installed watertight.

B. Wiring chases shall be provided where shown on the Contract Drawings. The Contractor shall have the option of installing chases below surface mounted panel boards provided all structural requirements are met.

C. It is the Contractor's responsibility to leave openings to allow installation of the complete, operational electrical system. Openings required but not left shall be cut as outlined under cutting and patching. The Contractor shall coordinate all holes and other openings with necessary diameters for proper fire stopping.

1.17 POWER COMPANY COORDINATION

A. The Contractor is responsible for coordinating all activities onsite by the power company.

B. All power company metering equipment shall be electrically located "upstream" of any manual/automatic transfer equipment on projects requiring onsite emergency power generation equipment.

C. Any special provisions required by the serving electrical utility shall be as outlined on the Contract Drawings or as advised by the utility at the time of construction, and work required by these special provisions shall be executed with no extra cost to the Owner.

1.18 TEMPORARY ELECTRICAL POWER

A. The Contractor shall be responsible for providing temporary electrical power as required during construction and shall remove the temporary service equipment when no longer required. Temporary power is also addressed in Division 01.

1.19 OVERCURRENT PROTECTION

A. Circuit breakers or fused switches shall be the size and type as written herein and shown on the Contract Drawings. Any additional overcurrent protection required to maintain an equipment

listing by an authority having jurisdiction shall be installed by the Contractor at no extra cost to the Owner.

B. The Contractor shall submit to the Engineer actual nameplate data from motors shipped to the site, stating motor identification as well as characteristics. Overload relay thermal unit selection tables shall accompany the motor data. The Engineer will select thermal unit sizes from this data for use by the Contractor in ordering proper thermal units.

1.20 TRAINING

A. All manufacturers supplying equipment for this division shall provide the Owner's operations staff with training in the operation and maintenance on the equipment being furnished. The training shall be conducted at the project site by a qualified representative of the manufacturer.

B. The cost of this training shall be included in the bid price.

C. The required training shall consist of both classroom and hands-on situation. Classroom training shall include instruction on how the equipment works its relationship to all accessories and other related units, detailed review of shop drawings, detailed presentation of written O & M instructions, troubleshooting and record-keeping recommendations. Hands-on-training shall include a review of the manufacturer's O & M instructions, check out of each operator to identifying key elements of the equipment, tear down as appropriate, calibration, adjustment, greasing and oiling points, and operating manipulations of all electrical and mechanical controls.

D. The training shall be scheduled through the Contractor with the Owner. The timing of the training shall closely coincide with startup of the equipment, but no training shall be conducted until the equipment is operational.

E. The minimum number of hours to be provided by manufacturers supplying equipment on this project shall be in accordance with the following table:

Item	Training Hours	
	Classroom	Hands-on
Lighting Control System	2	1

F. At least 60 days prior to the training the manufacturer shall submit through the Contractor to the Engineer an outline of the training proposed for the Engineer's review and concurrence.

G. The Owner reserves the right to record all training sessions.

1.21 AS BUILT DRAWINGS

A. The Contractor shall maintain 1 set of the Contract Drawings on the job in good condition for examination at all times. The Contractor's qualified representative shall enter upon these drawings, from day to day, the actual "as-built" record of construction and/or alteration progress. Entries and notes shall be made in a neat and legible manner and these drawings delivered to the Engineer after completion of the construction, for use in preparation of Record Drawings.

1.22 GROUNDING AND BONDING

A. All metallic conduit, cabinets, equipment, and service shall be grounded in accordance with the latest issue of the National Electrical Code. All supporting framework and other metal or metal clad equipment or materials which are in contact with electrical conduit, cable and/or enclosures shall be properly grounded to meet the code requirements.

1.23 RELATED SPECIFICATION DIVISIONS

A. The following divisions contain Specifications on utilization equipment, equipment accessories, and procedures related to execution of the electrical work, and are included here for the Contractor's information. Bids shall still be based on complete Contract Documents.

Division 00 – Procurement and Contracting Requirements
Division 01 – General Requirements
Division 02 – Existing Conditions
Division 03 – Concrete
Division 05 – Metals
Division 08 – Openings
Division 09 – Finishes
Division 10 – Specialties
Division 11 – Equipment
Division 13 – Special Construction
Division 23 – Heating, Ventilating, and Air Conditioning
Division 27 – Communications
Division 28 – Electronic Safety and Security
Division 31 – Earthwork
Division 33 – Utilities

1.24 SERVICE ENTRANCE

A. Conductors and terminations for service entrances shall be furnished and installed by the Contractor. Voltage, phase, and number of wires shall be as shown on the Drawings. Clearances for overhead entrance wires shall be per Power Company, NEC, and NESC requirements.

B. Any details not shown on the Drawings or written in the Specifications pertaining to the service entrance shall be per power company requirements. It is the Contractor's responsibility to contact the utility prior to bidding and obtain any special requirements or costs they will be imposing. Those costs shall be included in the bid.

C. On underground service entrances from pad mounted transformers, the Contractor shall be responsible for furnishing and installing all primary, secondary, and metering conduits, as well as secondary service/metering conductors. The Contractor shall be responsible for furnishing pull wires in primary conduits for use by the power company. The Contractor shall be responsible for fabricating the required concrete pad that the transformer will be mounted on. The Contractor shall also mount the meter base furnished by the power company.

1.25 CONTRACTOR LICENSING

A. The Contractor performing the electrical work on this project shall be locally licensed, if required by local law or ordinance. If the Contractor has passed the State test, it may not be necessary to meet local testing requirements. It shall be the Contractor's responsibility to investigate these requirements and comply with same.

1.26 ANCHORING/MOUNTING

A. Electrical conduits and/or equipment shall be rigidly supported. Anchors used shall be metallic expansion type, or if appropriate to prevent spalling concrete, epoxy set type. Plastic or explosive type anchors are prohibited.

B. Seismic Anchorage & Qualification of Electrical Components

1. Refer to the structural drawings for seismic design criteria, including seismic design accelerations, Seismic Design Category and structure Risk Category.
2. All electrical components shall be anchored to resist seismic forces in buildings with seismic design category D, E, or F except when ALL the conditions exist:

    a. The component is not required for life safety.
    b. The component is not needed for continuing operation of a Risk Category IV structure.
    c. The component is positively attached to the structure.
    d. The component is flexibly connected to associated conduit and is one of the following:

        1) The component weighs less than 400 lb and has a center of mass less than 48 in above the adjacent floor level OR
        2) The component weighs less than 20 lb or less than 5 lb/s.f. if distributed.

3. All electrical components required for life safety shall be anchored to resist seismic forces in buildings with Seismic Design Category C, D, E or F.

4. All electrical components required for continued operation of a Risk Category IV structure shall be anchored to resist seismic forces in buildings regardless of the Seismic Design Category.
5. Where anchorage to resist seismic forces is required, the following shall be submitted:

   a. Designs of all connections of electrical components to the structure, either supplied and certified by the manufacturer; or by a licensed professional engineer qualified and experienced in such design – FOR APPROVAL prior to installation.
   b. Certifications by manufacturers of electrical equipment in accordance with 13.2.2.1 of ASCE 7 – FOR APPROVAL prior to purchase.
   c. Special Inspection Reports verifying that the electrical components were installed in accordance with the seismic anchorage designs – FOR RECORD after installation.

1.27 ELECTRICAL COMPONENT MOUNTING HEIGHTS

A. Unless otherwise indicated, mounting height for components shall be as defined herein. In cases of conflicts with architectural or structural aspects, the components may be relocated. If an indicated height conflicts with a code requirement, the code shall govern.

B. Mounting heights are given from finished floor elevation to the centerline of the component, unless otherwise noted.

	Component	Height	Comments
1.	Wall type light switch	4'-0"	To top of box
2.	Low wall outlet (power, TV, Comm)	16"	To bottom
3.	Push-button or control stations	4'-0"	
4.	Top of panelboards or control panels	6'-6"	Maximum (except for handicapped areas)
5.	Top of local disconnect switch	6'-0"	Maximum

In situations where there appears to be a conflict with Americans with Disabilities Act (ADA) legislation, utilize the ADA requirements.

1.28 RECEIPTS

A. Some sections of the Specifications call for equipment, materials, accessories, etc. to be provided and "turned over to the Owner" or like requirements. The Contractor shall obtain a receipt for each item turned over, signed by the Owner or his representative. A copy of this receipt shall be transmitted to the Engineer.

B. When a question arises concerning whether items have been turned over to the Owner, and there is no signed receipt, it may be assumed that the items were not provided.

1.29 BUY AMERICAN

A. The Contractor is responsible for compliance with any "Buy American" legislation that may apply to this project due to State, Federal, and local laws or funding agency requirements. Necessary certifications of the sourcing of materials shall be part of the submittals.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 260000

SECTION 260519 - CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. All wire and cable shall conform to the latest requirements of the NEC and shall meet all ASTM/UL specifications. Wire and cable shall be new; shall have size, grade of insulation, voltage rating and manufacturer's name permanently marked on the outer covering at regular intervals. Complete descriptive literature shall be submitted to the Engineer for review and acceptance prior to installation.

B. Building wire #12 - #1 shall be applied based on a 60 degrees C temperature rise. Building wire larger than #1 may be applied at its 75 degrees C temperature rise.

1.2 DELIVERY, STORAGE AND HANDLING

A. Wire and cable shall be suitably protected from weather and damage during storage and handling and shall be in first class condition when installed.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Building Wire (types THWN and THW-cu.) – American, Carol, or Collyer, Rome, equal.

B. Flexible Cords and Cables (Types SO (600V) SJO - 300V) – American, Carol, Collyer, or equal.

C. Control Cables (Shielded or unshielded) 600V max. – Belden, Eaton-Dekoron, Okonite, Anixter, or equal.

D. Instrumentation Cables (Shielded) 600V mx. – American, Belden, Eaton-Dekoron, Manhatton, Okonite, or equal.

E. Multi-Conductor Instrumentation Cables (Shielded) 600V mx. – American, Belden, Houston Wire & Cable, Eaton-Dekoron, or equal.

2.2 MATERIALS

A. General

1. In general, all conductors shall be 98 percent conductive, annealed copper unless otherwise noted on the Contract Drawings.
2. Conductors shall be type THW or THWN insulation. Conductor size shall be AWG (American Wire Gauge) Standard. Minimum conductor size shall be AWG number 12 except branch circuits in excess of 75 feet from panel to first outlet not smaller than no. 10 AWG. Minimum voltage rating shall be 600 volts. Conductors for small power may be solid (i.e. lighting, receptacles), but conductors for control work shall be stranded.
3. All conductors shall be stranded, #8 and larger. Number 12 and number 10 AWG shall be solid.
4. Conductors with high temperature rated insulations and special construction shall be used where required in connecting to light fixtures or appliances that have special requirements.
5. Aerial power cables shall be as specified in this division, Section: Overhead Power Distribution.
6. Telephone cables shall be as specified in this division, Section: Communications.

PART 3 - EXECUTION

3.1 INSTALLATION/APPLICATION/ERECTION

A. General

1. Conductors shall be continuous from outlet to outlet and no splices shall be made except accessible in junction or outlet boxes. Wire connectors of insulating material or solderless pressure connectors, properly taped, shall be used for all splices in wiring, wherever possible.
2. Conductors shall be color coded in accordance with the following schedule:

	480/277V 3 Phase	208/120V 3 Phase	120/240, Single Phase
Phase A	Brown	Black	Black
Phase B	Orange	Red	Red
Phase C	Yellow	Blue	
Neutral (Grounded)	White or Light Gray	White or Light Gray	White or Light Gray
3-Way Tracers			Blue
Grounding	Green	Green	Green
Remote Energized Conductors			Yellow

	480/277V 3 Phase	208/120V 3 Phase	120/240, Single Phase
(Control)			
Control	Per NFPA 79	Per NFPA 79	

3. Conductors shall be pulled into raceways in strict accordance with manufacturer's recommendations.
4. Ample slack conductors shall be allowed at each terminal point, and pull or junction box, to permit installation with ease and without crowding.
5. All conductors terminating at terminal blocks shall be identified with numbers and/or letters identical to circuit or control identification.
6. No conductors shall be drawn into conduits until all work which may cause wire or cable damage is completed. Wire pulling shall be accomplished utilizing machinery and accessories intended for the purpose.
7. All connections and splices shall be made in accordance with conductor manufacturer's recommendations, and as written herein.
8. If the size and number of conductors in a conduit on the Drawings is not shown, then it shall be assumed to be 3 #12, 3/4 inch.
9. In general, feeder sizes shown are based on no more than three current carrying conductors in a conduit. Multiple small branch circuit feeders may be combined in a common conduit, provided conductors are derated in accordance with NEC article 310-15.
10. Unless otherwise specifically indicated, neutrals may not be shared.

B. Low Voltage Feeders

1. All low voltage feeders shall be 480-volt, 240-volt, or 208-volt as noted in the Contract Drawings. Three phase, 4 wire for power and 208/120 volt, 3 phase, 4 wire for general lighting, unless otherwise noted. The Contractor shall furnish and install all feeders from the distribution center(s) to each of the other structures/subpanels as shown on the Contract Drawings.
2. Wire shall be factory color coded for each phase and neutral, with green used for the ground conductor. As far as practical, all feeders shall be continuous from origin to panel termination without running splices in intermediate pull boxes.

C. Control Cable

1. Control cable shall be the size and have the number of conductors shown on the control system drawings. Control cable shall be used for motor controls and monitoring only. Color coding shall be ICEA, Method 1. Control cables between buildings shall be underground in conduit of the size shown in the control system schematic. Cabling shall provide a minimum of 25 percent spare conductors. Voltage rating shall be 600 volts.

D. Instrument Cable

1. General

a. All signal lines should be constructed of individually twisted pairs (6 to 10 twists per foot), including thermocouple extension leads. Cables should be made of twisted pairs, with all lays and pairs twisted in the same direction for maximum flexibility.
b. Wire size is #16 AWG minimum for single pair runs under 5,000 feet in length. Wire size shall be #16 - #20 AWG for multi-pair cable runs under 5,000 feet in length.
c. Stranded tinned copper conductor shall be used for all wiring other than thermocouple extension leads.
d. Insulation resistance at 68 degrees Fahrenheit between conductors and between conductors and ground should be at least 500 megohms per 1,000 feet.
e. Multi-pair cable should be jacketed with poly-vinyl-chloride, polyethylene or Teflon at least 0.045 inch thick. Voltage rating shall be 600 volts.

2. Signal Wiring

a. Low level analog (less than 500 millivolt d-c). Use twisted pairs which may be cabled with other pairs carrying similar voltage levels. Foil wraps or equivalent shielding is required for each cable with the shield insulated from ground.
b. High level analog (greater than 500 millivolts d-c). Use twisted pairs which may be cabled with other pairs carrying similar voltage levels and current levels less than 100 ma. Shielding is required.
c. Analog outputs (normally 0-4 d-c or 4-20 ma). Same as b.
d. Contact inputs - use twisted pairs and run in separate conduit.
e. Contact outputs - same as d.
f. Pulse inputs - same as d.

3. Signal and Shield Grounding

a. All shields must be grounded at one point only as close as possible to the signal source.
b. Thermocouples may be grounded or ungrounded.
c. Analog signals, if grounded, should be grounded as near the signal source as possible.
d. Resistance bulbs should not be grounded.

4. Signal and Wiring Separation

a. High level analog signals may share the same conduit or run with contact or pulse signals.
b. Thermocouple and low-level signals should be run in a separate conduit.
c. A minimum separation of 12 inches between analog signal leads and a-c power leads should be maintained. For a-c power leads carrying 100 amps or greater, a 24-inch separation should be maintained. Parallel runs should be limited to less than 500 feet. Perpendicular runs may be as close as 6 inches.

E. Multi-Pair Instrument Cables

1. Multi-Conductor instrument cable shall meet the requirements of 'Instrument Cable' above, plus the following:

   a. Provide number of shielded twisted pairs indicated on drawings.
   b. Conductor shall be terminated at valve actuators via cable glands listed for the environment (IP68 and/or Class I, Division 1, Class, I, Division 2).

END OF SECTION 260519

SECTION 260526 - SECONDARY GROUNDING

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Grounding shall be done in accordance with the NEC, as described in these Specifications, and as shown on the Contract Documents.

B. One electrolytic rod is required at the service point. All other rods shown shall be copper-clad steel driven rods.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Grounding equipment shall be Cadweld, Cathodic Engineering Equipment Co., Connector Castings, Inc., Copperweld Bimetallics Group, Harger, Thomas and Betts Blackburn, Lyncole, or equal.

2.2 ELECTROLYTIC MAINTENANCE-FREE GROUNDING ELECTRODES

A. Self-contained ground system(s) using electrolytic action to enhance the grounding performance shall be provided where specifically indicated on the Drawings. Basis of design is Lyncole. Other manufacturers or products that are equal will be accepted.

B. The ground rod shall operate by hygroscopically extracting moisture from the air to activate the electrolytic process, improving performance.

C. Ground rod system shall be UL listed.

D. Ground rod system shall be 100% self-activating/-sealed and maintenance free. No additions of chemical or water solutions required.

E. All copper ground rods shall consist of a 2-inch nominal diameter hollow copper tube with a nominal wall thickness of 0.083 inches. The tube shall be permanently capped on the top and bottom. Air breather holes shall be provided in the top and drainage holes shall be provided in the bottom of the tube for electrolyte drainage into the surrounding backfill material (Lynconite II).

F. The XIT rod shall be filled from the factory with non-hazardous Calsolyte™ salts to enhance grounding performance.

G. Ground rod shall be a minimum of 50 (fifty) feet long for straight (vertical) installation.

H. A stranded 1/0 AWG copper ground wire shall be exothermically welded to the side of the rod for the electrode to grounding conductor connection.

I. Fibrelyte composite box for traffic applications. Includes bolt-down flush cover with "breather" holes, XIT model XB-12F.

J. Natural volcanic, non-corrosive form of Lynconite II clay grout backfill material free of polymer sealants. Quantity of 50-pound bags varies with the length of the electrode and diameter of the hole.

K. Shall absorb approximately 13 gallons of water per 50-pound bag for optimal 30 percent solids density.

L. PH value 8-10 with maximum resistivity of <1 ohm-m at 30 percent solids density.

M. UL Listing: 467J.

N. Warranted for 30 years with a minimum life expectancy of 50 years.

PART 3 - EXECUTION

3.1 INSTALLATION/APPLICATION/ERECTION

A. Grounding shall utilize a counterpoise and driven ground rod system to achieve the design ground resistance.

B. The ground system shall be continuous with all structures on a common ground. This can be accomplished by bonding all conduits together and bonding to the ground bus at each equipment enclosure. Bonding jumpers shall be required at all pull boxes, and at all motor casings. A separate grounding conductor shall be pulled in all conduits in addition to wire counts shown on Drawings.

C. Ground rods shall be: 3/4-inch x 10 foot-0 inch copper clad type. Where multiple rods are driven, they shall be separated by at least 20 feet to assure maximum effect.

D. Ground resistance between ground and absolute earth shall not exceed 5 ohms.

E. All grounding and grounding electrode systems shall be as required by the NEC as for types of electrodes utilized and sizing of grounding conductor to service equipment from the electrode system. These shall include footer rebar, buried metal water pipe, buried bare copper conductor, etc.

F. All concealed grounding electrode system connections shall be made using exothermic welds, Cadweld, Harger, or equal. No splices are allowed in the grounding electrode conductor.

G. An insulated, isolated ground shall be run from building service entrances to panels serving computers as detailed on the drawings.

H. Should ground rods be impractical for use due to rocky conditions, then grounding electrode plates may be used after acceptance by the Engineer on a case-by-case basis.

3.2 INSTALLATION OF ELECTROLYTIC RODS

A. Install ground rod system in compliance with manufacturer's instructions or recommendations.

B. Bore minimum 6-inch diameter hole, 6 inches deeper than the length of rod to be installed. This ensures that the top of the XIT electrode will not come in contact with the top of the protective cover box.

C. If the electrode is longer than 10 feet, a minimum 8-inch diameter hole should be utilized. This is to ensure that the system will be completely surrounded by the Lynconite II backfill material.

D. Place XIT unit in the hole so that the top of unit is about 6 inches below grade.

E. Lynconite II is a highly conductive backfill included with the system. Mix each 50 pound backfill grout material with 13 gallons of water to form a slurry and pour or pump around XIT rod. Pouring the Lynconite II into the water facilitates the mixing process.

F. Backfill to the "Bury to Here" label.

G. Place protective box so top is flush with grade level. Use backfill or grout to stabilize box around the rod.

H. Remove sealing tape from top breather holes to activate.

I. Connect the grounding conductor to XIT rod pigtail exothermically.

3.3 FIELD QUALITY CONTROL

A. Testing

1. The Contractor shall be required to provide all labor, tools, instruments, and materials as necessary to perform testing of the grounding electrode system. Results shall be submitted in writing to the Engineer. The testing shall be done to determine the effectiveness of the selected grounding scheme and to see that it conforms to resistance specified (5 ohms maximum).

2. The testing should be done using a fall-of-potential method test at the point of grounding electrode conductor connection to main power distribution equipment and at each separately derived system or MCC. The test shall be performed no sooner than 48 hours after a rainfall event.
3. The written report should contain the following information:

    a. Type of ground scheme used, i.e., building steel, driven rod, mat, etc.
    b. Type of instrument used.

        1) Manufacturer
        2) Model Number
        3) Confirm fall-of-potential test
        4) *Serial Number
        5) *Where instrument was obtained

        * These 2 items are required so that the same instrument may be utilized should reproduction of the test be necessary due to unsatisfactory readings/instrument miscalibration.

    c. Ground resistance readings obtained at various test distances.
    d. Ground resistance/distance curve.
    e. Value of Grounding Electrode Resistance at knee of curve.
    f. Sketch showing setup of instrumentation and location of grounding electrode and test probes.
    g. Proposed method to achieve the specified resistance, should an unacceptable reading be obtained.
    h. Ground resistance readings obtained (if applicable) after modifications incorporated.

3.4 GROUND ENHANCEMENT MATERIAL

A. Where indicated on the Drawings or as deemed necessary by the Contractor to achieve design grounding electrode system resistance, a ground enhancement material shall be utilized, in accordance with manufacturer's recommendations.

B. The ground enhancement material must be permanent and maintenance free (no recharging with salts or chemicals which may be corrosive) and maintain its earth resistance for the life of the system. It must set up firmly and not dissolve or decompose, or otherwise pollute the soil or local water table. The material shall be capable of being applied dry or in a slurry form and shall reduce resistance by at least 40 percent.

C. Basic components of this material shall be carbon, hydraulic cements, and hydrous aluminum silicates. Minimum 4-inch diameter holes shall be used with ground rod installations, with depth 6 inch shorter than length of rod, completely filled with the material. Trenches for grounding electrode conductor shall also utilize this material the full length from electrode to building, in

accordance with manufacturer installation recommendations, except trench depth shall allow buried conductor to be at least 2'-6 inch deep.

D. Ground enhancement material shall be GEM by Erico Products, Powerfill by Cathodic Engineering Equipment Company, Harger UltraFill, or equal.

END OF SECTION 260526

LFUCG
Fire Training Academy
Phase 1 Site Development Project
Lexington, Kentucky

Bid #1-2026

January 2026

SECTION 260529 – SUPPORTING DEVICES AND HANGERS

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Provide a system of supporting devices and hangers to ensure secure support or bracing for conduit, electrical equipment, including safety switches, luminaires, panelboards, outlet boxes, junction boxes, cabinets, etc.

B. All electrical equipment shall be rigidly mounted, and installed using supporting devices as indicated, required by the work, or as described herein.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Provide appropriate supporting devices and hangers as manufactured by Erico Products, Inc., Steel City, Rayco, or equal:

1. Vertical flange clamps (beam clamps).
2. "Z" purlin clips.
3. Conduit clips.
4. Universal clamps (Beam clamps).
5. Beam clamps (set screw type).
6. Combination push-in conduit clips.
7. Combination conduit hanger clamps.
8. Flexible conduit clips.
9. Special combination conduit clips.
10. One hole steel straps.
11. Minerallac conduit hangers.

B. Strut type channel shall be Unistrut, Kindorf, or equal.

2.2 MATERIALS

A. All mounting brackets and strut used outside shall be aluminum. Fasteners used to mount equipment outside shall be stainless steel. The only exception to the above shall be anchor bolts for area light poles which shall be allowed to have galvanized threads and galvanized nuts.

B. All mounting brackets and strut used inside shall be galvanized or aluminum. If galvanized is used, then the cut ends shall be cold galvanized. Fasteners used inside to mount equipment into concrete shall be stainless steel. Ungalvanized strut is prohibited.

C. Stainless steel (non-magnetic) or fiberglass resin strut shall be used in chemical areas and areas exposed to chlorine gas.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Secure conduits to within 3' of each outlet box, junction box, cabinet, fitting, etc., and at intervals not to exceed ten feet (10') for EMT conduit and in accordance with Table 344.30 (B) (2) for Rigid Steel conduit.

B. Install clamps secured to structure for feeder and other conduits routed against the structure. Use drop rods and hangers or racks to support conduits run apart from the structure.

C. Furnish and install suitable angle iron, channel iron or steel metal framing with accessories to support or brace electrical equipment including safety switches, fixtures, panelboards, outlet boxes, etc.

D. Fasteners used to mount equipment into concrete shall be stainless steel.

E. All freestanding equipment shall be anchored to its foundation using stainless steel expansion bolts of the type, size, and number recommended by the equipment manufacturer.

F. Paint all supporting metal not otherwise protected, with rust inhibiting primer and then with a finish coat if appropriate to match the surrounding metal surfaces. (Prepainted or galvanized support material is not required to be painted or repainted.)

G. Use of chains, perforated iron, bailing wire, cable ties, duct tape, Velcro, or tie wire for supporting conduit runs will not be permitted.

H. All ends of strut (cut or not) shall have safety cap installed.

END OF SECTION 260529

LFUCG
Fire Training Academy
Phase 1 Site Development Project
Lexington, Kentucky

Bid #1-2026

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SECTION 260530 – DUCTBANK FLOWABLE FILL

PART 1 - GENERAL

1.1 INTRODUCTION

A. Flowable fill refers to a cementitious slurry consisting of a mixture of fine aggregate or filler, water, and cementitious material(s), which is used as a fill or backfill in lieu of compacted earth. This mixture is capable of filling all voids in irregular excavations and hard-to-reach places (such as under undercuts of existing slabs), is self-leveling and hardens in a matter of a few hours without the need for compaction in layers. Flowable fill is sometimes referred to as controlled density fill (CDF), controlled low strength material (CLSM), lean concrete slurry, and unshrinkable fill.

B. The materials and mix design for the flowable fill should be designed to produce a comparable compressive strength to the surrounding soil after hardening, making excavation at a later time possible.

C. All duct bank concrete shall be dyed red.

1.2 DESCRIPTION

A. Furnish and place flowable fill in a fluid condition that sets within the required time and, after curing, obtains the desired strength properties as evidenced by the laboratory testing of the specific mix design. This section specifies flowable fill for use as backfill to remain excavatable using hand tools or easily excavatable using a backhoe as would be utilized for adjoining earth.

1.3 SUBMITTALS

A. Flowable fill Mix Design: Provide flowable fill mix design containing cement and water. At the contractor's option, it may also contain fly ash, aggregate, or chemical admixtures in any proportions such that the final product meets the strength and flow consistency, and shrinkage requirements included in these specifications.

1. Test and Performance - Submit the following data:

a. Flowable fill shall have a minimum strength of 300 psi according to ASTM C 39 at 28 days after placement.

b. Flowable fill shall have minimal subsidence and bleed water shrinkage. Evaporation of bleed water shall not result in shrinkage of more than 1/8 inch per ft. of flowable fill depth (for mixes containing high fly ash content). Measurement of a Final Bleeding shall be as measured in Section 10 of ASTM C 940 "Standard

Test Method for Expansion and Bleeding of Freshly Mixed Grouts for Preplaced-Aggregate Concrete in the Laboratory.

B. Provide documentation that the admixture supplier has experience of at least one year, with the products being provided and any equipment required to obtain desired performance of the product.

1.4 APPLICABLE PUBLICATIONS

A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by basic designation only.

B. American Society for Testing and Materials (ASTM):

D4832-02	Standard Test Method for Preparation and Testing of Controlled Low Strength Material (CLSM) Test Cylinders.
C618-03	Standard Specifications for Coal Fly Ash and Raw or Calcined Natural Pozzolan for use as Mineral Admixture in Concrete. (Use Fly Ash conforming to the chemical and physical requirements for mineral admixture, Class F listed, including Table 2 (except for Footnote A). Waive the loss on ignition requirement.)
C403/C403M-05	Standard Test Method for Time of Setting of Concrete Mixtures by Penetration Resistance.
C150-99 Rev.A-04	Standard Specification for Portland Cement
C33-03	Standard Specification for Concrete Aggregates
C494/C494M-04	Standard Specification for Chemical Admixtures for Concrete
C940 RevA-98	Standard Specification for Expansion and Bleeding of Freshly Mixed Grouts for Preplaced – Aggregate Concrete in the Laboratory

C. American Concrete Institute (ACI):

SP-150-94	Controlled Low-Strength Materials

1.5 QUALITY ASSURANCE

A. Manufacturer: Flowable fill shall be manufactured by a ready-mix concrete producer with a minimum of 1-year experience in the production of similar products.

B. Materials: For each type of material required for the work of this Section, provide primary materials that are the products of one manufacturer. If not otherwise specified here, materials shall comply with recommendations of ACI 229, "Controlled Low Strength Materials."

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver and handle all products and equipment required, in strict compliance with manufacturer's recommendations. Protect from damage due to weather, excessive temperatures, and construction operations.

1.7 PROJECT CONDITIONS

A. Perform installation of flowable fill only when existing and forecasted weather conditions are within the limits established by the manufacturer of the materials and products used.

PART 2 - PRODUCTS

2.1 MATERIALS

Provide flowable fill containing, at a minimum, cementitious materials, and water. Cementitious materials shall be portland cement, pozzolanic materials. The flowable fill mix design may also contain, fine aggregate or filler, and/or chemical admixtures in any proportions such that the final product meets the strength, flow consistency, and shrinkage requirements included in this specification.

A. Portland Cement: ASTM C150, Type 1 or Type 2. Meeting Indiana State DOT standards.

B. Mixing Water: Fresh, clean, and potable.

C. Air-Entraining Admixture: ASTM C260.

D. Chemical Admixtures: ASTM C494.

E. Aggregate: ASTM C33.

F. Red Pigment: ASTM C979.

2.2 FLOWABLE FILL MIXTURE

A. Mix design shall produce a consistency that will result in a flowable product at the time of placement which does not require manual means to move it into place.

B. Flowable fill shall have a minimum strength of 300 psi according to ASTM C39 at 28 days after placement.

C. Flowable fill shall have minimal subsidence and bleed water shrinkage. Evaporation of bleed water shall not result in shrinkage of more than 1/8 inch per foot of flowable fill depth (for mixes containing high fly ash content). Measurement of a Final Bleeding shall be as measured in Section 10 of ASTM C 940 "Standard Test Method for Expansion and Bleeding of Freshly Mixed Grouts for Preplaced-Aggregate Concrete in the Laboratory.

D. Provide equipment as recommended by the manufacturer and comply with manufacturer's recommendations for the addition of additives, whether at the production plant or prior to placement at the site.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine conditions of substrates and other conditions under which work is to be performed. Do not proceed until unsatisfactory conditions are corrected.

3.2 APPLICATION OF FLOWABLE FILL

A. Secure pipes and other members to be encased in flowable fill. Ensure that there are no exposed metallic pipes, conduits, or other items that will be in contact with the flowable fill after placement. If so, replace with non-metallic materials or apply manufacturer's recommended coating to protect metallic objects before placing the flowable fill.

3.3 PROTECTION AND CURING

A. Protect exposed surfaces of flowable fill from premature drying, wash by rain or running water, wind, mechanical injury, and excessively hot or cold temperature. Curing method shall be subject to approval by Engineer.

END OF SECTION 260530

SECTION 260533 - RACEWAYS

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. This section of the Technical Specifications includes all raceways for accommodation of electrical conductors, communications conductors, and sleeves for underground electrical installations, conduit stubs for future installations, fittings and accessories.

B. All raceways shall be marked with the manufacturer's name or trademark as well as type of raceway and size. This marking shall appear at least once every 10 feet and shall be of sufficient durability to withstand the environment involved. All raceways shall be furnished and installed as outlined under Part 3 of this Specification.

C. All raceways and fittings shall be painted to match existing or surrounding surfaces except in mechanical spaces.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Tubular Raceways

1. Steel, Galvanized, Rigid, Heavy-Wall, Threaded – Allied Tube & Conduit Corp., Triangle, Wheatland Tube Co., or equal.
2. Steel, Galvanized, Thin-Wall, Electric-Metallic-Tubing (EMT) – Allied Tube & Conduit Corp., Triangle, VAW, or equal.
3. Aluminum, Rigid, Heavy-Wall, Threaded – Alcoa, Reynolds, VAW, or equal.
4. Plastic (PVC); Type A (Thin Wall); Type 40 (or Schedule 40); Type 80 (or Schedule 80) (Heavy -Wall) – Carlon, Robin-Tech, or equal.
5. Flexible Metal Conduit – AFC, Alflex, or equal.
6. Liquidtight Flexible Metal Conduit – Carol Cable Co., Inc., OZ Gedney, Superflex, or equal.
7. PVC Coated Rigid Steel – Korkap, Robroy, or equal.
8. Factory Coated Aluminum Conduit - Alumax ALX-1, or equal.

B. Wireways

1. Hoffman, Square-D, or equal.

C. Raceway Fittings

1. Conduit fittings – Appleton, Crouse-Hinds, OZ Gedney, or equal.
2. Non-metallic conduit fittings – Carlon, Robin-Tech, Scepter, or equal.
3. PVC coated rigid steel fittings shall be provided by the conduit manufacturer.
4. Flexible conduit fittings – OZ Gedney, Raco, T & B, or equal.

2.2 MATERIALS

A. Aluminum Conduit

1. Aluminum conduit shall be extruded from alloy 6063 and shall be the rigid type, non-toxic, corrosion resistant, and non-staining. It shall be manufactured per UL standards as well as listed/labeled by same.
2. Fittings, boxes, and accessories used in conjunction with aluminum conduit shall be die cast, copper free type. They shall be resistant to both chemical and galvanic corrosion. All covers shall have neoprene gaskets.
3. Aluminum conduit shall not be used in underground applications.

B. Rigid Steel Conduit

1. Rigid steel conduit and fittings shall be of mild steel piping, galvanized inside and out, and shall conform to UL standards. The conduit and fittings hall be listed and labeled by UL as well. The galvanized coating of zinc shall be of uniform thickness applied by the hot-dipped process and shall be applied also to the threads. It shall be further dipped in a chromic acid bath so as to chemically form a corrosion resistant protective coating of zinc chromate which has a characteristic yellow-green color. Each piece of conduit shall be straight, free from blisters and other defects, cut square and taper reamed. It shall be delivered with plastic protectors on the threads.

C. Polyvinylchloride (PVC) Conduit

1. PVC conduit and fittings shall be Schedule 40, 80 heavy wall, or thinwall, as indicated in these Specifications manufactured to conform to UL standards. It shall be listed and labeled by UL. It shall have at least the same temperature rating as the conductor insulation. Expansion joints shall be used as recommended by the manufacturer in published literature. PVC systems shall be 90 degrees C minimum UL rated, have a tensile strength of 7,000 psi @ 73.4 degrees F, flexural strength of 11,000 psi and compressive strength of 8,000 psi.

D. Electrical Metallic Tubing (EMT)

1. EMT shall be high grade steel with an exterior galvanized coating of zinc applied uniformly by the electro-galvanized process. The interior surface shall be uniformly coated with aluminum lacquer or enamel. After galvanizing, it shall be dipped in a chromic acid bath to chemically form a protective coating of zinc chromate. The conduit shall conform to UL standards and be listed as well as labeled by UL.

E. Flexible Conduit

1. Flexible metallic conduit shall be constructed from flexibly or spirally wound elecro-galvanized steel. Connections shall be by means of galvanized malleable iron squeeze type fittings, or tomic twist-in type in sizes not exceeding 3/4 inch. Liquidtight conduit shall be light gray in color and have sealtight fittings, type UA.

F. PVC coated rigid conduit shall be hot dip galvanized prior to PVC coating. All threads shall be galvanized. The exterior galvanized surface shall be coated with a primer prior to PVC coating to insure adhesion. The bond on conduit and fittings shall be greater than the tensile strength of the plastic coating. The PVC coating on the exterior of the conduits shall be applied by a plastisol dip method to a nominal thickness of 40 mils, minimum. The interior of the conduit and fittings, and threads shall be painted with a urethane coating. The coating shall allow flexibility for field bending without cracking. PVC sleeves shall be formed at each female opening, with the inside diameter of the sleeve matching the outside of the conduit.

G. Conduit Fittings

1. Rigid Steel Conduit Fittings

a. Standard threaded couplings, locknuts, bushings, and elbows made only of steel or malleable iron are acceptable.
b. Locknuts: Bonding type with sharp edges for digging into the metal wall of an enclosure.
c. Bushings: Metallic insulating type, consisting of an insulating insert molded or locked into the metallic body of the fitting. Bushings made entirely of metal or nonmetallic material are not permitted.
d. Erickson (union-type) and set screw type couplings: Approved for use in concrete are permitted or use to complete a conduit run where conduit is installed in concrete. Use set screws of case hardened steel with hex head and cup point to firmly seat in conduit wall for positive ground. Tightening of set screws with pliers is prohibited.
e. Sealing fittings: Threaded cast iron type. Use continuous drain type sealing fittings to prevent passage of water vapor. In concealed work, installed fittings in flush steel boxes with blank coverplates having the same finishes as that of other electrical plates in the room.
f. Fittings for PVC coated rigid conduit shall be manufactured by the maker of the conduit.

2. Rigid Aluminum Conduit Fittings

a. Standard threaded couplings, locknuts, bushings, and elbows: Malleable iron, steel or aluminum alloy materials. Zinc or cadmium plate iron or steel fittings. Aluminum fittings containing more than 0.4 percent copper are prohibited.
b. Locknuts and bushings: As specified for rigid steel and IMC conduit.
c. Set screw fittings: Not permitted for use with aluminum conduit.

3. Electrical Metallic Tubing Fittings

   a. Only material of steel or malleable iron is acceptable.
   b. Couplings and connectors: Concrete tight and rain tight, with connectors having insulated throats. Use gland and ring compression type couplings and connectors for conduit sizes 2-inches and smaller. Use set screw type couplings with four set screws each for conduit sizes over 2-inches. Use set screws of case-hardened steel with hex head and cup point to firmly seat in wall of conduit for positive grounding.
   c. Indent type connectors or couplings are prohibited.
   d. Die-cast or pressure-cast zinc-alloy fittings or fittings made of pot metal are prohibited.

4. Expansion and Deflection Couplings

   a. Accommodate 1.9 cm (0.75 inch) deflection, expansion, or contraction in any direction, and allow 30 degree angular deflections.
   b. Include internal flexible metal braid sized to guarantee conduit ground continuity and fault currents in accordance with UL, and the NEC code tables for ground conductors.
   c. Watertight, seismically qualified, corrosion-resistant, threaded for and compatible with rigid or intermediate metal conduit.
   d. Jacket: Flexible, corrosion-resistant, watertight, moisture and heat-resistant molded rubber material and stainless steel jacket clamps.

PART 3 - EXECUTION

3.1 PREPARATION

A. Exterior underground metallic conduits shall be degreased, pretreated, and coated with 2 coats of Carboline 888 epoxy, or equal. Other finishes may be acceptable upon the Engineer's review.

3.2 INSTALLATION

A. Conduit

1. All conduit shall be installed in a first class workmanship manner. It shall be installed in horizontal and vertical runs in such a manner as to ensure against trouble from the collection of trapped condensation and shall be arranged so as to be devoid of traps wherever possible. Special care shall be used in assuring that exposed conduit runs are parallel or perpendicular to walls, structural members, or intersections of vertical planes and ceilings. No open wiring is allowed.
2. Fittings or symmetrical bends shall be required wherever right-angle turns are made in exposed work. Bends and offsets shall be avoided wherever possible, but where

necessary, they shall be made with an approved conduit bending machine. All conduit joints shall be cut square, reamed smooth and drawn up tight, using couplings intended for the purpose.

3. Conduits shall be securely fastened to all sheet metal outlets, junction and pull boxes with double galvanized locknuts and insulating-grounding bushings as required by the NEC. Conduit crossings in insulating roof fill will require both conduits to be secured to the roof deck, and these crossings can only be made where the insulating fill is a minimum of 3 inches deep. Runs of exposed conduit shall be supported in accordance with the NEC using cast aluminum or malleable iron one hole pipe straps with spacers to provide an air space behind the conduit. Stainless steel minerallac, one piece conduit clamps shall be acceptable where located such that building occupants are not in danger of inadvertent contact, since this type fitting has several sharp edges. In general terms, they may be considered in areas such as on or above ceilings, or high on walls. All conduit in walls and slabs shall be securely braced, capped (wooden plugs are prohibited), and fastened to the forms to prevent dislodgement during vibration and pouring of concrete.
4. During construction, all conduit work shall be protected to prevent lodgement of dirt, plaster or trash in conduits, fittings or boxes. Conduits which have been plugged shall be entirely freed of accumulations or be replaced. All conduits in floors or below grade shall be swabbed free of debris and moisture before wires are pulled. Crushed or deformed conduit shall not be permitted.
5. All open conduit work through new walls or slabs shall be run through sleeves that shall be made watertight. These sleeves shall be PVC of suitable diameter to permit the passage of the conduit used.
6. Where GRS conduit penetrates a floor slab the conduit shall be painted with 2 coats of Koppers Bitumastic 300-M or equal to a point 6 inches above the penetration.
7. The final section of conduit connecting each motor or piece of utilization equipment subject to vibration shall be of the flexible type. Type UA shall be used in all process areas and in outdoor or wet locations. Flexible conduit to space heaters shall be long enough to allow swivel action.
8. All underground conduits entering a building shall be sealed against water/condensate entering around the conductors. Sealant may be silicone rubber-based caulk.
9. In certain situations, conduit expansion joints shall be required to ensure against conduit and/or cable damage due to settling or thermal expansion and contraction. These expansion joints shall be required where required by the manufacturer or the Contract Drawings and shall be installed per manufacturer's instructions.
10. All conduit to be added to an existing structure shall be exposed in unfinished and process areas. Where new devices are shown in existing walls in finished spaces, every attempt shall be made to conceal the conduit, by fishing flexible conduit through walls from ceiling cavities.
11. All conduit work in the finished space of each new structure shall be concealed except for conduits to lighting fixtures in buildings with precast roof slabs, open joist ceilings, or excepted as noted on the Contract Drawings. All conduit work below ground floor level in each structure shall be exposed. Conduits entering from underground into buildings shall be watertight through the wall, both inside and outside.
12. PVC conduit installed underground for low voltage application shall be schedule 80 without encasement, except service entrance conduits shall be schedule 40 PVC, thin wall PVC, or Fibre Duct, and shall be concrete encased. Where PVC conduit is installed,

transition shall be made to GRS conduit at bends where wire pulling could cut conduit. For medium voltage underground conduit requirements see Section 260513.

13. Aluminum conduit shall not be used underground, in chlorine storage/feed areas, or placed in concrete slabs, unless it is UL listed for the purpose and factory pre-coated.
14. Conduit stubs, for future use, extended through outside walls shall be capped with threaded pipe caps and coated to prevent corrosion. Stubs shall extend 5 feet beyond the walls from which they are stubbed unless otherwise indicated on the Contract Drawings.
15. All metal raceway systems shall be grounding conductive solidly bonded throughout and grounded in accordance with NEC requirements and/or as noted on the Contract Drawings. In addition, all raceway systems shall be provided with separate grounding conductors.
16. Minimum conduit size shall be 3/4 inch. The following table shows the minimum burial depth required for all exterior conduit or cable:

Rigid Metal Conduit	18
Schedule 80 PVC	30
Schedule 40 PVC, thinwall, or fiberduct, Concrete Encased (for low voltage service entrance)	18

17. Wire pulling shall be facilitated by the use of a UL approved pulling compound in pulls over 30 feet in length or where there are 2 or more 90-degree bends. Only polypropylene, nylon, or manila pulling ropes will be permitted. Standard industry recognized wire pulling equipment shall be used.
18. All conduits entering and leaving instrument enclosures shall be sealed around the wires with silicone caulk.
19. All conduits for emergency lighting systems shall be separate from other building power conduits.
20. Areas of use for each type of conduit:

Area of Use	Schedule 40 PVC	Schedule 80 PVC	EMT	GRS	Aluminum
Buildings – Interior					
Building Interior (Concealed)	X	X	X	X	X
Building Interior (Exposed)			X	X	X
Exterior Underground					
Low Voltage	X	X		X	
Low Voltage Service Entrance (Concrete Encased)	X	X		X*	
Exterior Exposed					

Area of Use	Schedule 40 PVC	Schedule 80 PVC	EMT	GRS	Aluminum
Low Voltage					X

21. Underground raceways (conduit) shall be provided with steel sleeves where they pass over or under obstructions, such as: sidewalks; roadways; piping; etc.
22. All conduit shall have an insulated ground wire pulled to all equipment and receptacles.
23. EMT conduit fittings shall be compression type.
24. All raceway runs are shown diagrammatically to outline the general routing of the raceway. The installation shall be made to avoid interference with pipes, ducts, structural members or other equipment. Should structural or other interference prevent the installation of the raceways, or setting of boxes, cabinets, or the electrical equipment, as indicated in the Drawings, deviations must be approved by the Owner and after approval, shall be made without additional charges and shown on the Record Drawings.
25. Fire Stop: Where conduits, wireways, and other electrical raceways pass through fire partitions, fire walls, smoke partitions, or floors, install a fire stop that provides an effective barrier against the spread of fire, smoke and gases, with rock wool fiber or silicone foam sealant only. Completely fill and seal clearances between raceways and openings with the fire stop material. See Section 078400 for complete fire stop requirements.
26. Assure conduit installation does not encroach into the ceiling height head room, walkways, or doorways.
27. No conduit shall be run exposed across roofs without first obtaining permission from the Engineer.
28. Conduit may be run inside concrete slabs as long as the slab is at least 6-inches thick and conduit will have at least 1-1/2-inches of cover on both sides.
29. Flexible conduit used in mechanical rooms shall be liquid tight.
30. Runs of flexible conduit above accessible ceilings shall be limited to 10 ft. Runs of exposed flexible conduit shall be limited to 5 feet. All runs of flexible conduit shall be supported in accordance with NEC requirements.

END OF SECTION 260533

SECTION 260534 - BOXES

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Outlet and junction boxes shall be furnished and installed where indicated on the Contract Drawings, and\or as required by the work in accordance with the NEC.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Boxes – Appleton, Bauers, Carlon, Cloud Concrete Products, Crouse-Hinds, Hoffman, Queen, Raco, Robroy Industries, Sedco, Spring City, Wiegmann, or equal.

2.2 GENERAL

A. All junction and/or pull boxes for dry (non-corrosive) areas shall be of code gauge sheet metal construction, of the inside dimensions as required by code, with covers.

B. Junction and/or pull boxes for wet or damp locations shall be cast metal, rust and corrosion resistant (NEMA 4X), with at least 5 1/2 full threads for each (bossed) conduit opening and shall be suitable for flush or surface mounting as required with drilled external, cast mounting extensions (bossed to provide at least 1/8 inch between back of box and mounting surface for drainage). Box covers shall be hinged, or cap screw retained as required, of the same material as the box and provided with stainless steel (rustproof) hardware.

C. Junction boxes for out-of-doors use, not mounted in concrete may be sheet metal (NEMA 4X), waterproof, rustproof, rain and sleetproof, with hinged covers and latches and provided means of locking by means of keyed locks, tamper-resistant screws or padlocking as required and with clamping cap-screws top and bottom door edges to provide firm contact with gasketing. All gaskets shall be molded (unbroken) neoprene or butyl rubber.

D. Junction boxes for out-of-doors use, not mounted in concrete may be sheet metal, NEMA 3R, rain and sleetproof, with hinged covers and latches, provided with a means of locking.

E. NEMA 4X junction and/or pull boxes may be stainless steel, if called for on the Contract Drawings; or non-metallic or cast aluminum.

F. Underground junction or pull boxes shall be constructed of reinforced concrete cast-in-place or prefabricated as detailed on the Contract Drawings and shall be AASHTO H20 rated.

PART 3 - EXECUTION

3.1 INSTALLATION, APPLICATION, AND ERECTION

A. General

1. Outlets shall be installed in the locations shown on the Contract Drawings. The Contractor shall study the general building plans in relation to the space surrounding each outlet, in order that his work may fit the other work required by these Specifications. When necessary, the Contractor shall relocate outlets so that when fixtures or other fittings are installed, they will be symmetrically located according to room layout and will not interfere with other work or equipment.
2. All supports for outlet boxes shall be furnished and installed by the electrical trades.

B. Concealed Work

1. All outlet boxes shall be standard galvanized steel type at least 1 1/2 inches deep, single or gang type of size to accommodate devices shown. Exceptions shall be noted on the Contract Drawings.
2. Standard deep type outlet boxes (concrete rings with appropriate covers) shall be used in floor slab construction so concealed conduits entering sides of boxes can clear reinforcing rods.
3. Outlet boxes for concealed telephone and signaling systems shall be the 4-inch square type, unless otherwise noted or required by the telephone company.
4. Boxes for use in masonry construction shall be 2 1/2 inches deep for 4-inch block and 3 1/2 inches deep for 6- and 8-inch block. Through wall boxes are prohibited for outlets opposite each other.

C. Exposed Work

1. Outlet or junction boxes for use with exposed steel conduit shall be cast steel. In dry areas sheet steel with rounded corners, made for the purpose.
2. Outlet or junction boxes for use with exposed aluminum conduit shall be copper free, cast aluminum type.
3. Outlet or junction boxes for use with exposed PVC conduit shall be PVC.

D. Pull Boxes

1. Pull boxes for exterior underground work is shown on the Contract Drawings and are the minimum number required. Others may be added at the Contractor's option, but no extra pay shall be allowed. Interior pull boxes are not shown but shall be used as needed. Pull box types are as follows:

Exterior Per detail on the Contract Drawings.

Interior — Interior pull boxes in dry areas shall be of code gauge steel of not less than the minimum required by the NEC and shall be provided with hinged covers. In wet areas or pipe galleries, they shall be rated watertight, of stainless steel, cast aluminum, PVC, fiberglass, or equal. Hardware shall be stainless steel.

E. Openings in Electrical Boxes

1. All openings in electrical equipment, enclosures, cabinets, outlet and junction boxes shall be by means of welded bosses, standard knockouts, or shall be sawed, drilled, or punched with tools specially made for the purpose. The use of a cutting torch is prohibited. Unused openings shall be plugged per the NEC.

END OF SECTION 260534

LFUCG
Fire Training Academy
Phase 1 Site Development Project
Lexington, Kentucky

Bid #1-2026

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SECTION 260542 – HORIZONTAL DIRECTIONAL DRILLING

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Provide all labor, materials, equipment and services required to utilize the trenchless technology of horizontal directional drilling (HDD) for the installation of below grade piping and appurtenances as specified herein.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification sections, apply to work of this Section.

1.3 EXISTING CONDITIONS

A. The existing piping & other utilities shown on the Contract Drawings is based on the best available information. The Engineer makes no guarantee as to the accuracy of the locations or type of piping or utility depicted. All new piping which ties into existing lines must be made compatible with that piping.

B. So that piping conflicts may be avoided, Contractor shall locate the utility (vertically & horizontally) well ahead of the pipe laying operation to confirm exact locations of existing piping before installing any new piping.

1.4 SUBMITTALS

A. Descriptive literature, catalog cuts, and dimensional prints clearly indicating all dimensions and materials of construction, shall be submitted on all items specified herein to the Engineer for review before ordering. Comply with provisions of Section 013323.

B. At the time of submission, the Contractor shall, in writing, call Engineer's attention to any deviations that the submittals may have from the requirements of the Engineer's Contract Drawings and Specifications.

C. Work Plan - Prior to beginning work, the Contractor must submit to the Engineer a general work plan outlining the procedure and schedule to be used to execute the project. Work Plan should be realistic and document the thoughtful planning required to successfully complete the project.

D. Bore Plan – Prior to beginning the work, the Contractor shall submit a drawing indicating the pilot bore plan.

E. Equipment - Contractor shall submit specifications on directional drilling equipment to be used to ensure that the equipment will be adequate to complete the project. Specifications for any drilling fluid additives that the Contractor intends to use shall be submitted for review by the Engineer.

F. The Contractor shall submit calculations to verify that the specified pipe wall thickness (DR) is sufficient to withstand the installation (i.e. pull back force).

1.5 QUALITY ASSURANCE

A. The requirements set forth in this document specify a wide range of procedural precautions necessary to ensure that the very basic, essential aspects of a proper directional bore installation are adequately controlled. Strict adherence shall be required under specifically covered conditions outlined in this specification. Adherence to the specifications contained herein, or the Engineer's approval of any aspect of any directional bore operation covered by this specification, shall in no way relieve the Contractor of their ultimate responsibility for the satisfactory completion of the work authorized under the Contract.

PART 2 - PRODUCTS

2.1 EQUIPMENT

A. The directional drilling equipment shall consist of a directional drilling rig of sufficient capacity to perform the bore and pullback the pipe, a mixing and delivery system for drilling fluid of sufficient capacity to successfully complete the installation, a guidance system to accurately guide boring operations, control and containment of drilling fluid, along with trained and competent personnel to operate the system. All equipment shall be in good, safe operating condition with sufficient supplies, materials and spare parts on hand to maintain the system in good working order for the duration of the project.

2.2 DRILLING SYSTEM

A. Drilling Rig - The directional drilling machine shall consist of a hydraulically powered system to rotate, push and pull hollow drill pipe into the ground at a variable angle while delivering a pressurized fluid mixture to a guidable drill (bore) head. The machine shall be anchored to the ground to withstand the pulling, pushing and rotating pressure required to complete the installation. The hydraulic power system shall be self-contained with sufficient pressure and volume to power drilling operations. Hydraulic system shall be free of leaks. Rig shall have a system to monitor and record maximum pull-back pressure during pull-back operations.

B. Drill Head - The drill head shall be steerable by changing its rotation and shall provide the necessary cutting surfaces and drilling fluid jets.

C. Mud Motors (if required) - Mud motors shall be of adequate power to turn the required drilling tools.

D. Drill Pipe - Shall be constructed of high quality 4130 seamless tubing, grade D or better, with threaded box and pins. Tool joints should be hardened to 32-36 RC.

2.3 GUIDANCE SYSTEM

A. The Guidance System shall be of a proven type and shall be used to provide a continuous and accurate determination of the location of the drill head during the drilling operation. The guidance system shall be capable of tracking all required depths in any soil condition and rock encountered along the proposed installation route.

B. The guidance system shall be setup and operated by personnel trained and experienced with this system. The Operator shall be aware of any magnetic anomalies and shall consider such influences in the operation of the guidance system if using a magnetic system.

2.4 DRILLING FLUID (MUD) SYSTEM

A. Mixing System - A self-contained, closed, drilling fluid mixing system shall be of sufficient size to mix and deliver drilling fluid composed of bentonite clay, potable water and appropriate additives. Mixing system shall be able to molecularly shear individual bentonite particles from the dry powder to avoid clumping and ensure thorough mixing. The drilling fluid reservoir tank shall be sized for adequate storage of the mud mixture. Mixing system shall continually agitate the drilling fluid during drilling operations.

B. Drilling Fluids - Drilling fluid shall be composed of clean water and an appropriate additive. Water shall be from a clean source with a pH of 8.5 – 10 and/or as per mixing requirements of the Manufacturer. Water of a lower pH or with excessive calcium shall be treated with the appropriate amount of sodium carbonate or equal. The water and additives shall be mixed thoroughly and be absent of any clumps or clods. No hazardous additives may be used. Drilling fluid shall be maintained at a viscosity sufficient to suspend cuttings and maintain the integrity of bore wall.

C. Delivery System - The mud pumping system shall have a minimum capacity to supply mud in accordance with the drilling equipment pull-back rating at a constant required pressure. The delivery system shall have filters in-line to prevent solids from being pumped into the drill pipe. Connections between the pump and drill pipe shall be relatively leak-free. Used drilling fluid and drilling fluid spilled during drilling operations shall be contained and properly disposed of. A berm, minimum of 12" high, shall be maintained around drill rigs, drilling fluid mixing system, entry and exit pits and drilling fluid recycling system (if used) to prevent spills into the surrounding environment. Pumps and or vacuum truck(s) of sufficient size shall be in place to convey excess drilling fluid from containment areas to storage facilities.

2.5 OTHER EQUIPMENT

A. Pipe Rollers - Pipe rollers, if required, shall be of sufficient size to fully support the weight of the pipe while being hydro-tested and during pull-back operations. Sufficient number of rollers shall used to prevent excess sagging of pipe.

B. Pipe Rammers - Hydraulic or pneumatic pipe rammers may only be used if necessary and with the authorization of Engineer.

C. Restrictions - Other devices or utility placement systems for providing horizontal thrust other than those previously defined in the preceding sections shall not be used unless approved by the Engineer prior to commencement of the work. Consideration for approval will be made on an individual basis for each specified location. The proposed device or system will be evaluated prior to approval or rejection on its potential ability to complete the utility placement satisfactorily without undue stoppage and to maintain line and grade within the tolerances prescribed by the particular conditions of the project.

2.6 HIGH DENSITY POLYETHYLENE (HDPE) ELECTRICAL CONDUIT

A. HDPE electrical duct pipe shall be manufactured in accordance with ASTM F2160, non-pressure-rated conduit. The PE 334420E/C resin used in HDPE non-pressure conduit shall meet ASTM D3350.

B. HDPE pipe shall have a high stress crack resistance and a coefficient of friction 30 percent less than PVC. The pipe shall come on a continuous reel, at least 500 feet of pipe on a single reel.

C. Schedule 80, UL 651 listed.

D. The Contractor shall adhere to the pipe manufacturer's most current calculation for safe pulling force and bend radius for trenchless application. This calculation shall be part of the required submittal prior to work.

E. Pipe shall be black in color.

F. HDPE pipe size as noted on project drawings.

G. HDPE pipe used on this project shall be manufactured by Carlon or equal.

PART 3 - EXECUTION-

3.1 GENERAL

A. The Engineer must be notified 48 hours in advance of starting work. The Engineer's approval for beginning the installation shall in no way relieve the Contractor of the ultimate responsibility for the satisfactory completion of the work as authorized under the Contract. It

shall be the responsibility of Engineer to provide inspection personnel at such times as appropriate.

B. The Contractor shall be fully responsible for all damages resulting from his failure to comply with all applicable state, federal and local regulations, and requirements of these specifications.

3.2 DRILLING PROCEDURE

A. Site Preparation - Prior to any alterations to work-site, contractor shall photograph or video tape entire work area, including entry and exit points. One copy shall be given to the Engineer and one copy to remain with contractor for a period of one year following the completion of the project. Work site as indicated on drawings, within right-of-way, shall be graded or filled to provide a level working area. No alterations beyond what is required for operations are to be made. Contractor shall confine all activities to designated work areas.

B. Drill Path Survey - Entire drill path shall be accurately surveyed with entry and exit stakes placed in the appropriate locations within the areas indicated on drawings. If contractor is using a magnetic guidance system, drill path will be surveyed for any surface geomagnetic variations or anomalies.

C. Environmental Protection – Contractor shall have in place silt fence between all drilling operations and any drainage, wetland, waterway or other area designated for such protection by contract documents, state, federal and local regulations. Additional environmental protection necessary to contain any hydraulic or drilling fluid spills shall be put in place, including berms, liners, turbidity curtains and other measures. Contractor shall adhere to all applicable environmental regulations.

D. Safety - Contractor shall adhere to all applicable state, federal and local safety regulations and all operations shall be conducted in a safe manner. Safety meetings shall be conducted at least weekly with a written record of attendance and topic submitted to Engineer.

E. Pipe will be placed on pipe rollers before pulling into bore hole with rollers spaced close enough to prevent excessive sagging of pipe.

F. Pilot Hole - Pilot hole shall be drilled on bore path with no deviations greater than 5% of depth over a length of 100'. In the event that pilot does deviate from bore path more than 5% of depth in 100', contractor will notify Engineer and Engineer may require contractor to pull-back and re-drill from the location along bore path before the deviation. In the event that a drilling fluid fracture, inadvertent returns or returns loss occurs during pilot hole drilling operations, contractor shall cease drilling, wait at least 30 minutes, inject a quantity of drilling fluid with a viscosity exceeding 120 seconds as measured by a March funnel and then wait another 30 minutes. If mud fracture or returns loss continues, contractor will cease operations and notify Engineer. Engineer and contractor will discuss additional options and work will then proceed accordingly.

G. Reaming - Upon successful completion of pilot hole, contractor will ream bore hole to a minimum of 25% greater than outside diameter of pipe using the appropriate tools. Contractor

will not attempt to ream at one time more than the drilling equipment and mud system are designed to safely handle.

H. Pull-Back - After successfully reaming bore hole to the required diameter, contractor will pull the pipe through the bore hole. In front of the pipe will be a swivel. Once pullback operations have commenced, operations must continue without interruption until pipe is completely pulled into bore hole. During pull-back operations contractor will not apply more than the maximum safe pipe pull pressure at any time. In the event that pipe becomes stuck, contractor will cease pulling operations to allow any potential hydro-lock to subside and will commence pulling operations. If pipe remains stuck, contractor will notify Engineer. Engineer and contractor will

3.3 SITE RESTORATION

A. Following drilling operations, contractor will de-mobilize equipment and restore the worksite to original condition. All excavations will be backfilled and compacted to 95% of original density. Landscaping will be restored to original. All mud shall be disposed of by the CONTRACTOR.

END OF SECTION 260542

SECTION 260553 - ELECTRICAL IDENTIFICATION

PART 1 - GENERAL

1.1 EQUIPMENT LABELING

A. All starters, feeder units in panelboards, switchboards, disconnects, instruments, etc., shall be marked to indicate the motor, outlet, circuit they control, or variable monitored. Marking is to be done with engraved laminated nameplates and shall bear the designation shown on the Contract Drawings where this information is given. Nameplates shall be fastened to equipment with stainless steel screws, minimum of one each side. In no way shall the installation of mounting screws void the NEMA enclosure rating of the equipment in which they are installed. If there are more than one identical unit, they shall be given consecutive numbers or other descriptions as designated by the Engineer. Nameplate background color shall be white, with black engraved letters, unless otherwise noted.

B. Branch circuits in lighting panels shall be typed on a card suitable for the card frame furnished with the panel. The card shall bear the panel designation listed on the Contract Drawings where this information is given, as well as indicate what each circuit controls.

C. Individual wall mounted starters, panelboards, and disconnect switch shall be labeled with vinyl self-adhesive signs that warn of "High Voltage" (state the specific voltage). Main service entrance conduits to a building, where exposed, shall be labeled with the voltage of the service they carry. Other major equipment such as transformers, transfer switches, generator sets, pump control panels, etc., shall be labeled as such. The type of labels to be used shall have orange as the basic color to conform to OSHA requirements, letters shall be black. The labels shall be of proper size to fit flatly on the surface of the enclosure to make for a neat appearance and not interfere with the operating function of the device it is attached to. These labels shall be as manufactured by the Brady Identification Systems Division, Safety Sign Company, Westline Products Company, or equal.

D. Furnish and install "Authorized Personnel Only" signs by doors into all power distribution equipment rooms/buildings. Furnish and install other signs as indicated on the Contract Drawings.

E. Furnish and install a maximum available fault current sign with date calculated on each structure main service device.

1.2 LOCATING UNDERGROUND UTILITIES

A. Plastic tape bearing the general notation of "buried electric service" or "buried high voltage cable" shall be placed in trenches with backfill about 12 inches below finished grade on all medium voltage underground conduit runs, and on others as indicated on the Contract Drawings.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 260553

SECTION 260573 – ELECTRICAL STUDIES AND CALCULATIONS

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Panelboard/switchgear manufacturer shall provide detailed computer-based, fault-current and overcurrent protective device coordination studies, and the setting of these devices. This shall apply to new work at existing facilities as well as new facilities.

B. As part of the short circuit study above, the manufacturer shall provide an Arc Flash Analysis.

1.2 SUBMITTALS

A. Provide Fault-Current Study as detailed in IEEE standards during design review submittals.

B. Submit an Over Current Protective Device Coordination Study and Arc Flash Analysis prepared in accordance with IEEE standards at the time of shop drawing submittals. The study shall show and include the following:

1. That each over current protective device in the project is applied within its fault current rating.
2. The coordination study shall include time current curves plotted on log-log graph paper for all over current devices. Curves for adjustable devices shall be shown adjusted to afford maximum coordination with upstream and downstream devices, including devices provided on the primary of service transformers.
3. The interrupting capacity of all over current devices shall equal or exceed the maximum fault current level where they are installed in the system. The system shall be fully rated in that the ability of the device to interrupt a fault at its terminals and shall not depend on the characteristics of an over current device upstream. Series rated devices shall not be acceptable.
4. A schedule of all adjustable devices indicating proper dial and tap settings to achieve the plotted characteristics. A schedule of Arc Flash values and corresponding boundary distances and PPE requirements.

1.3 QUALITY ASSURANCE

A. Coordination-Study Specialist Qualifications: An entity experienced in the application of computer software used for studies, having performed successful studies of similar magnitude on electrical distribution systems using similar devices.

1. Professional engineer, licensed in the state where project is located, shall be responsible for the study. All elements of the study shall be performed under the direct supervision and control of engineer.

PART 2 - EXECUTION

2.1 INSTALLATION/APPLICATION/ERECTION

A. Manufacturer's Field Service: Engage a factory-authorized service representative of electrical distribution equipment being set and adjusted to assist in the setting of overcurrent protective devices within equipment.

B. Overcurrent devices are to be visually inspected to verify that settings determined from the final Over Current Protection Coordination Devices Study have been programmed and/or set.

C. Labels shall be applied to all enclosures, with appropriate site-specific Arc Flash warnings, PPE requirements, and boundaries. Boundaries shall be painted on the floor in front of switchgear, switchboards, panelboards and MCC's.

D. Each building main service device shall be provided with a permanent nameplate stating the maximum fault current available and the date it was calculated.

END OF SECTION 260573

SECTION 260923 – LIGHTING CONTROLS

PART 1 - GENERAL

1.1 SYSTEM DESCRIPTION

A. The lighting control system specified in this section shall provide sensor-based (both occupancy and vacancy), and manual lighting control without the use of any centrally hardwired switching equipment (relay panels). The system's control shall be exerted by directly switching lighting loads on and off.

1.2 MANUFACTURERS

A. This specification is based on the nLight Control System from Acuity Brands. Other manufacturers like NX Lighting Controls, Wattstopper or Equal are acceptable provided they fully meet the intent of the drawings and specifications. All substitutions must clearly identify any and all exceptions to the drawings and specifications, with a detailed explanation as to the exception. If substitution is approved, the contractor shall bear the responsibility of a fully functional system to the owner's and an Engineer's satisfaction.

1.3 QUALITY ASSURANCE

A. The installing contractor shall be responsible for a complete and functional system in accordance with all applicable local and national codes.

B. All applicable products must be UL and CUL or CSA Listed.

C. Product must be manufactured in the USA and be warranted for 5 years.

PART 2 - PRODUCTS

2.1 GENERAL SYSTEM SPECIFICATIONS

A. The following sections describe the features which the lighting control system shall possess as a complete operational system. Individual device features and specifications are listed in section 2.2.

1. System Architecture

a. All switching relays shall be located within either a sensor device, single gang wall switch device, or power (relay) pack device.

b. All switching for a specific lighting zone shall take place within the devices located in the zone itself (i.e. not in a remotely located device).
c. All devices within a single lighting zone shall be capable of being daisy-chain wired with CAT-6 low voltage cabling.
d. Communication and Class 2 system power shall be delivered to each device via standard CAT-6 low voltage cabling with RJ-45 connectors.
e. Contractor shall make all lighting network cables with yellow jacketed Cat 6 cable and standard RJ-45 crimp-on connectors. Factory manufactured cables or cables with molded ends are not acceptable.
f. All system devices shall have at least two RJ-45 ports.
g. Individual lighting zones must continue to provide a user defined default level of lighting control.

2. Lighting Control Profiles

a. Changes to the operation of the system can be made in real-time or scheduled via lighting control profiles. These profiles are outlines of settings that direct how a collection of devices function for a defined time period.
b. Lighting control profiles shall be capable of being created and applied to a single device, zone of devices, or customized group of zones.
c. All relays and dimming outputs shall be capable of being scheduled to track or ignore information regarding occupancy, daylight, and local user switches via lighting control profiles.
d. Every device parameter (e.g. sensor time delay and photocell set-point) shall be configurable via a lighting control profile.

3. Commissioning Features

a. To facilitate commissioning, all devices daisy-chained together (using CAT-6) shall automatically be grouped together into a functional lighting control zone.
b. All lighting control zones shall be able to function according to default settings once adequate power is applied and before any system software is installed.
c. All system devices shall be capable of being given user defined names.

2.2 INDIVIDUAL DEVICE SPECIFICATIONS

The lighting control system outlined above shall consist of only devices of the following types; occupancy sensors, daylight (photocell) sensors and wall switches.

A. Occupancy & Photocell Sensors

1. General Specifications

a. Occupancy sensing technologies shall be completely passive meaning that they will not emit any radiation that is known to interfere with certain types of hearing aides, or electronic devices such as electronic white board readers. Passive Infrared (PIR)

or PIR/Microphonic Dual Technology detection technologies shall be acceptable. Ultrasonic or Microwave based sensing technologies shall not be accepted.

b. Sensors shall be available with zero, one, or two integrated Class 1 switching relays.
c. Sensors shall be available with one or two occupancy "poles", each of which provides a programmable time delay.
d. Sensors shall be available in multiple lens options which are customized for specific applications.
e. Sensors shall be equipped with an automatic override for 100 hour burn-in of lamps. This feature must be available at any time for lamp replacements.

2. Daylight (Photocell) Sensors

a. Sensor shall provide for an On/Off set-point, and a deadband to prevent the artificial light from cycling. Delay shall be incorporated into the photocell to prevent rapid response to passing clouds.
b. Sensors' set-point and deadband shall be automatically calibrated through the sensor's micro-controller by initiating the "Automatic Set-point Programming" subroutine. Further adjustment may be made manually if needed. Deadband setting shall be verified and modified by the sensor automatically every time the lights cycle to accommodate physical changes in the space (i.e., furniture layouts, lamp depreciation, or lamp outages).
c. Sensors with dimming control can control 0 to 10 VDC dimmable ballasts by sinking up to 20 mA of Class 2 current (typically 40 or more ballasts).
d. Photocell sensor's set point shall be automatically calibrated through the sensor's micro-controller by initiating the "Automatic Set-point Programming" subroutine. Min and Max dim settings as well as set-point may be manually entered.
e. Dual zone option shall be available for On/Off Photocell, Automatic Dimming Control Photocell, or Combination units. The second zone shall be controlled as an "offset" from the primary zone and shall be the zone farthest from the natural light source.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install all equipment in accordance with manufacturer's installation instructions.

B. The lighting controls shall be installed in accordance with specific guidelines and submittal documents provided by the lighting control manufacturer.

C. Where variations from the general specifications or drawings exist, the contractor shall request a clarification prior to rough in or installation.

D. The contractor shall verify all wire type and routing requirements with the lighting controls manufacturer prior to installation. Not part of this section are requirements for work including,

but not limited to, raceways, electrical boxes, junction boxes, circuit protection, wiring, and fittings required for installation of the lighting control equipment.

3.2 STARTUP AND PROGRAMMING

A. The system manufacturer shall provide a factory authorized field engineer to the project site after installation has been completed and prior to system energization for the purpose of testing and adjustment of the system. Factory field engineer shall test and verify all system functions and ensure proper operation of the system components in accordance with the specifications and on-site conditions, including follow up visits, repair and reprogramming that may be necessary. The installing contractor shall notify the system manufacturer in writing that the system is completely wired and ready to be energized and tested 2 weeks prior to scheduling a field engineer for start-up of the system. Should the field engineer arrive on the job site and find the installation incomplete, the installing contractor shall pay the cost of any extra visits by the field engineer required to complete the system start-up (beyond those that would normally be required).

B. The Contractor shall also advise the CxA when the lighting controls commissioning will occur so that it can be witnessed by the CxA as it occurs. The manufacturer shall cooperate with the CxA as much as practicable, to ensure a successfully commissioned system. If any major verification fails, the CxA will most likely look for compensation from someone for participating in any retesting.

C. During the start-up procedure, the factory field engineer shall provide programming assistance and guidance to the building operating personnel in order to program the systems for initial operation.

D. Allow for up to 4 hours of on-site training on the use and maintenance of the lighting control system to be scheduled at the completion of startup and programming of the system.

E. Include costs for 1 return trip during the warranty to reprogram or set new Owner preferences after they have had time to familiarize themselves with the system.

3.3 TECHNICAL SUPPORT

A. The lighting controls manufacturer shall provide reasonable access to factory direct telephone technical support during normal business hours.

END OF SECTION 260923

SECTION 262416 - PANELBOARDS

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. This section of the Technical Specifications includes furnishing all labor, materials, equipment, and incidentals required for the installation of all lighting and distribution panelboards as hereinafter specified and as shown on the Contract Drawings.

B. The panelboards for installation under this Contract shall be selected from the following types with the panel voltage and main sizes the determining factors. All panelboards shall be by the same manufacturer.

C. Circuit breakers of size and type shown on Contract Drawings and described herein shall be provided with the panelboards.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Eaton, General Electric, Square D, or equal.

2.2 EQUIPMENT

A. Rating

1. Panelboard ratings shall be as shown on the Contract Drawings. All panelboards shall be rated for the intended voltage.

B. Standards

1. Panelboards shall be in accordance with the Underwriter Laboratories, Inc. "Standard for Panelboards" and "Standard for Cabinets and Boxes" and shall be so labeled where procedures exist. Panelboards shall also comply with NEMA Standard for Panelboards and the National Electrical Code.

C. Panelboard Construction (NEMA 4X)

1. Interiors

a. All interiors shall be completely factory assembled with circuit breakers, wire connectors, etc. All wire connectors, except screw terminals, shall be of the anti-

turn solderless type and all shall be suitable for copper or aluminum wire of the sizes indicated.

b. Interiors shall be so designed that circuit breakers can be replaced without disturbing adjacent units and without removing the main bus connectors and shall be so designed that circuits may be changed without machining, drilling or tapping.

c. Branch circuits shall be arranged using double row construction except when narrow column panels are indicated. Branch circuits shall be numbered by the manufacturer.

d. A nameplate shall be provided listing panel type, number of circuit breakers and ratings.

2. Bussing

a. Bus-bars for the mains shall be of copper. Full size neutral bars shall be included. Bus bar taps for panels with single pole branches shall be arranged for sequence phasing of the branch circuit devices. Bussing shall be braced throughout to conform to industry standard practice governing short circuit stresses in panelboards. Phase bussing shall be full height without reduction. Cross connectors shall be copper.

b. Neutral bussing shall have a suitable lug for each outgoing feeder requiring a neutral connection. Neutrals shall be rated 200 percent for panelboards supplying non-linear loads (fed from K rated transformers).

c. Spaces for future circuit breakers shall be bussed for the maximum device that can be fitted into them.

d. Separate neutral and ground bus shall be provided, insulated and isolated from each other. For isolated ground application, provide another insulated and isolated ground bus.

3. Boxes

a. Recessed boxes shall be made from stainless steel, unless otherwise noted.

b. Boxes shall be of sufficient size to provide a minimum gutter space of 4 inches on all sides.

c. Surface mounted boxes shall have an internal and external finish as hereinafter specified. Surface mounted boxes shall be field punched for conduit entrances.

4. Trims

a. Hinged doors covering all circuit-breaker handles shall be included in all panel trims.

b. Doors shall have semi flush type cylinder lock and catch, except that doors over 43 inches in height shall have a vault handle and 3-point catch complete with lock, arranged to fasten door at top, bottom and center. Door hinges shall be concealed. Two keys shall be supplied for each lock. All locks shall be keyed alike; directory frame and card having a transparent cover shall be furnished on each door.

c. The trims shall be fabricated from stainless steel.

d. All exterior and interior steel surfaces of the panelboard shall be properly cleaned.

e. Surface trims shall have the same width and height as the box. Trims shall be fastened with quarter turn clamps.

D. Overcurrent Protective Devices (Circuit Breakers)

1. Panelboards shall be equipped with circuit breakers with frame size and trip settings as shown on the Contract Drawings.
2. Circuit-breakers shall be molded case, bolt-in, thermal-magnetic trip.
3. Circuit-breakers used in 120/240-volt panelboards shall have an interrupting capacity of not less than 10,000 amperes, RMS symmetrical, unless otherwise shown in the panelboard schedule or Contract Drawings.
4. Circuit-breakers used in 480-volt panelboards shall have an interrupting capacity of not less than 14,000 amperes, RMS symmetrical, unless otherwise shown in the panelboard schedule or Contract Drawings.
5. GFCI (ground fault circuit interrupter) shall be provided for circuits where indicated on the Contract Drawings. GFCI units shall be 1-pole, 120-volt, molded case, bolt-on circuit breakers, incorporating a solid-state ground fault interrupter circuit insulated and isolated from the circuit-breaker mechanism. The unit shall be UL listed Class A Group I device (5 milliamp sensitivity, 25 millisecond trip time), and an interrupting capacity of 10,000 amperes RMS.
6. Trip elements of multi-pole breakers shall be effectively insulated from one another. Multi-pole breakers shall be designed so that an overload on any pole shall open all poles simultaneously.
7. The breaker operating mechanism shall be the quick-make, quick-break type and shall be entirely trip free to prevent the contacts being held in a closed position against a short circuit.
8. Breakers shall have a thermal bimetallic element for time delayed overload protection and a magnetic element for short circuit protection.
9. The breaker shall be trip indicating with the trip position midway between the "On" and "Off" positions.
10. Breakers for power distribution panels shall be F frame or larger. All breakers rated above 225 amps shall have interchangeable magnetic trip elements.
11. All breakers shall be UL listed and conform to requirements of NEMA Standards.
12. Breakers for HVAC equipment shall be HACR rated.
13. Breakers as called out in panel schedules shall be arc fault circuit interrupting type.

PART 3 - EXECUTION

3.1 INSTALLATION/APPLICATION/ERECTION

A. Boxes for surface mounted panelboards shall be mounted so there is at least 1/2-inch air space between the box and the mounting surface.

B. Circuit directories shall be typed giving location and nature of load served.

C. Each panelboard shall be nameplated with plastic engraved nameplates stating the panel's name, voltage, and the name of panel serving the panel. Nameplates shall be secured by use of stainless-steel screws. All panels that are a part of an emergency system shall have an additional red nameplate titled "EMERGENCY."

END OF SECTION 262416

SECTION 262700 - WIRE CONNECTIONS AND CONNECTING DEVICES

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Wire connection and connecting devices shall be as herein specified.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Connectors, Lugs, etc. - Anderson, Burndy, T & B, or equal.

B. Ties and Servings - Panduit, T & B, or equal.

C. Termination and splice connectors - 3M Scotchlok, Anderson, Burndy, T & B, or equal.

2.2 MATERIALS

A. Wire Splicing and Terminations (600 Volts and Below)

1. Electrical Terminal and Splice Connectors (#22 - #4 AWG)

a. Terminals and splice connectors from #22 - #4 AWG shall be compression types with barrels to provide maximum conductor contact and tensile strength. Performance, construction, and materials shall be in conformance with UL standards for wire connectors and rated for 600 volts and 105 degrees Celsius.

b. Connectors shall be manufactured from high conductivity copper and entirely tin plated. Terminal barrels shall be serrated on the inside surface and have a chamfered conductor entry. Terminals shall have funnel entry construction to prevent strand fold-back. All barrels shall be brazed seam or seamless construction.

c. Spade type terminals shall be sized for the appropriate stud and shall be locking type that snap firmly onto studs with a close fit for maximum retention. Spade type terminals shall be insulated with an insulation suitable for maintaining a high dielectric strength when crimped and be made form nylon, PVC, or equal.

2. Electrical Lugs and Connectors (#6 AWG - 1000 Kcmil)

a. Lugs and splice connectors from #6 AWG - 1000 Kcmil shall be compression types with barrels to provide maximum conductor contact and tensile strength. They shall be manufactured from high conductivity copper and entirely tin plated.

They shall be crimped with standard industry tooling. The lugs and connectors must have a current carrying capacity equal to the conductors for which they are rated and must also meet all UL requirements. All lugs above 4/0 AWG shall be 2-hole lugs with NEMA spacing. The lugs shall be rated for operation through 35 KV. The lugs shall be of closed end construction to exclude moisture migration into the cable conductor.

3. Twist-on Wire Connectors (#22 AWG - #10 AWG)

   a. All twist-on wire connectors must have a corrosion resistant spring that is free to expand within a steel jacket. The steel jacket must be insulated with a flexible vinyl jacket capable of withstanding 105 degrees Celsius ambient temperatures and of sufficient length to cover wires that are inadvertently overstripped.
   b. Each connector size must be listed by UL for the intended purpose and color coded to assure that the proper size is used on the wire combinations to be spliced. The connectors must be compatible with all common rubber and thermoplastic wire insulations.

4. Solderless/re-usable lugs shall be used only when furnished with equipment such as control panels, furnished by others, where specification of compression type lugs is beyond the Contractor's control. In the event their use is necessary, the Contractor shall be responsible for assuring that they are manufactured to NEMA standards, with proper number and spacing of holes and set screws.

PART 3 - EXECUTION

3.1 INSTALLATION, APPLICATION, & ERECTION

A. Insulation of Splices and Connections

1. Connections/splices with a smooth even contour shall be insulated with a conformable 7 mil thick vinyl plastic insulating tape which can be applied under all weather conditions and is designed to perform in a continuous temperature environment up to 105 degrees Celsius. The tape shall have excellent resistance to abrasion, moisture, alkalies, acids, corrosion, and varying weather conditions (including sunlight). The tape shall be equal to Scotch 33+ and shall be applied in conformance with manufacturer's recommendations. In addition, it shall be applied in successive half-lapped layers with sufficient tension to reduce its width to 5/8 of its original width. The last inch of the wrap shall not be stretched.
2. Connections/splices with irregular shapes or sharp edges protruding shall be first wrapped with 30 mil rubber tape to smooth the contour of the joint before being insulated with 33+ insulating tape specified in the previous paragraph. The rubber tape shall be high voltage (69 KV) corona-resistant based on self-fusing ethylene propylene rubber and be capable of operation at 130 degrees Celsius under emergency conditions. The tape must be capable of being applied in either the stretched or unstretched condition without

any loss in either physical or electrical properties. The tape must not split, crack, slip, or flag when exposed to various environments. The tape must be compatible with all synthetic cable insulations. The tape must have a dissipation factor of less than 5 percent at 130 degrees Celsius, be non-vulcanizing, and have a shelf life of at least 5 years. The rubber tape shall be applied in successive, half-lapped wound layers and shall be highly elongated to eliminate voids. Other manufacturer's recommendations on installation shall be adhered to. The rubber tape shall be equal to Scotch 23 or 130C electrical splicing tape.

3. Splices made in wet or damp locations shall be made submersible and watertight with special kits made for the application and compatible with type of cables employed.

B. Connection Make-up

1. Connections of lugs to bus bars, etc., shall be made up with corrosion resistant steel bolts having non-magnetic properties with matching nuts, and shall utilize a Belleville spring washer (stainless steel) to maintain connection integrity. Connections shall be torqued to the proper limits. Prior to bolting up the connection, electrical joint compound shall be brushed on the contact faces of the electrical joint.
2. All motor lead connections shall be made up to match the type of lead furnished on the motor. If the lead is not lugged, then twist-on wire connectors may be used. To prevent possible vibration problems, twist-on connectors shall be taped after installation.
3. All lugged motor lead connections (excluding motors over 200 horsepower) shall be made up using ring tongue compression lugs with proper size stainless steel nuts and bolts. Belleville type spring shall be used to maintain tension on the connections. The connections shall then be insulated using the procedure described for irregular shapes, utilizing rubber tape in conjunction with vinyl electrical tape.
4. At the time of final inspection, the Engineer may request the Contractor to disassemble 3 randomly selected motor lead connections in the Engineer's presence, to assure conformance with these Specifications.
5. The Contractor shall include all necessary tools, materials, and labor in his bid for disassembly of the connections and for remaking them with new insulating materials after inspection.

END OF SECTION 262700

SECTION 262726 - WIRING DEVICES

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Wiring devices shall be installed where indicated on the Contract Drawings.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Flush floor box devices are specified in Section 260534.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Bryant, Cooper, Hubbell, Intermatic, Leviton, P&S, Taymac, Wiremold, or equal.

2.2 RECEPTACLES AND SWITCHES

A. Receptacles

1. Twin-convenience - outlet (interior) – "Hubbell" cat. no. 5362, or equal. Hospital grade equivalent cat. no. 8300.
2. Twin-convenience - outlet (exterior) – "Hubbell" cat. no. 5362 with Taymac Corporation or Intermatic, Inc. safety outlet enclosure.
3. Single-convenience - outlet (pole mounted) – "Hubbell" cat. no. 53CM61 or equal.
4. Special purpose outlet - Per equipment requirements.
5. Isolated ground twin - convenience - outlet – "Hubbell" catalog number IG5362, or equal. Hospital grade equivalent cat. no. IG 8300.
6. Range outlet - 50 amp. 4-wire grounded, 125/250 VAC – "Hubbell" cat. no. 9450, or equal.
7. Single receptacle for sump pump - 20A/125 VAC – "Hubbell" cat. no. 2310, or equal.
8. Ground fault interrupting receptacles shall be required where shown on the Contract Drawings and shall be indicated by the abbreviation "GFI" beside the circuit symbol on the Contract Drawings. They shall be rated 20 amps (125 volts) and shall be of the duplex, feed through type, capable of protecting all downstream receptacles on the same circuit. They shall be UL listed and interrupt the current between 4-6 milliamps of ground fault leakage. Appropriate plates shall be furnished and installed. The 20-ampere rating shall apply not only to device internals but to the faceplate as well. Receptacle shall be "Hubbell", Cat. GF20LA or equal. The hospital grade equivalent cat. no. is GF 8300.

9. Weather-resistant type receptacles shall be required in all outdoor, damp, and wet locations or where shown on Contract Drawings. Receptacle type shall be indicated by the abbreviation "WR" beside the circuit symbol on the Contract Drawings. Receptacle shall be UL Listed. Weather-resistant receptacles shall be "Hubbell" Cat 5362WR or equal. Weather-resistant ground fault interrupting type receptacles shall be "Hubbell" Cat. GFTR20 or equal.

B. Plates and Covers

1. Furnish and install plates of the appropriate type and size for all wiring and control devices, signal and telephone outlets.
2. All plates on surface mounted boxes shall be of 304 stainless steel (nonmagnetic) with rounded or beveled edges. All plates on flush mounted boxes shall be white nylon or non-breakable thermoplastic. All device plate screws shall be nylon or stainless steel with countersunk heads. Plates shall be installed vertically and with an alignment tolerance of 1/16 inch. Device plates shall be of the one-piece type, of suitable shape for the devices to be covered. Plates shall have a smooth finish with no crevices to collect dirt. Oversize plates are not acceptable.
3. Covers for boxes serving equipment where flexible conduit is to be tapped into cover plates shall be sheet metal drilled for conduit. Gaskets shall be required as well as all special adapters for mounting.
4. Weatherproof plates shall be Hubbell 5205/5206/CWP26H/CWP8H/WP26 as appropriate for the box utilized, vertical or horizontal mounting. Use the appropriate plate for the mounting, affixed with security fasteners if in inmate accessible areas.

C. Wall Switches (Tumbler Type)

1. Single pole (interior) – "Hubbell" cat. no. 1221, or equal.
2. Single pole (exterior) – "Hubbell" cat. no. 1222, or equal, and Bryant 7420 or equal plate.
3. Switch and pilot light (interior) – "Hubbell" cat. no. 1221-IL (with lighted switch handle), or equal.
4. Switch and pilot light (exterior) – "Hubbell" cat. no. 1221- PL or equal.
5. 3-way switches (interior) – "Hubbell" cat. no. 1223, or equal.
6. Double-pole (interior) – "Hubbell" cat. no. 1222, or equal.
7. Single pole with "Hypalon" plate and pressure switch – "Hubbell" cat. no. 178 (w/cat. no. 1750 plate), or equal.
8. 4-way switches (interior) – "Hubbell" cat. no. 1224, or equal.
9. Key switches or lock type shall be "Hubbell" cat. no. 1221-L, 1222-L, 1223-L, 1224-L. Provide 20 extra matching keys in addition to one for each switch.

PART 3 - EXECUTION

3.1 INSTALLATION/APPLICATION/ERECTION

A. Wall Switches

1. Wall switches shall be mounted at a height as indicated in Section 260000, unless otherwise noted on the Contract Drawings.

2. Switches within finish spaces shall be white, while switches within unfinished spaces shall be gray.

B. Receptacles

1. Outlets shall be located as shown on the Contract Drawings. Where located in special interior finishes, they shall be properly centered. Boxes shall be of the type noted and accepted for the specific installation.
2. Furnish and install receptacle circuits where called for on the Contract Drawings and/or by these Specifications. Circuits shall be installed in conduit from panel to receptacle, with flush mounted boxes except as noted on the Contract Drawings.
3. Receptacles and lighting circuits shall not be combined on the same overcurrent device. For runs over 75 feet or for 30-amp receptacles, minimum wire size shall be AWG No. 10.
4. Receptacles for specific devices (i.e., clothes dryer), shall be rated at the correct voltage and amperage for that unit.
5. The minimum free length of conductor at each box for the connection of a fixture, switch or receptacle shall be 8 inches. All connections shall be made mechanically and electrically secure.
6. Receptacles shall be duplex type, rated at 20 amps, 125 volts, unless otherwise noted. Mounting height shall be as specified for low outlets in Section 260000. All receptacles shall be of the grounding type. Receptacles within finished spaces shall be white, while receptacles within unfinished spaces shall be gray.
7. Receptacles over workbenches or countertops or at medium or high mountings shall be mounted so that the grounding slot is below the neutral and hot. All other receptacles shall be mounted with the grounding slot above the neutral and hot.
8. Duplex receptacles that are in wet locations shall be weatherproof while in use. To meet this requirement, appropriate safety outlet covers as manufactured by Taymac Corporation, Intermatic Guardian Series, or equal shall be utilized in these areas.

END OF SECTION 262726

SECTION 264313 – SURGE PROTECTIVE DEVICES

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. The specified unit(s) shall provide effective high energy surge suppression, surge current diversion, and high frequency noise attenuation in all electrical modes for equipment connected downstream from the SPD unit. The unit(s) shall be connected in parallel with the facility's wiring system.

B. All products that are submitted according to these specifications will be required to meet this specification in its entirety. Any product that is submitted and does not comply with all parts of this specification will be subject to rejection.

C. Instrumentation Transient Suppressors

1. Transient suppressors are intended for use on all instrument control loops for power and signal protection on transmitters/receivers, etc., and shall be furnished and installed as specified in Division 40.

D. Type 1 SPD (Secondary Power Arrestors) (480, 240, or 240/120 Volts)

1. Type 1 Surge Protective Devices shall be furnished and installed on all control equipment supplied as outlined on the Contract Drawings.

E. Type 2 SPD (Surge Protective Device) (480, 240, or 240/120 Volts)

1. Type 2 Surge Protective Devices shall be furnished and installed in all Power Distribution Panels and on all equipment supplied having solid state components as the central control/monitoring device. These shall include, but not be limited to, computer systems, level control systems, and/or variable speed equipment. They shall be shown on the Drawings where required.

F. Service entrance SPD's shall be listed to be used as part of a UL master labeled lightning protection system.

1.2 SUBMITTALS

A. Provide UL1449 Fourth Edition listing documentation including Voltage Protection Ratings for all modes of protection, Short Circuit Current Rating (SCCR), Maximum Continuous Operating Voltage Rating (MCOV), and Nominal Discharge Current (I-n) Rating.

B. Indicate the type of internal or external fusing that is incorporated in the SPD system and what impact the fusing has on the performance of the device with respect to surge capacity and clamping levels.

C. Provide independent third party testing documentation demonstrating that the SPD is capable of surviving the specified maximum 8x20 μs surge current pulse without suffering performance degradation or more than 10 percent.

D. Submittals shall include shop drawings including manufacturer installation instruction manual and line drawings detailing dimensions and weight of enclosure, internal wiring diagram illustrating all modes of protection in each type of SPD required, wiring diagram showing all field connections and manufacturer's recommended wire and breaker sizes.

1.3 STANDARDS

A. Underwriters laboratories 1449 - (UL 1449 4th edition or current safety standard for surge protection devices)

1. Underwriters laboratories 1283 - (UL 1283 listed as an electromagnetic interference filter that provides noise attenuation)
2. Underwriters laboratories 67 - (UL 67 internal integration of SPD in panelboard)

B. National electrical code latest edition - (NEC article 285 SPD installation practice/NEC article 250 grounding)

1. NFPA-780 and CSA - (National Fire Protection Association)
2. ISO 9001:2000 - quality standard / military standards (mil-std 220a)

C. IEEE (Institute of Electrical and Electronic Engineering Inc.) C62.41.1 and C62.41.2 – 2002 rev. - (system shall be designed to meet C62.41)

1. IEEE C62.41.2-2002 section 7.2 long duration 10 x 1,000 µsec test to be compliant if the device exhibits less than 10 percent deviation from initial readings. Units must be tested to withstand and pass the 10 x 1,000 µsec test
2. IEEE C62.45 – 2002 rev. - (system shall be tested to meet the C62.45)
3. Category A & B - (0.5 µs x 100 kHz ring wave)
4. Category B3 bi-wave - (8 x 20 µs at 3,000 amperes and 1.2 x 50 µs at 6,000 volts)
5. Category C3 bi-wave - (8 x 20 µs at 10,000 amperes and 1.2 x 50 µs at 20,000 volts)

D. CBEMA (ITIC) and IEC - (Computer Business Equipment Manufacturers Association or Information Technology Industry Council and International Electrotechnical Commission define clamping voltage tolerance guidelines for sensitive equipment)

E. All manufacturers must comply with above listed standards and any current revisions of industry standards. All products that do not comply with current industry standards will not be accepted.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Type 1 SPD (Secondary Power Arrestors)

1. Dale, General Electric, or equal.

B. Type 2 SPD (Surge Protection Devices)

1. Advanced Protection Technologies, Atlantic Scientific Corporation, Current Technology, LEA International, or equal.

2.2 EQUIPMENT

A. Type 1 SPD (Secondary Power Arrestors)

1. The arrestor shall be hermetically sealed with pre-ionized spark gap. The unit shall be capable of repeated overvoltages without significant change in breakdown level or insulation resistance. The arrestor shall be capable of mounting in any position and shall be capable of mounting through a box knockout with standard locknuts and shall be weatherproof.
2. Capacitance shall be less than 50 picofarads, and insulation resistance shall be at least 100 megohms. Maximum arc-over with 10 KV/micro second rise time pulse applied shall be 1,500 volts. The arrestor shall be capable of withstanding repeated application of 10 kiloampere current surges and extinguish power-follow current in 2 cycle or less. Maximum voltage between terminals shall be 2,500 volts when conducting 10 kiloampere current surges.
3. Operating temperature range shall be -40 degrees Celsius to +75 degrees Celsius.

B. Type 2 SPD (Surge Protection Devices)

1. The nominal operating voltage and configuration shall be as indicated on the contract drawings.
2. Declared Maximum Continuous Operating Voltage (MCOV) shall be greater than 115 percent of the nominal system operating voltage and in compliance with test and evaluation procedures outlined in the nominal discharge surge current test of UL1449 4th Edition.
3. SPD shall be UL labeled with 20kA Inominal (I-n) for compliance to UL 96A Lightning Protection Master Label and NFPA 780.
4. The system shall provide a noise filtering system capable of attenuating noise levels produced by electromagnetic interference and radio frequency interference. The system's filtering characteristics shall be expressed in decibels (dB) of attenuation per NEMA LS1 publication. The noise filtering system shall also be UL 1283 listed as an Electromagnetic Interference Filter.

5. SPD shall be UL labeled with 200kA Short Circuit Current Rating (SCCR). Fuse ratings shall not be considered in lieu of demonstrated withstand testing of SPD, per NEC 285.6.
6. Unit shall have not more than 10 percent deterioration or degradation of the UL1449 3rd Edition Voltage Protective Rating (VPR) due to repeated surges.
7. The unit shall be UL 1449 4th Edition Listed. The UL 1449 4th Edition voltage protection ratings (VPR) for the unit including integral disconnect shall be equal to or below the following values:

UL 1449 4th Edition Voltage Protection Ratings (VPR)				
System Voltage	Mode of Protection			
	L-N	L-G	N-G	L-L
120/240	700	700	700	1200
120/208	700	700	700	1200
277/480	1200	1200	1000	2000

8. The maximum single-pulse surge current capacity per mode shall be verified through testing at an independent third party testing facility and shall be conducted per NEMA LS-1-1992 (R2000), paragraphs 2.2.9 and 3.9. The unit shall be tested in all modes at rated surge currents and all tested modes shall be from the same test sample. This test shall include all components of the system, including disconnects (if applicable), fusing, and monitoring as a completed assembly. Individual component testing, module testing only, or subsystem testing of the unit for compliance with this section will not be acceptable. Testing that causes damage to the device, fuse operation, or voltage clamping performance degradation by more than 10 percent is not acceptable.
9. The fusing elements must be capable of allowing the suppressor's rated single impulse current to pass through the suppressor at least one time without failure. The system shall be tested to 1,000 sequential per C62.45-2002 section B.38 referencing C62.41.1 and C62.41.2 category C3 combination wave transients. The category C3 combination wave is defined as a 1.2 x 50 microsecond wave at 20,000-volt open circuit voltage waveform and 8 x 20 microsecond wave at 10,000 ampere short circuit current waveform. In addition, the system components shall be tested repetitively 1,000 times testing based on an IEEE C62.33 (MOV test) and C62.35 (SAD test) without failure or degradation exceeding ±10 percent.
10. Service Entrance Suppressors

    a. Equipment shall Equipment shall be a multi-stage parallel protector rated for 480Y/277. See one line diagram and panelboard schedule to confirm voltages. The equipment's minimum surge current capacity shall be 200kA per mode (L-N, L-G, L-L and N-G).
    b. The system protection modules shall contain a technology that utilizes a symmetrical array of balanced metal oxide varistors (MOV). Each MOV will be individually coordinated to pass UL 1449.
    c. All primary transient paths shall utilize copper wire, aluminum bus bar and lugs of equivalent capacity to provide equal impedance interconnection between phases. No plug-in module or components shall be used in surge carrying paths.

d. Each protection module shall have a visual indicator that signifies that the protection circuitry is online. The unit shall not be taken offline to verify integrity of system. Redundant status indicators shall be mounted on the front of the door that monitors the system protection circuitry (or be visible through the enclosure front).
e. The system shall be modular with field replaceable modules. Modular units shall contain a minimum of one module per phase.
f. Equipment shall utilize a NEMA 1 enclosure.

11. Panelboard Suppressors & Auxiliary Panel Suppressors

a. Device shall meet all specification requirements for service entrance suppressors except as follows:

1) Equipment shall be a multi-stage parallel protector rated for 480Y/277 or 208Y/120. See one line diagram and panelboard schedule to confirm voltages. The equipment's minimum surge current capacity shall be 100kA per mode (L-N, L-G, L-L and N-G).
2) The system protection shall contain a technology that utilizes a symmetrical array of balanced metal oxide varistors (MOV). Each MOV will be individually coordinated to pass UL 1449. The unit shall be non-modular type.
3) Equipment shall utilize a NEMA 1 enclosure.

12. Accessories

a. Device Monitoring

1) As a minimum, device monitoring shall include: Audible alarm with alarm disable switch, surge counter, and two sets of Form C contacts for remote monitoring.

b. Integral Disconnect Switch

1) The unit shall include an integral safety interlocked disconnect located in the unit enclosure with an externally mounted manual operator. If fuses are included with this switch, the fusing shall not effectively lower the rating of the SPD unit.

PART 3 - EXECUTION

3.1 INSTALLATION/APPLICATION/ERECTION

A. Where the SPD unit is not specified with an integral safety/disconnect switch an appropriately sized disconnect switch or thermal magnetic breaker shall be installed before and in-line with

the SPD. It shall be capable of electrically isolating the SPD from the electrical service for repair without interrupting service to the building. If a safety/disconnect switch is utilized the switch shall be rated for 600VAC. If fuses are included with this switch, the fusing shall not effectively lower the rating of the SPD unit and shall have a minimum interrupt rating of 200kAIC. Connection means utilizing breakers shall be sized at 60A/3P and 30A/3P respectively for service entrance/switchboard/switchgear and branch panelboard units unless otherwise recommended by manufacturer.

B. The specified SPD system shall be installed with #6 AWG minimum copper conductors tapped from the electrical power distribution system. The conductors are to be as short and straight as practically possible and shall not exceed 5 electrical feet from the power conductor(s) it is protecting for service entrance/switchboard/switchgear units and 1.5 electrical feet for branch panelboard units and shall avoid any unnecessary or sharp bends. The input conductors are to be twisted together to reduce the SPD system inductance.

C. The SPD shall be installed following the SPD manufacturer's recommended practices and in compliance with these specifications and all applicable codes.

3.2 WARRANTY

A. Manufacturer shall provide a full 5-year limited warranty against failure or workmanship defects when installed in compliance to the manufacturer's written installation instructions, UL listing requirements and the National Electrical Code.

END OF SECTION 264313

SECTION 265110 - LED EXTERIOR LIGHTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Exterior luminaires with LED lamp and drivers.
2. Poles and accessories.

1.3 DEFINITIONS

A. CCT: Correlated color temperature.

B. CRI: Color-rendering index.

C. LER: Luminaire efficacy rating.

D. Luminaire: Complete lighting fixture, including ballast housing if provided.

E. Pole: Luminaire support structure, including tower used for large area illumination.

F. Standard: Same definition as "Pole" above.

1.4 STRUCTURAL ANALYSIS CRITERIA FOR POLE SELECTION

A. Dead Load: Weight of luminaire and its horizontal and vertical supports, lowering devices, and supporting structure, applied as stated in AASHTO LTS-4-M.

B. Live Load: Single load of 500 lb/f, distributed as stated in AASHTO LTS-4-M.

C. Ice Load: Load of 3 lbf/sq. ft. applied as stated in AASHTO LTS-4-M Ice Load Map.

D. Wind Load: Pressure of wind on pole and luminaire and banners and banner arms, calculated and applied as stated in AASHTO LTS-4-M.

1. Basic wind speed for calculating wind load for poles 50 feet high or less is 115 mph.

a. Wind Importance Factor: 1.0
b. Minimum Design Life: 25 years
c. Velocity Conversion Factors: 1.0

1.5 ACTION SUBMITTALS

A. Product Data: For each luminaire, pole, and support component, arranged in order of lighting unit designation. Include data on features, accessories, finishes, and the following:

1. Physical description of luminaire, including materials, dimensions, effective projected area, and verification of indicated parameters.
2. Details of attaching luminaires and accessories.
3. Details of installation and construction.
4. Luminaire materials.
5. Photometric data based on laboratory tests of each luminaire type, complete with indicated LED lamps, drivers, and accessories.

    a. Testing Agency Certified Data: For indicated luminaires, photometric data shall be certified by a qualified independent testing agency. Photometric data for remaining luminaires shall be certified by manufacturer.
    b. Manufacturer Certified Data: Photometric data shall be certified by manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.

6. Drivers, including energy-efficiency data.
7. LED lamps, including life, output, CCT, CRI, lumens, and energy-efficiency data.
8. Materials, dimensions, and finishes of poles.
9. Means of attaching luminaires to supports, and indication that attachment is suitable for components involved.
10. Anchor bolts for poles.
11. Manufactured pole foundations.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
2. Anchor-bolt templates keyed to specific poles and certified by manufacturer.

1.6 INFORMATIONAL SUBMITTALS

A. Pole and Support Component Certificates: Signed by manufacturers of poles, certifying that products are designed for indicated load requirements in AASHTO LTS-4-M and that load imposed by luminaire and attachments has been included in design.

B. Qualification Data: For qualified agencies providing photometric data for lighting fixtures.

C. Field quality-control reports.

1.7 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For luminaires and poles to include in emergency, operation, and maintenance manuals.

1.8 QUALITY ASSURANCE

A. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by manufacturers' laboratories that are accredited under the National Volunteer Laboratory Accreditation Program for Energy Efficient Lighting Products.

B. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by an independent agency, with the experience and capability to conduct the testing indicated, that is an NRTL as defined by OSHA in 29 CFR 1910.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

D. Comply with IEEE C2, "National Electrical Safety Code."

E. Comply with NFPA 70.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Package aluminum poles for shipping according to ASTM B 660.

B. Store poles on decay-resistant-treated skids at least 12 inches above grade and vegetation. Support poles to prevent distortion and arrange to provide free air circulation.

C. Retain factory-applied pole wrappings on metal poles until right before pole installation. For poles with nonmetallic finishes, handle with web fabric straps.

1.10 WARRANTY

A. The manufacturer shall provide a warranty against loss of performance and defects in materials and workmanship for the Luminaires for a period of 5 years after acceptance of the Luminaires. Warranty shall cover all components comprising the luminaire. All warranty documentation shall be provided to customer prior to the first shipment.

B. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace products that fail in materials or workmanship; that corrode; or that fade, stain, perforate, erode, or chalk due to effects of weather or solar radiation within specified warranty period. Manufacturer may exclude lightning damage, hail damage, vandalism, abuse, or unauthorized repairs or alterations from special warranty coverage.

1. Warranty Period for Poles: Repair or replace lighting poles and standards that fail in finish, materials, and workmanship within manufacturer's standard warranty period, but not less than three years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Base Bid Manufacturers: Are listed on fixture schedule. Manufacturers listed without accompanying catalog numbers are responsible for meeting the quality standards and photometric distribution set by the specified product.

2.2 GENERAL REQUIREMENTS FOR LUMINAIRES

A. Luminaires shall comply with UL 1598 and be listed and labeled for installation in findwet locations by an NRTL acceptable to authorities having jurisdiction.

1. LER Tests Incandescent Fixtures: Where LER is specified, test according to NEMA LE 5A.
2. LER Tests Fluorescent Fixtures: Where LER is specified, test according to NEMA LE 5 and NEMA LE 5A as applicable.
3. LER Tests HID Fixtures: Where LER is specified, test according to NEMA LE 5B.

B. Luminaires shall have the International Dark-Skys Association seal of approval.

C. Lateral Light Distribution Patterns: Comply with IESNA RP-8 for parameters of lateral light distribution patterns indicated for luminaires.

D. Metal Parts: Free of burrs and sharp corners and edges.

E. Sheet Metal Components: Corrosion-resistant aluminum unless otherwise indicated. Form and support to prevent warping and sagging.

F. Housings: Rigidly formed, weather- and light-tight enclosures that will not warp, sag, or deform in use. Provide filter/breather for enclosed luminaires.

G. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to

prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position. Doors shall be removable for cleaning or replacing lenses.

H. Exposed Hardware Material: Stainless steel.

I. Plastic Parts: High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.

J. Light Shields: Metal baffles, factory installed and field adjustable, arranged to block light distribution to indicated portion of normally illuminated area or field.

K. Reflecting surfaces shall have minimum reflectance as follows unless otherwise indicated:

1. White Surfaces: 85 percent.
2. Specular Surfaces: 83 percent.
3. Diffusing Specular Surfaces: 75 percent.

L. Lenses and Refractors Gaskets: Use heat- and aging-resistant resilient gaskets to seal and cushion lenses and refractors in luminaire doors.

M. Luminaire Finish: Manufacturer's standard paint applied to factory-assembled and -tested luminaire before shipping. Where indicated, match finish process and color of pole or support materials.

N. Factory-Applied Finish for Steel Luminaires: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

1. Surface Preparation: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning," to remove dirt, oil, grease, and other contaminants that could impair paint bond. Grind welds and polish surfaces to a smooth, even finish. Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning," or SSPC-SP 8, "Pickling."
2. Exterior Surfaces: Manufacturer's standard finish consisting of one or more coats of primer and two finish coats of high-gloss, high-build polyurethane enamel.
3. Color: As selected by Architect from manufacturer's full range.

O. Factory-Applied Finish for Aluminum Luminaires: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

1. Class I, Color Anodic Finish: AA-M32C22A42/A44 (Mechanical Finish: medium satin; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.018 mm or thicker) complying with AAMA 611.

a. Color: As selected by Architect from manufacturer's full range.

P. Factory-Applied Labels: Comply with UL 1598. Include recommended LED lamps and drivers. Labels shall be located where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place.

2.3 LED LUMINAIRES

A. LED Lamps

1. LED's shall be manufactured by Nichia, Samsung, Osram or equal.

   a. Lumen Output – minimum initial lumen output of each luminaire shall be as specified in light fixture schedule.

2. High-efficacy LEDs mounted to metal-core circuit boards to maximize heat dissipation and promote long life 100,000 hrs at 40°C, L70.
3. Individual LEDs shall be connected such that a catastrophic loss or the failure of one LED will not result in the loss of the entire luminaire.
4. LED Boards shall be suitable for field maintenance or service with plug-in connectors. LED boards shall be upgradable.
5. Light Color/Quality

   a. Correlated Color temperature (CCT) shall be 4000K, unless otherwise indicated.
   b. The color rendition index (CRI) shall be 67 or greater.

B. Drivers

1. Class 1 electronic driver designed to provide a power factor >90%, THD <20%, with an expected life of 100,000 hours with <1% failure rate.
2. Easily-serviceable surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).
3. Driver shall be > 80% efficient at full load across all input voltages. Input wires shall be 18AWG solid copper minimum.
4. Driver shall be UL listed.
5. Maximum stand-by power shall be 1 Watt.
6. Driver disconnect shall be provided where required to comply with codes. The electronics/power supply enclosure shall be internal to the luminaire and be accessible per UL requirements.
7. IP66 rated.

C. Electrical

1. Operation Voltage - The luminaire shall operate from a 50 or 60 HZ ±3 HZ AC line over a voltage ranging from 120 VAC to 277 VAC. The fluctuations of line voltage shall have no visible effect on the luminous output.

2. Power Factor: The luminaire shall have a power factor of 90% or greater at all standard operating voltages and full luminaire output.
3. THD: Total harmonic distortion (current and voltage) induced into an AC power line by a luminaire shall not exceed 20 percent at any standard input voltage.
4. Surge Suppression: The luminaire shall include surge protection to withstand high repetition noise and other interference.
5. RF Interference: The luminaire and associated on-board circuitry must meet Class A emission limits referred in Federal Communications Commission (FCC) Title 47, Subpart B, Section 15 Non-Consumer requirements for EMI/RFI emissions.
6. Electrical connections between normal power and driver must be modular utilizing a snap fit connector. All electrical components must be easily accessible after installation and be replaceable without removing the fixture from the ceiling.
7. All electrical components shall be RoHS compliant.

D. Photometric Requirements

1. Luminaire performance shall be tested as described herein.

    a. Luminaire performance shall be judged against the specified minimum illuminance in the specified pattern for a particular application.
    b. Luminaire lighting performance shall be adjusted (depreciated) for the minimum life expectancy.
    c. The performance shall be adjusted (depreciated) by using the LED manufacturer's data or the data from the IESNA Standard TM-21 test report, which ever one results in a higher level of lumen depreciation.

2. The luminaire may be determined to be compliant photometrically, if the initial minimum illuminance level is achieved in 100% of the area of the specified lighting pattern.
3. The measurements shall be calibrated to standard photopic calibrations.

E. Thermal Management

1. The thermal management (of the heat generated by the LEDs) shall be of sufficient capacity to assure proper operation of the luminaire over the expected useful life.
2. The LED manufacturer's maximum junction temperature for the expected life shall not be exceeded at the average operating ambient.
3. The LED manufacturer's maximum junction temperature for the catastrophic failure shall not be exceeded at the maximum operating ambient.
4. The luminaire shall have an UL IC rating.
5. The Driver manufacturer's maximum case temperature shall not be exceeded at the maximum operating ambient. Thermal management shall be passive by design. The use of fans or other mechanical devices shall not be allowed.

2.4 GENERAL REQUIREMENTS FOR POLES AND SUPPORT COMPONENTS

A. Structural Characteristics: Comply with AASHTO LTS-4-M.

1. Wind-Load Strength of Poles: Adequate at indicated heights above grade without failure, permanent deflection, or whipping in steady winds of speed indicated in "Structural Analysis Criteria for Pole Selection" Article.
2. Strength Analysis: For each pole, multiply the actual equivalent projected area of luminaires and brackets by a factor of 1.1 to obtain the equivalent projected area to be used in pole selection strength analysis.

B. Luminaire Attachment Provisions: Comply with luminaire manufacturers' mounting requirements. Use stainless-steel fasteners and mounting bolts unless otherwise indicated.

C. Mountings, Fasteners, and Appurtenances: Corrosion-resistant items compatible with support components.

1. Materials: Shall not cause galvanic action at contact points.
2. Anchor Bolts, Leveling Nuts, Bolt Caps, and Washers: Hot-dip galvanized after fabrication unless otherwise indicated.
3. Anchor-Bolt Template: Plywood or steel.

D. Handhole: Oval-shaped, with minimum clear opening of 2-1/2 by 5 inches, with cover secured by stainless-steel captive screws.

E. Concrete Pole Foundations: Cast in place, with anchor bolts to match pole-base flange. Concrete, reinforcement, and formwork are specified in Division 02 – Concrete.

PART 3 - EXECUTION

3.1 LUMINAIRE INSTALLATION

A. Install lamps in each luminaire.

B. Fasten luminaire to indicated structural supports.

1. Use fastening methods and materials selected to resist seismic forces defined for the application and approved by manufacturer.

C. Adjust luminaires that require field adjustment or aiming.

3.2 POLE INSTALLATION

A. Alignment: Align pole foundations and poles for optimum directional alignment of luminaires and their mounting provisions on the pole.

B. Clearances: Maintain the following minimum horizontal distances of poles from surface and underground features unless otherwise indicated on Drawings:

1. Fire Hydrants and Storm Drainage Piping: 60 inches.
2. Water, Gas, Electric, Communication, and Sewer Lines: 10 feet.
3. Trees: 15 feet from tree trunk.

C. Concrete Pole Foundations: Set anchor bolts according to anchor-bolt templates furnished by pole manufacturer. Concrete materials, installation, and finishing requirements are specified in Division02 – Concrete.

D. Foundation-Mounted Poles: Mount pole with leveling nuts, and tighten top nuts to torque level recommended by pole manufacturer.

1. Use anchor bolts and nuts selected to resist seismic forces defined for the application and approved by manufacturer.
2. Grout void between pole base and foundation. Use nonshrink or expanding concrete grout firmly packed to fill space.
3. Install base covers unless otherwise indicated.
4. Use a short piece of 1/2-inch-diameter pipe to make a drain hole through grout. Arrange to drain condensation from interior of pole.

E. Poles and Pole Foundations Set in Concrete Paved Areas: Install poles with minimum of 6-inch-wide, unpaved gap between the pole or pole foundation and the edge of adjacent concrete slab. Fill unpaved ring with pea gravel to a level 1 inch below top of concrete slab.

F. Raise and set poles using web fabric slings (not chain or cable).

3.3 CORROSION PREVENTION

A. Aluminum: Do not use in contact with earth or concrete. When in direct contact with a dissimilar metal, protect aluminum by insulating fittings or treatment.

B. Steel Conduits: Comply with Section 260533 "Raceways." In concrete foundations, wrap conduit with 0.010-inch-thick, pipe-wrapping plastic tape applied with a 50 percent overlap.

3.4 GROUNDING

A. Ground metal poles and support structures according to Section 260526 "Secondary Grounding."

1. Install grounding electrode for each pole unless otherwise indicated.
2. Install grounding conductor pigtail in the base for connecting luminaire to grounding system.

3.5 FIELD QUALITY CONTROL

A. Inspect each installed fixture for damage. Replace damaged fixtures and components.

B. Illumination Observations: Verify normal operation of lighting units after installing luminaires and energizing circuits with normal power source.

C. Verify operation of photoelectric controls.

D. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.

END OF SECTION 265110

SECTION 312000 - EARTHWORK

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Provide all materials, labor, equipment and services necessary to do all clearing and grubbing, excavation, backfilling, providing of additional fill material and topsoil, control of surface drainage and ground water, finished site grading and erosion control required to construct the work as shown.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. State and local code requirements shall control the disposal of trees and shrubs.

B. All burning shall be controlled by applicable local regulations.

D. EROSION AND SEDIMENTATION CONTROL – Section 31 25 00

E. The report of geotechnical exploration titled "Geotechnical Evaluation, LFUCG Fire Training Academy Campus", by Thoroughbred dated 10/31/24, included in the Appendix. The geotechnical report shall be used as a reference for the execution of this work and all recommendations included therein shall be followed in full.

1.3 JOB CONDITIONS

A. Weather: Earthwork operations shall be suspended at any time when satisfactory results cannot be obtained on account of rain, snow, ice, drought or other adverse weather conditions.

B. Existing Utilities: Prior to commencement of work, the Contractor shall locate existing underground utilities in areas of the work. If utilities are to remain in place, provide adequate means of protection during earthwork operations.

C. Use of Explosives: The Contractor (or any of his Subcontractors) shall not bring explosives onto site or use in work without prior written permission from the Owner. All activities involving explosives shall be in compliance with the rules and regulations of the State Department of Mines, and Minerals, Division of Explosives and Blasting. Contractor is solely responsible for handling, storage, and use of explosive materials when their use is permitted.

D. Protection of Persons and Property:

1. Barricade open excavations occurring as part of this work and post with warning lights.

a. Operate warning lights as recommended by authorities having jurisdiction.
b. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

E. Dust Control: Use all means necessary to control dust on or near the project site where such dust is caused by the Contractor's operations or directly results from conditions left by the Contractor.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. Definitions:

1. Satisfactory soil materials are defined as those complying with ASTM D2487 soil classification groups GW, GP, GM, SM, SW, SP, GC, SC, ML, and CL.
2. Unsatisfactory soil materials are defined as those complying with ASTM D2487 soil classification groups MH, CH, OL, OH and PT. The Contractor shall notify the Engineer if these soil materials are encountered.
3. Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, crushed slag, natural or crushed sand.
4. Drainage Fill: Washed, evenly graded mixture of crushed stone, or uncrushed gravel, with 100 percent passing a 1/2 inch sieve and not more than 5 percent passing a No. 4 sieve.
5. Backfill and Fill Materials: Satisfactory soil materials free of debris, waste, frozen materials, vegetable, and other deleterious matter.

PART 3 - EXECUTION

3.1 CLEARING AND GRUBBING

A. Work shall consist of cutting and removing designated trees, stumps, brush, logs, removal of fences, or other loose and projecting material. Unless otherwise specified, it shall also include the grubbing of stumps, roots, and other natural obstructions which, in the opinion of the Engineer, must be removed to execute properly the construction work and operate properly the facility upon the completion of construction.

B. Trees, bushes, and all natural vegetation shall only be removed with the approval of the Engineer. No cleared or grubbed materials shall be used in backfills or embankment fills. All stumps, roots, and other objectionable material shall be grubbed up so that no roots larger than 3 inches in diameter remain less than 18 inches below the ground surface. All holes and

depressions left by grubbing operations shall be filled with suitable material and compacted to grade, as recommended in Paragraph 3.06.

C. Disposal shall be by burning or other methods satisfactory to the Engineer; however, burning will be permitted only when the Contractor has obtained written permission from the local regulatory agency.

D. The Contractor shall also remove from the site and satisfactorily dispose of all miscellaneous rubbish including, but not limited to, masonry, scrap metal, rock, pavement, etc., that is under the fill or to be removed as shown on the Drawings, specified herein, or directed by the Engineer.

E. Existing improvements, adjacent property, utility and other facilities, and trees, plants, and brush that are not to be removed shall be protected from injury or damage resulting from the Contractor's operations.

F. Trees and shrubs, designated to remain or that are beyond the clearing and grubbing limit, which are injured or damaged during construction operations shall be treated or replaced at the Contractor's expense by experienced tree surgery personnel.

3.2 EROSION CONTROL

A. Temporary measures shall be applied throughout the construction period to control and to minimize siltation to adjacent properties and waterways. Such measures shall include, but not be limited to, the use of berms, silt barriers, gravel or crushed stone, mulch, slope drains and other methods.

B. These temporary measures shall be applied to erodible material exposed by any activity associated with the construction of this project.

C. Refer to Section 31 25 00, Erosion and Sedimentation Control for requirements.

3.3 EXCAVATION

A. Excavation of every description and of whatever substances encountered within the grading limits of the project shall be performed to the lines and grades indicated on the Drawings. All excavation shall be performed in the manner and sequence as required for the work.

B. All excavated materials that meet the requirements for fill, subgrades or backfill shall be stockpiled within the site for use as fill or backfill, or for providing the final site grades. Where practicable, suitable excavated material shall be transported directly to any place in the fill areas within the limits of the work. All excavated materials that are not suitable for fill, and any surplus of excavated material that is not required for fill shall be disposed of by the Contractor.

C. The site shall be kept free of surface water at all times. The Contractor shall install drainage ditches, dikes and shall perform all pumping and other work necessary to divert or remove rainfall and all other accumulations of surface water from the excavations. The diversion and removal of surface water shall be performed in a manner that will prevent flooding and/or damage to other locations within the construction area where it may be detrimental. The Contractor shall provide, install and operate sufficient trenches, sumps, pumps, hose piping, well points, deep wells, etc., necessary to depress and maintain the ground water level at least two (2) feet below the base of the excavation during all stages of construction operations. The ground water table shall be lowered in advance of excavation and maintained a minimum of two (2) feet below the lowest excavation subgrade made until the excavation is backfilled or the structure has sufficient strength and weight to withstand horizontal and vertical soil and water pressures from natural ground water.

D. Excavations for concrete structural slabs on grade shall extend two (2) feet below the indicated bottom of slabs. The over-excavation shall be backfilled with 18 inches, compacted thickness, of over lot fill material or suitable material as herein specified. The remaining six (6) inches of over-excavation shall be backfilled with porous fill material. The porous fill layer shall extend beyond the limits of the concrete slab a minimum of two (2) feet on all sides as indicated on the Drawings. The porous fill shall be crushed stone or gravel and shall have the following U.S. Standard Sieve gradation:

Sieve	1-1/2	1	3/4	1/2	3/8
% Passing	Min 100	95±5	58±17	Max 15	Max 5

E. Excavations for the construction shall be carefully made to the depths required. Bottoms for footings and grade beams shall be level, clean and clear of loose material, the lower sections true to size. Bottoms of footings and grade beams, in all locations, shall be at a minimum depth of 30 inches below adjacent exterior finished grade or 30 inches below adjacent existing grade, whichever is lower, whether so indicated or not. Footings and grade beam bottoms shall be inspected by the Engineer before any concrete is placed thereon.

F. In excavations for structures where, in the opinion of the Engineer, the ground is spongy or otherwise unsuitable for the contemplated foundation, the Contractor shall remove such unsuitable material and replace it with suitable material properly compacted.

G. Sheeting and shoring shall be provided as necessary for the protection of the work and for the safety of the personnel. The clearances and types of the temporary structures, insofar as they affect the character of the finished work, will be subject to the review of the Engineer, but the Contractor shall be responsible for the adequacy of all sheeting, bracing and cofferdamming. All shoring, bracing and sheeting shall be removed as the excavations are backfilled in a manner such as to prevent injurious caving; or, if so directed by the Engineer, shall be left in place. Sheeting left in place shall be cut off 18 inches below the surface.

H. Excavation for structures which have been carried below the depths indicated without specific instructions shall be refilled to the proper grade with suitable material properly compacted, except that in excavation for columns, walls or footings, the concrete footings shall extend to this lower depth. All work of this nature shall be at the Contractor's expense.

3.4 FILL

A. All existing fill below structures and paved areas must be stripped. The upper six (6) inches of the natural subgrade below shall be scarified and recompacted at optimum moisture to at least ninety-five percent (95%) of Standard Proctor Density ASTM D 698 (latest revision).

B. All vegetation, such as roots, brush, heavy sods, heavy growth of grass and all decayed vegetable matter, rubbish and other unsuitable material within the area upon which fill is to be placed shall be stripped or otherwise removed before the fill is started. In no case will such objectionable material be allowed to remain in or under the fill area. Existing fill from excavated areas on site shall be used as fill for open and/or planted areas. Additional fill stockpiled at the site can be used for structural fill if approved by the Engineer. Any additional material necessary for establishing the indicated grades shall be furnished by the Contractor and approved by the Engineer. All fill material shall be free from trash, roots and other organic material. The best material to be used in fills shall be reserved for backfilling pipe lines and for finishing and dressing the surface. Material larger than 3 inches maximum dimension shall not be permitted in the upper 6 inches of the fill area. Fill material shall be placed in successive layers and thoroughly tamped or rolled in a manner approved by the Engineer, each layer being moistened or dried such that the specified degree of compaction shall be obtained. No fill shall be placed or compacted in a frozen condition or on top of frozen material. No fill material shall be placed when free water is standing on the surface of the area where the fill is to be placed and no compaction of fill will be permitted with free water on any point of the surface of the fill to be compacted.

C. Where concrete slabs are placed on earth, all loam and organic or other unsuitable material shall be removed. Where fill is required to raise the subgrade for concrete slabs to the elevations as indicated on the Drawings or as required by the Engineer, such fill shall consist of suitable material and shall be placed in layers. Each layer shall be moistened or dried such that the specified degree of compaction shall be obtained. All compaction shall be accomplished in a manner and with equipment as approved by the Engineer. When the subgrade is part fill and part excavation or natural ground, the excavated or natural ground portion shall be scarified to a depth of 12 inches and compacted as specified for adjacent fill.

3.5 BACKFILLING

A. After completion of footings, grade beams and other construction below the elevation of the final grades and prior to backfilling, all forms shall be removed and the excavation shall be cleaned of all trash and debris. Material for backfilling shall be as specified for suitable material, placed and compacted as specified hereinafter. Backfill shall be placed in horizontal layers of the thickness specified and shall have a moisture content such that the required degree of compaction is obtained. Each layer shall be compacted by mechanical tampers or by other suitable equipment approved by the Engineer to the specified density. Special care shall be taken to prevent wedging action or eccentric loading upon or against the structure. Trucks and

machinery used for grading shall not be allowed within 45 degrees above the bottom of the footings or grade beams.

B. The trenches shall be backfilled following visual inspection by the Engineer and prior to pressure testing. The trenches shall be carefully backfilled with the excavated materials approved for backfilling, or other suitable materials, free from large clods of earth or stones. Each layer shall be compacted to a density at least equal to that of the surrounding earth and in such a manner as to permit the rolling and compaction of the filled trench with the adjoining earth to provide the required bearing value, so that paving, if required, can proceed immediately after backfilling is completed.

3.6 COMPACTION

A. Suitable material as hereinbefore specified shall be placed in maximum 8" horizontal layers. Compaction shall be performed by rolling with approved tamping rollers, pneumatic-tired rollers, three wheel power rollers or other approved equipment. The degree of compaction required is expressed as a percentage of the maximum dry density obtained by the test procedure presented in ASTM D-698. Laboratory moisture density tests shall be performed on all fill material. Material shall be moistened or aerated as necessary to provide the moisture content that will readily facilitate obtaining the specified compaction. Compaction requirements shall be as specified below:

Fill Utilized For	Required Density (%)	Maximum Permissible Lift Thickness As Compacted, Inches
Backfill & Utility Trenches Under Foundations & Pavements	95-100	8
Backfill Around Structures	95-100	8
Field and Utility Trench Backfill Under Sidewalks and Open Areas	90-100	8

B. Field density tests shall be performed in sufficient number to insure that the specified density is being obtained. Tests shall be in accordance with ASTM Standards D 1556 or D 2922/D 3017 and shall be performed as authorized by the Engineer. Payment for field density tests shall be by the Contractor. Contractor shall provide suitable notification for coordination of testing. Delays due to the lack of adequate advance notification shall be the responsibility of the Contractor.

3.7 SITE GRADING

A. Where indicated or directed, topsoil shall be removed without contamination with subsoil and spread on areas already graded and prepared for topsoil, or transported and stockpiled convenient to areas for later application, or at locations specified. Topsoil shall be stripped to

full depth and, when stored, shall be kept separate from other excavated materials and piled free of roots, stones, and other undesirable materials.

B. Following stripping, fill areas shall be scarified to a minimum depth of six (6) inches to provide bond between existing ground and the fill material. Material should be placed in successive horizontal layers not exceeding twelve (12) inches uncompacted thickness. In general, layers shall be placed approximately parallel to the finished grade line.

C. In general and unless otherwise specified, the Contractor may use any type of earth moving equipment he has at his disposal, provided such equipment is in satisfactory condition and of such type and capacity that the work may be accomplished properly and the grading schedule maintained. During construction, the Contractor shall route equipment at all times, both when loaded and empty, over the layers as they are placed, and shall distribute the travel evenly over the entire area.

D. The material in the layers shall be of the proper moisture content before rolling or tamping to obtain the prescribed compaction. Wetting or drying throughout the layer shall be required. Should the material be too wet to permit proper compaction or rolling, all work on the fill thus affected shall be delayed until the material has dried to the required moisture content. If the material is too dry, it shall be sprinkled with water and manipulated to obtain the uniform moisture content required throughout a layer before it is compacted.

E. Each layer of the fill shall be compacted by rolling or tamping to the standard specified in Paragraph 3.06 and not less than 90% maximum density at optimum moisture content as determined by field density tests made by the Standard Proctor method. In general and unless otherwise specified, the Contractor may use any type of compaction equipment such as sheepsfoot rollers, pneumatic rollers, smooth rollers and other such equipment he has at his disposal, provided such equipment is in satisfactory condition and is of such design, type, size, weight, and quantity to obtain the required density in the embankment. If at any time the required density is not being obtained with the equipment then in use by the Contractor, the Engineer may require that different and/or additional compaction equipment be obtained and placed in use at once to obtain the required compaction.

F. The Contractor shall be responsible for the stability of all embankments and shall replace any portion which, in the opinion of the Engineer, has become displaced due to carelessness or negligence on the part of the Contractor.

3.8 TOPSOIL

A. Provide all labor, materials, equipment and services required for furnishing and placing topsoil. Samples of topsoil shall be submitted to the Engineer for review before topsoil is placed. The material shall be good quality loam and shall be fertile, friable, mellow; free from stones larger than one (1) inch, excessive gravel, junk metal, glass, wood, plastic articles, roots and shall have a liberal amount of organic matter. Light sand loam or heavy clay loam will not be acceptable.

B. The topsoil shall be 3 inches thick in all areas to be seeded. No topsoil shall be placed until the area to be covered is excavated or filled to the required grade. Imported backfill material will be stockpiled on site for structure backfilling and top soiling.

END OF SECTION 312000

SECTION 312502 - EROSION AND SEDIMENTATION CONTROL-KPDES REQUIREMENTS

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Furnish all labor, materials, and equipment required for erecting, maintaining and removing temporary erosion and sedimentation controls as shown on the Drawings and as specified herein and as recommended by state and local regulatory agencies.

B. The contractor shall at all times minimize disturbance and the period of time that the disturbed area is exposed without stabilization practices. In "critical areas" (within 25 feet of a stream) erosion prevention measures such as erosion control mats/blankets, mulch, or straw blown in and stabilized with tackifiers or by treading, etc shall be implemented on disturbed areas within 24 hours or "as soon as practical" after completion of disturbance/grading or following cessation of activities.

C. Temporary erosion controls include, but are not limited to grassing, mulching, seeding, providing erosion control and turf reinforcement mats on all disturbed surfaces including waste area surfaces and stockpile and borrow area surfaces; scheduling work to minimize erosion and providing interceptor ditches at those locations which will ensure that erosion during construction will be either eliminated or maintained within acceptable limits.

D. Temporary sedimentation controls include, but are not limited to, silt dams, traps, barriers, and appurtenances on sloped surfaces which will ensure that sedimentation pollution will be either eliminated or maintained within acceptable limits.

E. Contractor is responsible for providing and maintaining effective temporary erosion and sediment control measures prior to and during construction or until final controls become effective.

F. The Contractor shall be responsible for placement of erosion and sedimentation controls. Prior to construction, the Contractor shall develop a Stormwater Pollution Prevention Plan per state regulations. Prior to excavation, fill or grade work, the Contractor shall place controls in locations required by the plan. If during the course of construction, the state and/or local regulatory agency determines additional controls are required, the Contractor shall furnish, install and maintain additional mulching, blankets and/or sediment barriers to control erosion and sedimentation to the satisfaction of the regulatory agency.

G. The Contractor shall inspect and repair all erosion and sedimentation controls every seven (7) days and after each rainfall of 0.5 inch or greater.

H. Bare soil areas must be seeded, mulched, or covered after 14 days if no work will be done in the area within the next 7 days. If areas are to be left bare for more than 14 days, erosion controls and sediment barriers are required to be installed.

I. Erosion Control prevention measures shall be installed prior to removal of vegetation and/or stripping of topsoil.

J. The Contractor is responsible for preparing and submitting the Notice of Intent and attachments and obtaining permit approval prior to the beginning of any construction activities.

1.2 PERMIT AND NOTIFICATION REQUIREMENTS

A. The Contractor shall submit a Notice of Intent Specifically for Construction Activities (NOI-SWCA) before beginning any site disturbance, and shall implement erosion control measures as may be required by state, local and federal agencies. Contractor shall submit an electronic Notice of Intent form and required attachments to the Division of Water at least seven working (7) days, prior to beginning of construction activity. See Paragraph 3.8 in this section for detailed requirements.

B. The Contractor shall comply with all additional requirements of the local regulatory agency.

1.3 RELATED WORK

A. Dewatering is included in this Division, Section 31 23 19.

B. Final erosion protection measures where required are included in this Section.

C. Utility Line Stream Crossings – Division 33.

PART 2 – PRODUCTS

2.1 SEED

A. The seed mixture to be sown shall be in the following proportions:

Common Name	Proportion By Weight	% of Purity	% of Germination
Fine Lawn Fescue	40	90	85
Chewings Fescue	25	90	85
Italian Rye Grass	20	90	85
Red Top	10	90	85
White Clover	5	95	90

B. All seed shall be fresh and clean and shall be delivered mixed, in unopened packages, bearing a guaranteed analysis of the seed mixture.

C. Seed for temporary stabilization shall be annual rye grass, oats or wheat.

2.2 FERTILIZER

A. Just prior to the planting of turf, evenly broadcast 15 pounds per thousand square feet of fertilizer, 10-10-10 (nitrogen, phosphorus, potassium). Disc or harrow fertilizer 2 to 4 inches into the soil.

B. Fertilizer shall be delivered to the site in the original unopened container bearing the manufacturer's guarantee analysis. Any fertilizer that becomes caked or damaged making it unsuitable for use, will not be accepted.

2.3 SOD

A. Sod shall be at least 70% Bluegrass, strongly rooted and free of weeds.

B. It shall be mowed to a height not to exceed 3" before lifting, and shall be of uniform thickness with ½" to 1- ½" of soil.

2.4 MULCH

A. Mulch for seeded areas shall be Conwed Hydro Mulch, Silva-Fiber, or equal. It shall be suitable for use in a water slurry or for application with hydraulic equipment. The moisture content shall be 9-15%, and mulch shall have an organic matter content of minimum 98%.

B. Clean straw is acceptable as mulch. It shall be spread at the rate of one (1) bale per 1,000 feet (approximately 2" loose depth).

C. Mulch on slopes at or greater than 3:1 shall be held in place with turf reinforcement mat.

D. Mulch on areas subject to surface water run-off or in drainage ditches shall be held in place with turf reinforcement mat.

2.5 EROSION CONTROL BLANKETS

A. Erosion Control Blanket shall be made up of biodegradable and/or photodegradable products such as jute, wood fiber, coconut fiber, straw and degradable plastic netting. They shall degrade at a rate of approximately 6 months to 24 months.

B. Erosion Control Blanket shall be installed on slopes less than 3:1.

2.6 TURF REINFORCEMENT MAT

A. Where indicated on the Contract Drawings or as described in the Specifications, in all ditches and drainage channels and on all slopes equal to or greater than 3:1, Turf Reinforcement Mat shall be installed for long-term erosion control.

B. Turf Reinforcement Mat shall consist of top and bottom heavy weight netting and biodegradable matrix such as coconut fiber or aspen curled wood excelsior, as manufactured by Western Excelsior Excel PP5-8 Turf Reinforcement Mat or equal. Product shall degrade at a minimum rate of 36 months.

C. Where slope and hydraulic conditions are severe, a synthetic matrix may be used, based on manufacturer's recommendations.

2.7 SILT FENCE

A. Temporary Silt Fence shall consist of woven geotextile fabric attached to 2" X 2" X 48" tall hardwood stakes.

1. Exposed Fabric shall be 36" and a minimum of 4" shall be buried in trench as shown on the Detail Drawings.
2. Stakes shall be at 6' centers unless stated otherwise on Contract Documents.

B. Temporary Reinforced Silt Fence

1. For areas of steep slopes and high flows, where indicated on the Contract Drawings, or as directed by state or local regulations, Reinforced Silt Fence shall be installed.
2. Fabric shall be woven monofilament geotextile attached to 11 gauge steel fencing of 2" X 4" grid.
3. Stakes shall be 5' tall steel and shall be installed on 4' centers.
4. Fabric and fencing shall be buried in trench as shown on the Detail Drawings.

C. Spacing of Silt Fences on slopes shall be according to the following table, or as directed by state or local regulatory agencies:

Slope Angle	Soil Type		
	Silty	Clays	Sandy
Very Steep (1:1)	50 ft.	75 ft.	100 ft.
Steep (2:1)	75 ft.	100 ft.	125 ft.
Moderate (4:1)	100 ft.	125 ft.	150 ft.
Slight (10:1)	125 ft.	150 ft.	200 ft.

D. If runoff flows along the uphill side of the silt fence, Contractor shall install "J-hooks" every 40 to 80 feet. These are curved sections of silt fence above the continuous fence that serve as small dams to stop and hold the flow to allow sediment to settle.

2.8 FIBER ROLLS

A. On long slopes less than 10:1, and where indicated on the Contract Drawings or recommended by the regulatory agency, Fiber Rolls shall be installed.

B. Fiber Rolls shall be made of wood shavings, coconut fiber or other similar material encased in heavy duty netting.

C. Wooden stakes at 4'-0" on center shall be used to anchor the Fiber Rolls along the contours of the slope.

2.9 AGGREGATE SILT CHECKS

A. Where needed to slow flow velocity, to cause ponding or to protect storm water inlet structures, Aggregate Silt Checks shall be installed.

B. Aggregate Silt Checks shall consist of rock of various sizes ranging from 2" to 6" contained in or placed on geotextile filter fabric. Pea-stone or gravel-filled bags are acceptable for temporary silt checks in low-flow conditions.

2.10 RIP RAP

A. Rip Rap shall be installed at the outlets of storm drains and on channel banks as noted on the Contract Drawings and/or recommended by state and local regulatory agencies.

B. Rip Rap shall have no less than 80%, by volume, of individual stones that range in size from 0.0247 to 1.483 cubic feet.

2.11 CONSTRUCTION ENTRANCE PAD

A. Contractor shall construct entrance pads at all locations where vehicles will enter or exit the site.

B. Pad shall be a minimum of 20 feet wide, 50 feet long and 6" thick, and consist of No. 2 stone laid on top of filter fabric.

PART 3 - EXECUTION

3.1 GENERAL

A. Erosion and sediment control practices shall be consistent with the requirements of the state and local regulatory agencies and in any case shall be adequate to prevent erosion of disturbed and/or regraded areas.

B. Contractor is responsible for notifying the state regulatory agency concerning inclusion under the KPDES General Permit for Storm Water Discharges From Construction Activities.

C. Gravity sewer lines, force mains and water lines that cross steams shall be constructed by methods that maintain normal stream flow and allow for a dry excavation. Water pumped from the excavation shall be contained and allowed to settle prior to reentering the stream. Excavation equipment and vehicles shall operate outside of the flowing portion of the stream. Spoil material from the line excavation shall not be allowed to enter the flowing portion of the stream. The provisions of this condition shall apply to all types of utility line stream crossings.

D. Removal of riparian vegetation in the utility line right-of-way shall be limited to that necessary for equipment access. Effective erosion and sedimentation control measures must be employed at all times during the project to prevent degradation of waters of the Commonwealth. Site regrading and reseeding will be accomplished with 14 days after disturbance.

3.2 TEMPORARY AND PERMANENT STABILIZATION REQUIREMENTS

A. Temporary Stabilization is required for all disturbed areas where active work is not being performed. Rough graded areas and topsoil piles that are not in active use must be seeded immediately. The Contractor shall follow the guidelines in the table below:

Temporary Stabilization Table

Area requiring temporary stabilization	**Time frame to apply erosion controls**
Any disturbed areas within 25 feet of a stream	Within 24 hours of the most recent disturbance if the area will remain idle for more than 21 days
For all construction activities, any disturbed areas that will be dormant for more than 21 days but less than one year, and not within 25 feet of a stream	Within seven days of the most recent disturbance within the area
Disturbed areas that will be idle over winter	Prior to the onset of winter weather
All areas where activity has temporarily ceased	Within 14 days

B. Permanent control measures to minimize erosion and sedimentation shall be through the stabilization of soil as soon as possible with perennial vegetation. The contractor shall follow the guidelines for Permanent Stabilization as specified in the table below.

Permanent Stabilization Table

Area requiring permanent stabilization	**Time frame to apply erosion controls**
Any areas that will lie dormant for 180 days or more	Within 14 days of the most recent disturbance
Any areas within 25 feet of a stream and at final grade	Within 24 hours of reaching final grade
Any other areas at final grade	Within 7days of reaching final grade within that area

If permanent seeding is not practical due to the time of year, the disturbed area shall be seeded immediately with an annual rye grass at a rate of 3 lb. per 1,000 sq. feet and mulched with straw at a rate of 2.5 tons per acre. Mulch shall be anchored at 6 to 12-inch intervals across the slope by crimping into soil.

3.3 SEEDING

A. The areas to be seeded shall be thoroughly tilled to a depth of at least 4" by discing, harrowing, or other approved methods until the condition of the soil is acceptable to the Engineer. After harrowing or discing, the seed bed shall be dragged and/or hand raked to finish grade.

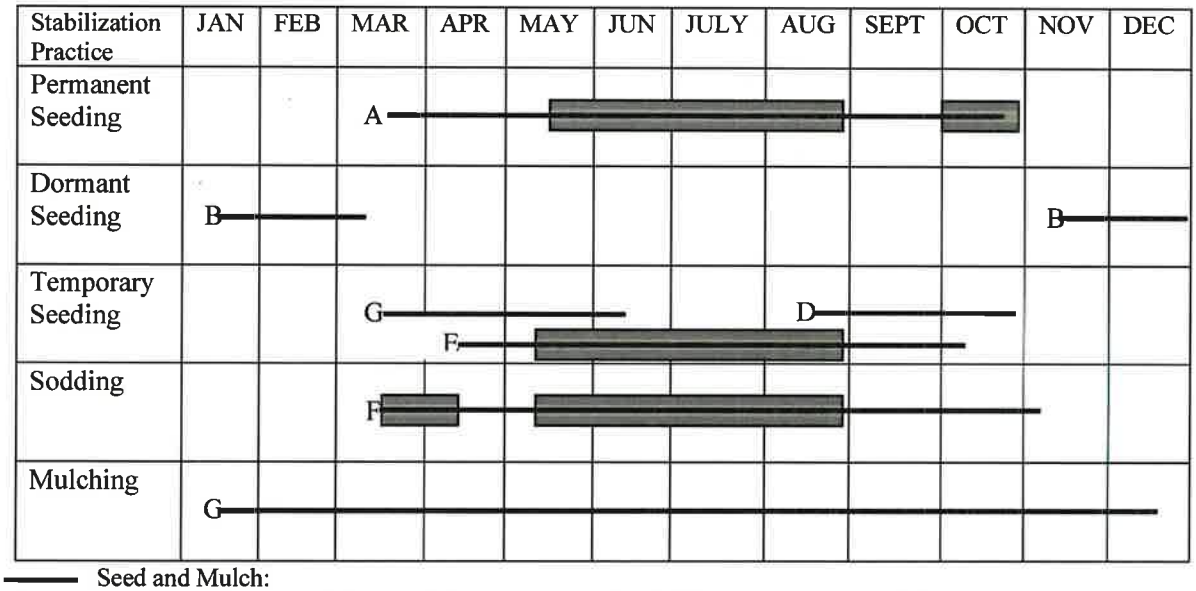
B. The incorporation of the fertilizer and the agricultural lime may be a part of the tillage operation and shall be applied no less than 24 hours nor more than 48 hours before the seed is to be sown.

C. Seed shall be broadcast either by hand or approved sowing equipment at the rate of ninety (90) pounds per acre (two pounds per 1,000 square feet), uniformly distributed over the area. Broadcasting seeding during high winds will not be permitted. The seed shall be drilled or raked into a depth of approximately 2 inch and the seeded areas shall be lightly raked to cover the seed and rolled. Drilling seeding shall be done with approved equipment with drills not more than 3 inches apart. All ridges shall be smoothed out, and all furrows and wheel tracks likely to develop into washes, shall be removed.

D. After the seed has been sown, the areas so seeded shall be mulched with clean straw at the rate of one (1) bale per 1,000 feet (approximately 2 inch loose depth). Mulch on slopes and in all ditches and drainage channels shall be held in place with erosion control blankets.

E. Areas seeded shall be watered and protected until a uniform stand develops, and then inspected periodically and maintained appropriately. Displaced mulch shall be replaced or any damage to the seeded area shall be repaired promptly, both in a manner to cause minimum disturbance to the existing stand of grass. If necessary to obtain a uniform stand, the Contractor shall refertilize, reseed and remulch as needed. Scattered bare spots up to one (1) square yard in size will be allowed up to a maximum of 10 percent of any area.

F. The following table is a guide to schedule seeding and mulching:



Seed and Mulch:

A = Fescue, Clover, Ryegrass Mixture: 160 lbs/acres or 4 lbs/1,000 s.f. plus 2 tons mulch per acre

B = Fescue, Clover, Ryegrass Mixture: 160 lbs/acres or 4 lbs/1,000 s.f. plus 2 tons mulch per acre

C= Oats: 120 lbs/acre

D=Wheat or Rye: 120 lbs/acre

E=Perennial Ryegrass: 40 lbs/acre or 1 lb/1,000 s.f.

F=Install Sod

G= Mulch 2 tons per acre

Irrigation Needed: May through August and October and two to three weeks after installing sod in March or April

3.4 SOD

A. To install, bring soil to final grade and clear of trash, wood, rock, and other debris. Apply topsoil, fertilizer at approximately 1000 lbs per acre.

B. Use sod within 36 hours of cutting. Lay sod in straight lines. Butt joints tightly, but do not overlap joints or stretch sod. Stagger joints in adjacent rows in a brickwork type pattern. Use torn or uneven pieces on the end of the row.

C. Notch into existing grass. Anchor sod with pins or stakes if placed on slopes greater than 3:1. Roll or tamp sod after installation and water immediately. Soak to a depth of 4 to 6 inches. Replace sod that grows poorly. Do not cut or lay sod in extremely wet or cold weather. Do not mow regularly until sod is well established.

3.5 INSTALLATION OF EROSION AND SEDIMENT CONTROL DEVICES

A. All erosion and sediment control products and materials shall be installed per manufacturer's recommendations and in accordance with the Kentucky Erosion Prevention and Sediment Control Field Guide.

B. Contractor shall pay special attention to the trenching-in of the bottoms of silt fence, the staking of sediment barriers, and the stapling of erosion control blankets.

3.6 MAINTENANCE OF EROSION AND SEDIMENT CONTROL DEVICES

A. Erosion and sedimentation controls shall be inspected weekly and after rain events of 0.5 inch or greater. Replace silt fencing as needed, filter stone which is dislodged, erosion control blanket which is damaged, and make other necessary repairs.

B. Remove sediment from fences and barriers when it accumulates to half the height of the barrier, or more often as needed.

3.7 CLEAN UP

A. Upon completion of the project and/or establishment of satisfactory turf, vegetation or permanent erosion control structures, Contractor shall remove all temporary devices and properly dispose of such.

3.8 KPDES GENERAL PERMIT FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

A. The Contractor is responsible for filing the electronic Notice of Intent (NOI-SWCA) form at least seven (7) days prior to start of construction activity. The Notice of Intent (NOI) is a Kentucky Pollution Discharge Elimination System (KPDES) permit application as provided by the Kentucky Revised Statutes, Chapter 224. This application is required to be submitted for construction projects that disturb one or more acres of land.

B. The NOI requires the inclusion of the descriptions of (but is not limited to) the following items:

1. Names and designated uses of any receiving waters
2. Anticipated number and locations of discharge points
3. Identification of planned construction in or along a water body

A project map showing property boundaries, areas to be disturbed, locations of anticipated discharge points and receiving waters is also required to be submitted with the NOI.

C. If the construction site is near a designated "Impaired Water" or a "Cold Water Aquatic Habitat Waters, Exceptional Waters, Outstanding National/State Resource Waters", additional items and/or individual permits may be required.

D. The NOI form requires an SIC code. The link to the SIC codes is http://www.osha.gov/pls/imis/sicsearch.html. The following are the typical construction SIC codes utilized:

1542 – Building Construction, nonresidential, except industrial and warehouses
1623 – Water Main Construction, Sewer Construction
1629 – Water and Wastewater Treatment Plant Construction
1711 – Water Pump Installation
1781 – Drilling Water Wells

E. The Contractor is responsible for developing, implementing and continuously updating a Stormwater Pollution Prevention Plan (SWPPP) before commencement of site disturbance. The SWPPP should include erosion prevention measures and sediment control measures which are installed and maintained to minimize discharges of sediments and other pollutants from a 2-year, 24-hour storm event. The SWPPP must be kept at the site and available for review by State officials, and must be updated as necessary through the course of the construction project.

F. The Contractor should receive notification from the Kentucky Division of Water of permit coverage within seven (7) days of the electronic submittal. Until receipt of notification that NOI is acceptable, site disturbance is not permitted.

G. The permit, fact sheet, and links to permitting forms and more information can be found at http://water.ky.gov/permitting/Pages/WastewaterDischarge.aspx, General Permit KYR10.

H. Unless otherwise noted, the Contractor is responsible for completing and maintaining the required Self-Inspection Forms. A sample is included at the end of this specification section.

I. Upon completion of the project and establishment of all permanent erosion and sediment control structures and devices, the Contractor shall submit the Notice of Termination (NOT) form to the Division of Water.

J. All subcontractors are required to comply with the requirements of the Permit and the Stormwater Pollution Prevention Plan (SWPPP).

3.10 WHERE TO SUBMIT

A Submit an Electronic Notice of Intent (NOI) Form to:
https://dep.gateway.ky.gov/eForms/default.aspx?FormID=48

3.11 REQUIRED FOR THIS CONTRACT

A. The Contractor shall submit the signed electronic NOI to the Kentucky Division of Water (address noted above) at least seven (7) days prior to the start of work activities for an electronic submittal, or thirty (30) days for a paper submittal. Do not begin site work until receiving notice of permit approval from the Division of Water.

B. Submit the NOI and locally required documents to the local regulatory agency.

C. Develop, implement, and continuously update the Stormwater Pollution Prevention Plan (SWPPP).

D. Inspect and document the condition of runoff controls every seven (7) days and after each rain event of one-half inch or more. Maintain inspection reports at the site.

E. The Contractor shall file an electronic Notice of Termination (NOT) when General Permit coverage is no longer needed (General Permits describe how this is done).

END OF SECTION 312502

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Phase 1 Site Development Project
Lexington, Kentucky

Bid #1-2026

January 2026

KENTUCKY CONSTRUCTION SITE INSPECTION REPORT

Utility Line Projects

KENTUCKY EROSION AND SEDIMENT CONTROL
PERMIT COMPLIANCE INSPECTION REPORT

General Site Information:

Company:	**County:**
Site:	**Date:**

Permit Compliance Information:

Copy Of Permit kept on site	**Yes**	**No**
Copy of Best Management Practices (BMP) Plan kept on site		
Site specific description of project timing/phasing and implementation		
Adequate site map showing:		
• Drainage patterns indicated on plan		
• Receiving waters (stream, river, lake, wetland, etc.) named		
• Approximate slopes after major grading		
• Area of soil disturbance		
• Undisturbed areas and vegetative buffer zones		
• Location of structural and non-structural controls (BMPs)		
• Areas where stabilization practices are to be employed		
• Storm water discharge locations		

Specific Site Information:

Name of receiving stream:	
Total area of site:	
Area disturbed:	

Inspection Results:

Inspection Criteria: **Satisfactory, Marginal, Unsatisfactory**	**S**	**M**	**U**
Condition of receiving stream is BMP Plan adequately implemented?			
Timely seedling and mulching			
• Revegetation on cut/fill/cleared areas			
• Condition of slope areas			
Structural Controls			
• Drainage ditch protection/liners installed			
• Inlet protection for curb drains, etc.			
• Outlet protection – no erosion or scour			
• Silt fences below bare soil areas			
• Rock check dams in ditches			
• Sediment traps/ponds maintained			
• Other controls			

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Kentucky Best Management Practices Plan • Construction Site Inspection Report

Company:	**Site:**	**County:**
Site Operator:		**Date:**
Receiving Water:	**Total Site Area (acres):**	**# Disturbed Acres:**
Inspector Name:	**Inspector Qualifications:**	
Inspection Type: Weekly or ½ Inch Rain	**Days Since Last Rainfall ____**	**# Inches of Last Rainfall: _____**

Field Inspection Observations

BMP Category	Compliance Yes	No	N/A	Field Indicators for Compliance
Project Operations				Notice of Intent (KPDES permit) and other local/state permits on file BMP Plan on site and available for review Project timing/schedule and activities following BMP Plan Weekly inspection and rain-event reports on BMPs available for review Diversions, silt checks/traps/basins, and silt fences/barriers installed prior to clearing Grading and clearing conducted in phases to minimize exposed soil areas No vegetation removal or operations in stream or sinkhole buffer area (25-50 ft min) Rock pad in place on all construction site exits leading to paved roads No sediment, mud, or rock on paved public roads in project area Dust control if needed when working in residential areas during dry conditions
Drainage Management				Upland runoff diverted around bare soil areas with vegetated/lined ditches/berms Drainage channels exiting the site are lined with grass/blanket/rock and stabilized Discharges from dewatering operations cleaned in silt fence enclosure or other filter No muddy runoff leaving site after rains up to 1½ inches
Erosion Protection				Exposed soil seeded/mulched after 2 weeks if no work is planned for the next 7 days Soils on steep slopes seeded/mulched/blanketed as needed to prevent rutting
Sediment Barriers				Silt fence, rock filter, or other sediment barrier below all bare soil areas on slopes Barrier installed across slope on the contour, trenched in, posts on downhill side Multiple sediment barriers at least 125 ft apart on unseeded slopes steeper than 4:1 J-hook interceptors along silt fence where heavy muddy flows run along fencing No visible undercutting or bypassing or blowout of sediment barrier Accumulated sediment is less than halfway to the top of sediment barrier
Slope Protection				Slopes tracked, disked, or conditioned after final grade is established Slopes seeded, mulched, or blanketed within 21 days, no unmanaged rills or gullying Heavy downslope flows controlled by lined downdrain channels or slope drain pipes No muddy runoff from slopes into streams, rivers, lakes, or wetlands
Inlet Protection				Inlet dam/device or filtration unit placed at all inlets receiving muddy flows No visible undercutting, bypassing, or blowout of inlet protection dam or device Accumulated sediment is less than halfway to the top of the inlet protection dam/device
Outlet Protection				High flow discharges have rock or other flow dissipaters of adequate sizing at outlet Culvert outlets show no visible signs of erosion/scour, bank failure, or collapse
Ditch and Channel Stabilization				No unmanaged channel bank erosion or bottom scouring visible within or below site Ditches with slopes more than 3% have check dams spaced as needed, if not grassed Ditch check dams tied in to banks, with center 4" lower than sides, and no bypassing Ditches with slopes of up to 5% are thickly seeded with grass (minimum requirement) Ditches 5% to 15% are lined with thick grass and erosion control blankets as needed Ditches 15% to 33% are lined with thick grass and matting or other approved product Ditches exceeding 33% are paved or lined with rock or other approved product

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Sediment Traps and Basins				Storage volume is at least 134 cubic yards for each acre of bare soil area drained Trap or basin is seeded/mulched and stabilized; no collapsing sidewalls or banks Outlet structure is stable and consists of rock-lined notched overflow or outlet riser Rock overflow is 6" lower in center to control overflow discharge Outlet riser pipe has concrete & rock base, ½ inch holes every 3" to 6", and trash rack Area near pipe outlet or overflow is stable, with no scour or erosion Sediment removed before trap or basin is halfway full; disposal is away from ditches
Maintenance of EPSC Management Practices				Sediment behind silt fence and other filters does not reach halfway to top Sediment traps and basins are less than half full of sediment Gullies repaired, silt fences and other controls inspected and repaired/replaced Written documentation of controls installed, inspection results, and repairs performed All controls removed and areas graded, seeded, and stabilized before leaving site
Materials Storage, Handling, and Cleanup				Materials that may leach pollutants stored under cover and out of the weather Fuel tanks located in protected area with double containment system Fuel and/or other spills cleaned up promptly; no evidence of unmanaged spills No evidence of paint, concrete, or other material washouts near drain inlets No storage of hazardous or toxic materials near ditches or water bodies
Waste Disposal				Trash, litter, and other debris in proper containers or properly managed No litter or trash scattered around on the construction site Provisions made for restroom facilities and/or other sanitary waste management Sanitary waste facilities clean and serviced according to schedule No disposal of any wastes into curb or other inlets, ditches, streams, or water bodies

Inspection Notes and Key Observations

List of Stabilized Areas: Vegetation is Established; Ditches are Stabilized; No Exposed Soil

Other Notes or Observations:

Corrective Actions Taken and/or Proposed Revisions to BMP Plan:

I certify under penalty of law that I understand the terms and conditions of the general Kentucky Pollutant Discharge Elimination System (KPDES) permit that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification.

Signature of Inspector: _____

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SECTION 316329

DRILLED PIERS & SHAFTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification sections, apply to work of this section.

B. Installation shall include the furnishing of all labor, materials, equipment and services necessary to mobilize equipment, to excavate, and install end-bearing Drilled Piers to the depths and sizes as indicated on the drawings, or as required. All equipment used for this construction shall be in good working order and well-maintained. Drilled Piers & Shafts shall be installed by a contractor who specializes in Drilled Pier construction.

1.2 DESCRIPTION OF WORK

A. Extent of Drilled Piers & Shafts is shown on drawings, including locations, diameters of shafts, top elevations, and details of construction. The geotechnical report has a map indicating approximate top of bedrock elevations on the site. The geotechnical report is for reference only.

1.3 QUALITY ASSURANCE

A. Codes and Standards: Comply with provisions of American Concrete Institute (ACI) "Standard Specification for the Construction of End Bearing Drilled Piers" (ACI 336.1), and as herein specified.

1. Where provisions of above standard conflict with building regulations in effect for this project, building regulations will govern, but only to establish minimum requirements.

B. Drilled Pier Installer Qualifications: Not less than three (3) successfully completed contracts with similar soil conditions, shaft sizes, depths and volumes of work contained in this project. Submit satisfactory proof of compliance to Engineer.

C. Concrete Testing: All testing shall be in accordance with the provisions of Section "Cast-In-Place Concrete", except that one strength test shall be made for each 50 cubic yards of concrete or fraction thereof placed in any one day.

1.4 SUBMITTALS

A. Reports: Submit following reports directly to Engineer, with copy to others as designated.

1. A description of the method proposed to be used in Drilled Pier excavation and installation.

2. Certified Drilled Pier Report for each Drilled Pier, recording actual elevation at bottom and top, elevation of rock, final centerline location at top, variation of shaft from plumb, result of tests performed, actual allowable bearing capacity of bottom, depth of socket, levelness of bottom, elevation of bottom and top of any casing left in place, any unusual conditions, from original design, dates of starting excavation, completion of excavation, inspection, testing, and placement of concrete (include any delays in concreting and location of construction joints in shafts).

1.5 JOB CONDITIONS

A. Site Information: Any data on indicated subsurface conditions are not intended as representations or warranties of continuity of such conditions. It is expressly understood that Owner will not be responsible for interpretations or conclusions drawn therefrom by Contractor. Data are made available for convenience of Contractor and are not guaranteed to represent conditions that may be encountered.

B. Additional test borings and other exploratory operations may be made by Contractor but shall be at no additional cost to Owner.

PART 2 - PRODUCTS

2.1 CONCRETE

A. Concrete work shall conform to the requirements of Section "Cast-In-Place Concrete" for Class A concrete, except the 28-day compressive strength shall be 4,000 psi, the minimum cementitious materials content shall be 517 lb/cy, and the air content shall be 2% +/- 1%, plus the additional requirements herein specified.

B. Concrete placed by tremie through water shall have one extra sack of cement per cubic yard, up to a level of not less than 10 feet above the initial water level.

PART 3 - EXECUTION

3.1 DRILLED PIER & SHAFT EXCAVATION

A. General: Excavate holes for Drilled Piers & Shafts to required bearing stratum or elevation as shown on drawings. Excavate holes for closely spaced Drilled Piers & Shafts, and those occurring in fragile or sand strata only after adjacent holes are filled with concrete and allowed to set.

1. Drilled Pier design dimensions shown are minimums as-installed and is subject to verification by the owner's on-site geotechnical and special inspection representative in the field. If bearing stratum/elevation is revised based on observed conditions, foundation system will be revised as directed by Engineer. Such revisions will be paid for in accordance with contract conditions relative to changes in work or negotiated.

B. Construction Tolerances: Locate centerline of Drilled Piers & Shafts within the following tolerances:

1. Maximum permissible variation of location not more than 1/24th of shaft diameter or 2", whichever is less.
2. Shafts out of plumb, not more than 1.5% of length nor exceeding 12.5% of shaft diameter, whichever is less.
3. Concrete cut-off elevation, plus 1" to minus 3".
4. If above tolerances are exceeded, provide corrective construction to compensate for excessive eccentricity. Submit proposed corrective construction methods to Engineer for approval before proceeding.

C. Temporary Shaft Protections: When required, provide full-length watertight steel casings of sufficient thickness to withstand compressive, displacement and withdrawal stresses and to maintain shaft walls. Temporary casings may be left in place or may be withdrawn as concrete is placed, at Contractor's option.

D. The work of this section includes demolition and removal of all material to install the drilled piers & Shafts as indicated on the drawings, including existing concrete, rock, rock boulders, and other subsurface obstructions, and such work will not be considered a change in work.

E. Dewatering: Provide and maintain pumping equipment to keep excavations free of water before placing concrete. If excessive water is encountered and drilling operations must be halted, consult with Engineer before using alternate methods of construction.

1. Conduct water to general site run-off ditches and disposal areas with discharge lines. Provide ditching as required to conduct water to site drainage facilities.
2. Conform to the Sediment and Erosion Control Plan, SWPPP and BMPs for management of water removed from excavations.

F. Inspection: Each Drilled Pier & Shaft hole bottom must be inspected and tested before placing

concrete.

1. Provide facilities as required to assist inspection and testing of excavations and cooperate with inspecting and testing personnel to expedite work.
2. Notify Engineer and testing facility at least 24 hours prior to time excavations will be ready for inspection and tests.

3.2 REINFORCEMENT STEEL AND DOWELS

A. Fabricate and erect reinforcing cages in shafts as one continuous unit. Place reinforcement accurately and symmetrically about axis of hole and hold securely in position during concrete placement.

B. Provide adequate cover of concrete over reinforcement, but do not exceed tolerances for reinforcement placement in so doing. Oversized piers & shafts are acceptable to maintain concrete cover, whereas undersized reinforcement cages are not acceptable.

C. Use templates to set anchor bolts, leveling plates and other accessories furnished under work of other sections. Provide blocking and holding devices to maintain required position during concrete placement.

D. Protect exposed ends of dowels and anchor bolts from mechanical damage and exposure to weather.

3.3 CONCRETE PLACEMENT

A. General: Fill Drilled Piers & Shafts with concrete immediately after inspection and approval by inspection and testing agent. Use protection sheets (cut out to receive concrete) over excavation openings, extending at least 12 inches beyond edge. Place concrete continuously and in a smooth flow without segregating the mixed materials. Provide mechanical vibration for consolidation of at least top 25 feet of each shaft. Place concrete by means of bottom discharge bucket, flexible drop chute, elephant trunk hopper, or tremie. Use chutes or tremies for placing concrete where a drop of more than 10 feet is required, or pump concrete into place. Place concrete in-the-dry unless placing underwater is acceptable to Engineer. If water occurs, and it is impracticable to dewater Drilled Pier excavation, and reasonable attempts to seal off water flow have failed, allow water level to attain its normal level and place concrete by tremie method. Control placement operations to ensure that tremie is not broken during continuous placing from bottom to top. Other methods of depositing concrete underwater may be used if acceptable to Engineer. Maintain a sufficient head of concrete to prevent reduction in diameter of Drilled Pier shaft by earth pressure and to prevent extraneous material from mixing with fresh concrete. Coordinate withdrawal of temporary casings with concrete placement operations to maintain ahead of concrete approximately above casing bottom. Stop concrete placement at cut-off elevation shown, screed level, and apply a scarified, rough finish.

1. Where cut-off elevation is above ground elevation, form top section above grade and

extend shaft to required elevation. Interrupted placing operations of over one-hour duration will require a cold joint installation. Leave resulting shaft surface approximately level and insert steel dowels as shown on drawings. At resumption of concrete placing, clean off surface laitance, roughen as required, and slush with a 1-to-1 cement grout or commercial bonding agent before remainder of concrete is placed.

B. Cold Weather Placing: Protect concrete work from physical damage or reduced strength which could be caused by frost, freezing actions, or low temperatures, in compliance with ACI 306 and as herein specified. When air temperature has fallen to or is expected to fall below 40°F (4°C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50°F (10°C), and not more than 80°F (27°C) at point of placement. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials. Do not use calcium chloride, salt and other mineral containing antifreeze agents or chemical accelerators, unless otherwise accepted by Engineer.

C. Hot Weather Placing: When hot weather conditions exist that would seriously impair quality and strength of concrete, place concrete in compliance with ACI 305 and as herein specified. Cool ingredients before mixing to maintain concrete temperature at time of placement below 90°F (32°C). Mixing water may be chilled or chopped ice may be used to control concrete temperature provided water equivalent of ice is calculated to total amount of mixing water. Place concrete immediately upon delivery. Keep exposed concrete surfaces, and formed shaft extensions, moist by fog sprays, wet burlap or other effective means. Do not use retarding admixtures without acceptance of Engineer.

3.4 FIELD QUALITY CONTROL

A. Sample test concrete for quality control during placement, as follows:

1. Sampling Fresh Concrete: ASTM C 172, except modified for slump to comply with ASTM C 94.
2. Slump: ASTM C 143; one test for each concrete load at point of discharge; and one for each set of compressive strength test specimens.
3. Air Content: ASTM C 231, pressure method; one for each set of compressive strength test specimens.
4. Compression Test Specimens: ASTM C 31; one set of 4 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens except when field-cure test specimens are required.
5. Concrete Temperature: Test when air temperature is 40°F (4°C) and below, and when 80°F (27°C) and above; and each time a set of compression test specimens made.
6. Compressive Strength Tests: ASTM C 39; one set for each 50 cubic yards or fraction thereof placed in one day. One specimen tested at 7 days, 2 specimens tested at 28 days, and one specimen retained in reserve for later testing if required.

    a. When strength of field-cured cylinders is less than 85% of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for

protecting and curing in-place concrete.

b. Report test results in writing to Engineer and Contractor on same day tests are made. Include in reports project identification name and number, date of concrete placement, name of contractor, name of concrete supplier and truck number, name of concrete testing service, concrete type, location of Drilled Pier, design compressive strength at 28 days, concrete mix proportions and materials; compressive breaking strength and type of break for both 7-day test and 28-day tests.

7. Additional Concrete Tests: Testing service may take core samples of in-place concrete when test results are such that there is reasonable doubt specified concrete strengths have not been attained.

   a. Complete continuous coring of Drilled Piers & Shafts may be required at Contractor's expense, where time for removal of temporary casings exceed specified limits, or where observations or placement operations indicate cause for suspicion of quality of concrete, presence of voids, segregation or other possible defects.

8. Inspection and Tests for Drilled Pier: Soil testing facility shall perform and report specified tests and additional tests which may be required. Conduct tests and provide reports as soon as possible to not delay concreting operations for acceptable excavations. Bottom elevations and bearing capacities and lengths of Drilled Piers & Shafts as shown on drawings are estimated from available soil data. Actual elevations, Drilled Pier lengths, and bearing capacities will be determined by soil testing facility from conditions found in excavations. Final evaluations and acceptance of data will be determined by Engineer.
9. Drilled Piers & Shafts Bearing on Rock: Inspect and test each Drilled Pier bottom by drilling and probing to a depth of 5'-0" below bottom elevation to determine whether voids, clay seams, or solution channels exist. Inspection and probing of rock to be performed by testing facility; condition of rock to be approved log testing facility before concrete placement can begin.

END OF SECTION 316329

LFUCG
Fire Training Academy
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SECTION 321216 – ASPHALT PAVING (KENTUCKY)

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. The hot-mix asphalt paving work includes the construction of an aggregate base course, asphalt base and wearing courses as specified herein. This work is to replace paving disturbed by the construction and any damages to paving by Contractor's operations, as well as new pavement and driveways, within the limits shown on the plans.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including General Conditions and General Requirements apply to the work specified in this section.

B. Earthwork: Section 31 20 00

1.3 APPLICABLE STANDARDS

A. All references in this section to the Standard Specifications shall refer to the most recent Edition of Standard Specifications for Road and Bridge Construction with all amendments thereto as published by the Kentucky Transportation Cabinet (KYTC).

1.4 SUBMITTALS

A. Job-Mix Designs: For each job mix proposed for the Work.

B. Comply with the requirements of Section 013323.

1.5 QUALITY ASSURANCE

A. Hot Mix Asphalt Producer Qualifications: Engage a firm experienced in producing hot-mix asphalt similar to that indicated for this Project and with a record of successful in-service performance.

B. Producer firms shall be qualified through the Kentucky Transportation Cabinet as an approved Asphalt Mix Producing Firm.

C. Testing and inspection: The Contractor shall retain a qualified testing laboratory for testing and inspection.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp. Comply with the provisions of KYTC Standard Specifications Section 403.03.01 for temperature requirements.

B. Grade Control: Establish and maintain required lines and elevations.

PART 2 – PRODUCTS

2.1 AGGREGATES

A. General: Use materials and gradations that have performed satisfactorily in previous installations.

B. Aggregate Base Course: Dense Graded Aggregate Base (DGA) complying with Section 302 and 805 of the Standard Specifications.

C. Coarse Aggregate: Sound, angular crushed stone, or crushed gravel, complying with Standard Specifications Section 805.

2.2 ASPHALT MATERIALS

A. Asphalt Binder: AASHTO MP 1, Performance Graded Binder PG 64-22 for general applications.

B. Tack Coat: Comply with provisions in KYTC Standard Specifications Section 406.

2.3 MIXES

A. Hot-Mix Asphalt: Hot-laid, hot-mix asphalt plant mixes meeting the requirements of the Standard Specifications of the Kentucky Transportation Cabinet (KYTC) or Asphalt Institute (AI) MS-2 and complying with the following requirements:

1. Base Course: Produce KYTC mixture designation Class 2 Base. There shall be no restrictions on polish resistant aggregates (utilize KYTC Type "D" aggregates). Recycled Asphalt Pavement (RAP) may be utilized in accordance with Standard Specifications Section 409.
2. Surface Course: KYTC mixture designation Class 2 Surface. The mixture gradation may pass through the restricted zone and there shall be no restriction on polish resistant

aggregates (utilize KYTC Type "D" aggregates). Recycled Asphalt Pavement (RAP) may be utilized in accordance with Standard Specifications Section 409.

B. Hot-Mix Asphalt: Hot-laid, hot-mix asphalt plant mixes designed according to procedures established by the Kentucky Transportation Cabinet (KYTC) and complying with the following requirements.

1. Provide mixes complying with composition, grading, and tolerance requirements Standard Specifications for the following nominal, maximum aggregate sizes:

a. Base Course: Mixture with a nominal maximum aggregate size of 0.75 inch with a minimum Voids in the Mineral Aggregate (VMA) of 12 percent.
b. Surface Course: Mixture with a nominal maximum aggregate size of 0.38 inch with a minimum VMA of 14 percent.

PART 3 - EXECUTION

3.1 INSPECTION

A. Pavement installer must examine the areas excavated and backfilled and conditions under which pavement is to be constructed. Notify the Contractor in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until satisfactory embankments and subgrade have been established to a uniform line, properly shaped and compacted.

B. Verify that subgrade is dry and in suitable condition to support paving and imposed loads.

C. Proof-roll subbase using loaded dump trucks or heavy rubber-tired construction equipment to locate areas that are unstable or that require further compaction.

D. Proceed with paving only after unsatisfactory conditions have been corrected.

E. Repairs to Base Course: Fill excavated pavements with hot-mix asphalt base mix and, while still hot, compact flush with adjacent surface.

F. Patching: Partially fill excavated pavements with hot-mix asphalt base mix and, while still hot, compact. Cover asphalt base course with compacted, hot-mix surface layer finished flush with adjacent surfaces.

3.2 AGGREGATE BASE COURSES

A. Place aggregate base course on subgrades free of mud, frost, snow, or ice in accordance with KYTC Section 302 of the Standard Specifications.

B. On prepared subgrade, place base course as follows:

1. Shape base course to required crown elevations and cross-slope grades.
2. Place base course that exceeds 9 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
3. Compact base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 98 percent of maximum dry unit weight according to ASTM D698 or in accordance with Section 302.03.04 of the Standard Specifications.

3.3 SURFACE PREPARATION

A. General: Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.

1. Sweep loose granular particles from surface of unbound-aggregate base course. Do not dislodge or disturb aggregate embedded in compacted surface of base course.

B. Tack Coat: Comply with provisions in Standard Specifications Section 406. Apply to the surface of concrete surfaces, existing asphalt surfaces and, when necessary, to newly constructed asphalt surfaces.

3.4 HOT-MIX ASPHALT PLACING

A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand to areas inaccessible to equipment in a manner that prevents segregation of mix. Comply with applicable provisions of KYTC Standard Specifications Section 403 for delivery, placement, spreading and compaction of the mixture.

1. Average Density: 92 percent of reference maximum theoretical density according to ASTM D 2041, but not less than 90 percent.

3.5 FIELD QUALITY CONTROL

A. Thickness Tolerances: Compact each course to produce the thickness indicated within the following tolerances:

1. Aggregate and asphalt base Course: Plus or minus 1/2 inch.
2. Asphalt surface course: Plus or minus 1/4 inch.
3. Provide a minimum fall of 2% to facilitate drainage unless otherwise indicated on the Drawings.

B. Surface Smoothness: Compact each course to produce a surface smoothness with the following tolerances as determined using a 10-foot straightedge applied transversely or longitudinally to paved areas:

1. Aggregate base course: 3/8 inch.
2. Asphalt base course: 1/4 inch.
3. Asphalt surface course: 1/8 inch.
4. Crowned surfaces: Test with crowned template centered and at a right angle to crown. Maximum allowable variance from template is 1/4 inch.

C. In-Place Density: Filed density test of in-place compacted aggregate base will be determined by nuclear method in accordance with ASTM D 2940. Field density of in-place compacted pavement will be determined by nuclear method according to ASTM D 2950 and correlated with ASTM D 1188 or ASTM D 2726. Test will be made for every 1,000 square yards or less of installed pavement.

D. Core Sampling: If required to confirm either thickness tolerances or compaction of asphalt courses, core samples shall be taken and tested according to ASTM D 3549 for thickness and ASTM D 1188 or ASTM D 2726 for compaction. Determination of need for core samples will be made by the Engineer.

END OF SECTION 321216

LFUCG
Fire Training Academy
Phase 1 Site Development Project
Lexington, Kentucky

Bid #1-2026 January 2026

SECTION 321313 - CONCRETE PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes Concrete Paving Including the Following:

1. Curbs and gutters.
2. Paving and Walks.

B. Related Requirements:

1. Comply with Kentucky Transportation Cabinet Standard (KYTC) specifications for Road and Bridge Construction.

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash, slag cement, and other pozzolans.

B. W/C Ratio: The ratio by weight of water to cementitious materials.

1.4 ACTION SUBMITTALS

A. Design Mixtures: For each concrete paving mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

B. Contactor to submit jointing layout plan for review by the designer of record.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified testing agency.

B. Field quality-control reports.

1.6 QUALITY ASSURANCE

A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities" (Quality Control Manual - Section 3, "Plant Certification Checklist").

B. Testing Agency Qualifications: Qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.

1.7 FIELD CONDITIONS

A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

B. Cold-Weather Concrete Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing, or low temperatures. Comply with ACI 306.1 and the following:

1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.
2. Do not use frozen materials or materials containing ice or snow.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in design mixtures.

C. Hot-Weather Concrete Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:

1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated in total amount of mixing water.
2. Cover steel reinforcement with water-soaked burlap, so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. ACI Publications: Comply with ACI 301 unless otherwise indicated.

B. Concrete shall be Class A in accordance with KYTC Standard Specifications.

2.2 CURING MATERIALS

A. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry or cotton mats.

B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

D. Evaporation Retarder: Waterborne, monomolecular, film forming, manufactured for application to fresh concrete.

E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.

F. White, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 2, Class B, dissipating.

2.3 CONCRETE MIXTURES

A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete, and as determined by either laboratory trial mixtures or field experience.

1. Use a qualified independent testing agency for preparing and reporting proposed concrete design mixtures for the trial batch method.
2. When automatic machine placement is used, determine design mixtures and obtain laboratory test results that comply with or exceed requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

B. Proof-roll prepared subbase surface below concrete paving to identify soft pockets and areas of excess yielding.

1. Completely proof-roll subbase in one direction and repeat in perpendicular direction. Limit vehicle speed to 3 mph.
2. Proof-roll with a pneumatic-tired and loaded, 10-wheel, tandem-axle dump truck weighing not less than 15 tons.
3. Correct subbase with soft spots and areas of pumping or rutting exceeding depth of 1/2 inch according to requirements in Section 312000 "Earthwork."

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove loose material from compacted subbase surface immediately before placing concrete.

3.3 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.4 JOINTS

A. General: Form construction, isolation, and contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated.

1. When joining existing paving, place transverse joints to align with previously placed joints unless otherwise indicated.

B. Construction Joints: Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than one-half hour unless paving terminates at isolation joints.

1. Butt Joints: Use bonding agent or epoxy-bonding adhesive at joint locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, other fixed objects, and where indicated.

1. Extend joint fillers full width and depth of joint.
2. Terminate joint filler not less than 1/2 inch or more than 1 inch below finished surface if joint sealant is indicated.
3. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.
4. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
5. During concrete placement, protect top edge of joint filler with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.

D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness.

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with grooving tool to a 1/4-inch radius. Repeat grooving of contraction joints after applying surface finishes.
2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks.

E. Edging: After initial floating, tool edges of paving, gutters, curbs, and joints in concrete with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes.

3.5 CONCRETE PLACEMENT

A. Before placing concrete, inspect and complete formwork installation and items to be embedded or cast-in.

B. Remove snow, ice, or frost from subbase surface before placing concrete. Do not place concrete on frozen surfaces.

C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.

D. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.

E. Do not add water to concrete during delivery or at Project site. Do not add water to fresh concrete after testing.

F. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

G. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.

1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies or side forms. Use only square-faced shovels for hand spreading and consolidation.

H. Screed paving surface with a straightedge and strike off.

I. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleedwater appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

J. Curbs and Gutters: Use design mixture for automatic machine placement. Produce curbs and gutters to required cross section, lines, grades, finish, and jointing.

K. Slip-Form Paving: Use design mixture for automatic machine placement. Produce paving to required thickness, lines, grades, finish, and jointing.

1. Compact subbase and prepare subgrade of sufficient width to prevent displacement of slip-form paving machine during operations.

3.6 FLOAT FINISHING

A. General: Do not add water to concrete surfaces during finishing operations.

B. Float Finish: Begin the second floating operation when bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.

1. Burlap Finish: Drag a seamless strip of damp burlap across float-finished concrete, perpendicular to line of traffic, to provide a uniform, gritty texture.
2. Medium-to-Fine-Textured Broom Finish: Draw a soft-bristle broom across float-finished concrete surface, perpendicular to line of traffic, to provide a uniform, fine-line texture.

3.7 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Comply with ACI 306.1 for cold-weather protection.

C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete but before float finishing.

D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

E. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound, or a combination of these as follows:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

   a. Water.
   b. Continuous water-fog spray.
   c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Immediately repair any holes or tears occurring during installation or curing period, using cover material and waterproof tape.
3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating, and repair damage during curing period.

3.8 PAVING TOLERANCES

A. Comply with tolerances in ACI 117 and as follows:

1. Elevation: 1/2 inch.
2. Thickness: Plus 3/8 inch, minus 1/4 inch.
3. Surface: Gap below 10-feet-long; unleveled straightedge not to exceed 1/2 inch.
4. Contraction Joint Depth: Plus 1/4 inch, no minus.
5. Joint Width: Plus 1/8 inch, no minus.

3.9 FIELD QUALITY CONTROL

A. Testing and inspection: The Contractor shall retain a qualified laboratory for testing and inspection.

B. Testing Services: Testing and inspecting of composite samples of fresh concrete obtained according to ASTM C 172/C 172M shall be performed according to the following requirements:

1. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.
2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C 231/C 231M, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when it is 80 deg F and above, and one test for each composite sample.
5. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.
6. Compressive-Strength Tests: ASTM C 39/C 39M; test one specimen at seven days and two specimens at 28 days.

    a. A compressive-strength test shall be the average compressive strength from two specimens obtained from same composite sample and tested at 28 days.

C. Strength of each concrete mixture will be satisfactory if average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.

D. Test results shall be reported in writing to Engineer, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

E. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Engineer.

F. Concrete paving will be considered defective if it does not pass tests and inspections.

G. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

H. Prepare test and inspection reports.

3.10 REPAIR AND PROTECTION

A. Remove and replace concrete paving that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Engineer.

B. Drill test cores, where directed by Engineer, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory paving areas with portland cement concrete bonded to paving with epoxy adhesive.

C. Protect concrete paving from damage. Exclude traffic from paving for at least 14 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.

D. Maintain concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep paving not more than two days before date scheduled for inspections.

3.11 INSTALLATION OF TACTILE WARNING SURFACING

A. General: Prepare substrate and install tactile warning surfacing according to manufacturer's written instructions unless otherwise indicated.

B. Surface-Applied Detectable Warning Tiles: Prepare existing paving surface by grinding and cleaning as recommended by manufacturer. Apply adhesive in amounts and pattern recommended by manufacturer. Install anchor devices into pavement using anchors located as recommended by manufacturer. Apply sealant in continuous bead around perimeter of installation.

END OF SECTION 321313

SECTION 321615 - SIDEWALKS

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Furnish all labor, materials, equipment and services required for constructing concrete sidewalks where shown on the Drawings and as specified herein,

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Earthwork: Section 31 20 00

B. Concrete: Section 03 31 00

PART 2- PRODUCTS

2.1 CRUSHED STONE

A. Stone for sidewalk base shall be No. 57 aggregate, or equal.

2.2 CONCRETE

A. Concrete for sidewalks shall be 3000 psi concrete.

2.3 REINFORCEMENT

A. The minimum yield strength of the reinforcement shall be 60,000 pounds per square inch. Bar reinforcement shall conform to the requirements of ASTM A615. All bar reinforcement shall be deformed.

B. Wire-mesh reinforcement shall be continuous between expansion joints. Laps shall be at least one full mesh plus 2", staggered to avoid continuous lap in either direction, and securely wired or clipped with standard clips.

2.4 PREMOLDED EXPANSION JOINT FILLER

A. Premolded expansion joint filler shall be closed cell polyethylene foam type, Sonneborn Sonoflex F, Williams Products Expand-O-Foam, or equal. Seal joint with one-part self. leveling

polyurethane sealant, Sonneborn Sonolastic SL 1, or equal, maximum 3/8" deep. Prepare and prime joints per manufacturer's instructions.

PART 3- EXECUTION

3.1 BASE

A. Following finished grading, a base course of crushed stone shall be placed to a compacted thickness of four (4) inches. Immediately prior to placing concrete, crushed stone base shall be thoroughly wetted, or the concrete placed on a layer of heavy building paper.

3.2 SURFACE

A. Concrete paving shall consist of 4 inches of 3,000 psi reinforced concrete, struck off to accurately placed screens and worked with a float until mortar appears on the top. After surface has been thoroughly floated, it shall be brushed to leave markings of a uniform type, providing non-slip finish. No dusting or plastering will be allowed.

3.3 FINISHING

A. All joints and edges shall be finished with an edging tool. Dummy joints shall be formed about five (5) feet apart to form rectangular blocks. Expansion joints of 1/2 inch premolded expansion joint material shall be provided at the intersection of all vertical surfaces with the sidewalks slabs and at approximately 20-feet intervals along the walks.

3.4 QUALITY CONTROL

A. The allowable variation shall be 1/8 inch to 10 feet transversely and longitudinally.

END OF SECTION 321615

SECTION 329200 - TURF AND GRASSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General, Supplementary and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Hydroseeding
2. Sodding.
3. Lawn renovation.
4. Erosion-control material(s).

B. Related Sections:

1. Division 31 Section "Site Clearing" for topsoil stripping and stockpiling.
2. Division 31 Section "Earth Moving" for excavation, filling and backfilling, and rough grading.

1.3 DEFINITIONS

A. Finish Grade: Elevation of finished surface of planting soil.

B. Planting Soil: Native or imported topsoil, manufactured topsoil, or surface soil modified to become topsoil; mixed with soil amendments.

C. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill immediately beneath planting soil.

D. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture stating the botanical and common name and percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.

1. Certification of each seed mixture for turfgrass sod, identifying source, including name and telephone number of supplier.

C. Qualification Data: For qualified landscape Installer.

D. Product Certificates: For soil amendments and fertilizers, from manufacturer.

E. Material Test Reports: For existing surface soil.

F. Samples for Verification: For each of the following:

1. Erosion Control Blanket: 12 by 12 inches.

G. Planting Schedule: Indicating anticipated planting dates for each type of planting.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful lawn and meadow establishment.

1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when planting is in progress.
2. Maintenance Proximity: Not more than two hours' normal travel time from Installer's place of business to Project site.

B. Soil-Testing Laboratory Qualifications: An independent laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.

C. Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; deleterious material; pH; and mineral and plant-nutrient content of topsoil.

1. Report suitability of topsoil for lawn growth. State-recommended quantities of nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce satisfactory topsoil.

D. Preinstallation Conference: Conduct conference at Project site.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Seed: Deliver seed in original sealed, labeled, and undamaged containers.

B. Sod: Harvest, deliver, store, and handle sod according to requirements in TPI's "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" in its "Guideline Specifications to Turfgrass Sodding." Deliver sod in time for planting within 24 hours of harvesting. Protect sod from breakage and drying.

1.7 PROJECT CONDITIONS

A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with initial maintenance periods to provide required maintenance from date of Substantial Completion.

1. Summer Planting: July 1st – September 1st

B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit.

1.8 MAINTENANCE SERVICE

A. Initial Lawn Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after each area is planted and continue until acceptable lawn is established, but for not less than the following periods:

1. Seeded Lawns: 60 days from date of Project Substantial Completion.

a. When initial maintenance period has not elapsed before end of planting season, or if lawn is not fully established, continue maintenance during next planting season.

2. Sodded Lawns: 60 days from date of Project Substantial Completion.

PART 2 - PRODUCTS

2.1 SEED FOR HYDROSEEDING

A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Journal of Seed Technology; Rules for Testing Seeds" for purity and germination tolerances.

B. Seed Species: Seed of grass species as follows, with not less than 95 percent germination, not less than 85 percent pure seed, and not more than 0.5 percent weed seed:

1. Sun to Partial Shade: Proportioned by weight as follows:

   a. 85 percent blend three species of Turf Type Tall Fescues. Cultivars shall be specifically tolerant for summer season seeding.
   b. 15 percent perennial ryegrass.

2. Seed Grade: Certified Turf Quality.
3. Application Rate: 2.5 lbs/1000 sf
4. Seed shall be weed free, fresh, re-cleaned, Grade A, new crop.

C. Hydro-Mulch:

1. Cellulose wood fiber with no growth or germination inhibiting factors, dyed green. Material shall have equilibrium air-dry moisture content of twelve (12) percent, plus or minus two (2) percent, at time of manufacture.
2. Fiber shall disperse rapidly in water forming homogeneous slurry and remaining in such state when agitated in hydro-mulching equipment.

D. Binders:

1. Tackifier to bind soil and mulch together to prevent erosion.

E. Fungicide for use with Hydroseeding application.

F. Fertilizer: 16-20-0.

2.2 MIXES FOR HYDROSEEDING

A. General:

1. Amount of hydro-mulch shall be 1800 lbs per acre.
2. Add water as necessary to provide suitable slurry mixture.
3. Add fungicide at rates recommended by Manufacturer on installations made between 1st of June and 30 September.

2.3 TURFGRASS SOD

A. Turfgrass Sod: Certified, complying with TPI's "Specifications for Turfgrass Sod Materials" in its "Guideline Specifications to Turfgrass Sodding." Furnish viable sod of uniform density, color, and texture, strongly rooted, and capable of vigorous growth and development when planted. Do not use sod with netting.

B. Turfgrass Species: Sod of grass species as follows, with not less than 95 percent germination, not less than 85 percent pure seed, and not more than 0.5 percent weed seed:

1. Full Sun: Blend of three "fine blade turf type" Tall Fescue cultivars acceptable to the Architect.

2.4 TOPSOIL

A. Topsoil: ASTM D 5268, pH range of 5.5 to 7, a minimum of 2 percent organic material content; free of stones 1 inch or larger in any dimension and other extraneous materials harmful to plant growth.

1. Topsoil Source: Reuse surface soil stockpiled on-site. Verify suitability of stockpiled surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.

a. Supplement with imported or manufactured topsoil from off-site sources when quantities are insufficient. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches deep; do not obtain from bogs or marshes.

2.5 INORGANIC SOIL AMENDMENTS

A. Lime: ASTM C 602, agricultural limestone containing a minimum of 80 percent calcium carbonate equivalent and as follows:

1. Class: T, with a minimum of 99 percent passing through No. 8 sieve and a minimum of 75 percent passing through No. 60 sieve.

2.6 PLANTING ACCESSORIES

A. Selective Herbicides: EPA registered and approved, of type recommended by manufacturer for application.

2.7 FERTILIZER

A. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:

1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

2.8 MULCHES

A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.

B. Asphalt Emulsion: ASTM D 977, Grade SS-1; nontoxic and free of plant-growth or germination inhibitors.

2.9 EROSION-CONTROL MATERIALS

A. Erosion Control Blankets: For slopes exceeding 6:1 and not indicated to be sodded. Short term, 100% biodegradable double net straw fiber erosion control blanket designed for use on moderate slopes for up to 1 year. Blanket shall be sewn together on 1.5" centers, FHWA FP-03, Type 2D erosion control blanket for slopes up to 2:1. 100% agricultural straw fiber matrix, straw applied at a rate of .5lbs/SY, top and bottom leno woven biodegradable nets with a mesh size of .5x1 inches, 100% biodegradable leno woven net, thread and matrix. Erosion Control Blanket S32BD or an equivalent product.

2.10 PLANTING SOIL MIX

A. Planting Soil Mix: Topsoil mixed with the following soil amendments and fertilizers in the following quantities:

1. Weight of Lime per 1000 Sq. Ft.: As determined by Soil Test.
2. Weight of Sulfur per 1000 Sq. Ft.: As determined by Soil Test..
3. Weight of Commercial Fertilizer per 1000 Sq. Ft.: As determined by Soil Test.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive lawns and grass for compliance with requirements and other conditions affecting performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.

1. Protect adjacent and adjoining areas from hydroseeding and hydromulching overspray.
2. Protect grade stakes set by others until directed to remove them.

B. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 FIELD QUALITY CONTROL

A. Field Inspections:

1. Seeded areas will be accepted at final inspection if:

a. Seeded areas are properly established.
b. Lawn is free of bare and dead spots and is without weeds.
c. No surface soil is visible when grass has been cut to height of 2 inches.
d. Seeded areas have been mowed a minimum of twice.

3.4 LAWN PREPARATION

A. Limit lawn subgrade preparation to areas to be planted.

B. Newly Graded Subgrades: Loosen subgrade to a minimum depth of 6 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.

1. Spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil mix.

a. Delay mixing fertilizer with planting soil if planting will not proceed within a few days.
b. Mix lime with dry soil before mixing fertilizer.

2. Spread planting soil mix to a depth of 6 inches but not less than required to meet finish grades after light rolling and natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.

a. Spread approximately 1/2 the thickness of planting soil mix over loosened subgrade. Mix thoroughly into top 2 inches of subgrade. Spread remainder of planting soil mix.
b. Reduce elevation of planting soil to allow for soil thickness of sod.

C. Unchanged Subgrades: If lawns are to be planted in areas unaltered or undisturbed by excavating, grading, or surface-soil stripping operations, prepare surface soil as follows:

1. Remove existing grass, vegetation, and turf. Do not mix into surface soil.
2. Loosen surface soil to a depth of at least 6 inches. Apply soil amendments and fertilizers according to planting soil mix proportions and mix thoroughly into top 4 inches of soil. Till soil to a homogeneous mixture of fine texture.

a. Apply fertilizer directly to surface soil before loosening.

3. Remove stones larger than 1 inch in any dimension and sticks, roots, trash, and other extraneous matter.
4. Legally dispose of waste material, including grass, vegetation, and turf, off Owner's property.

D. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/2 inch of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit finish grading to areas that can be planted in the immediate future.

E. Moisten prepared lawn areas before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

F. Before planting, restore areas if eroded or otherwise disturbed after finish grading.

3.5 PREPARATION FOR EROSION-CONTROL MATERIALS

A. Prepare area as specified in "Lawn Preparation" Article.

B. For erosion-control blanket and turf reinforcement mat, install from top of slope, working downward, and as recommended by material manufacturer for site conditions. Fasten as recommended by material manufacturer.

C. Moisten prepared area before planting if surface is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

3.6 HYDROSEEDING

A. Interface With Other Work:

1. Do not commence work of this Section until work of section 312000 Earth Moving has been completed and approved.

B. Tolerances:

1. Final grade of soil after seeding of lawn areas is complete shall be one inch below top of adjacent pavement of any kind.

C. After lawn areas are graded, apply specified slurry mix with machine capable of continuously mixing slurry and providing an application meeting Contract Document requirements. Hydro-mulch shall form an absorptive mat, but not a plant inhibiting membrane, which will allow water to percolate into underlying soil.

D. Post Application Watering:

1. Allow slurry mixture to 'set.'
2. Water hydro-seeded areas sufficiently to insure proper seed germination, but not cause erosion or slope failure. Repeat watering at regular intervals to keep seed germinating and growing until plantings are established. Note hydroseeding will take place in summer months and Contractor shall water accordingly to provide establishment in hot, dry conditions.
3. After plantings are established, decrease frequency and increase amount of water per application as necessary to meet plant water requirements.

E. If fungicide has been applied with slurry mix, make a second application of fungicide fourteen (14) days after initial application.

3.7 SODDING

A. Lay sod within 24 hours of harvesting. Do not lay sod if dormant or if ground is frozen or muddy.

B. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to subgrade or sod during installation. Tamp and roll lightly to ensure contact with subgrade, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.

1. Lay sod across angle of slopes exceeding 1:3.
2. Anchor sod on slopes exceeding 1:6 with wood pegs spaced as recommended by sod manufacturer but not less than 2 anchors per sod strip to prevent slippage.

C. Saturate sod with fine water spray within two hours of planting. During first week after planting, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches below sod.

3.8 LAWN RENOVATION

A. Renovate existing lawn damaged by Contractor's operations, such as storage of materials or equipment and movement of vehicles.

1. Reestablish lawn where settlement or washouts occur or where minor regrading is required.
2. Provide new topsoil as required.
3. Lawn renovation shall be done by hydroseeding.

B. Remove sod and vegetation from diseased or unsatisfactory lawn areas; do not bury in soil.

C. Remove topsoil containing foreign materials resulting from Contractor's operations, including oil drippings, fuel spills, stone, gravel, and other construction materials, and replace with new topsoil.

D. Mow, dethatch, core aerate, and rake existing lawn.

E. Remove weeds before hydroseeding. Where weeds are extensive, apply selective herbicides as required. Do not use pre-emergence herbicides.

F. Remove waste and foreign materials, including weeds, soil cores, grass, vegetation, and turf, and legally dispose of them off Owner's property.

G. Till stripped, bare, and compacted areas thoroughly to a soil depth of 6 inches.

H. Apply soil amendments and initial fertilizers required for establishing new lawns and mix thoroughly into top 4 inches of existing soil. Provide new planting soil to fill low spots and meet finish grades.

I. Apply seed and protect with straw mulch as required for new lawns.

J. Water newly planted areas and keep moist until new lawn is established.

3.9 LAWN MAINTENANCE

A. Maintain and establish lawn by watering, fertilizing, weeding, mowing, trimming, replanting, and other operations. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth lawn. Provide materials and installation the same as those used in the original installation.

1. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.

B. Watering: Provide and maintain temporary piping, hoses, and lawn-watering equipment to convey water from sources and to keep lawn uniformly moist to a depth of 4 inches.

1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
2. Water lawn with fine spray at a minimum rate of 1 inch per week unless rainfall precipitation is adequate.

C. Mow lawn as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than 1/3 of grass height. Remove no more than 1/3 of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height:

1. Mow grass to a height of 2 to 3 inches.

D. Lawn Postfertilization: Apply fertilizer after initial mowing and when grass is dry.

1. Use fertilizer that will provide actual nitrogen of at least 1 lb/1000 sq. ft. to lawn area.

3.10 SATISFACTORY LAWNS

A. Lawn installations shall meet the following criteria as determined by Architect:

1. Satisfactory Seeded Lawn: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches.
2. Satisfactory Sodded Lawn: At end of maintenance period, a healthy, well-rooted, even-colored, viable lawn has been established, free of weeds, open joints, bare areas, and surface irregularities.

B. Use specified materials to reestablish lawns that do not comply with requirements and continue maintenance until lawns are satisfactory.

3.11 LAWN WARRANTY

A. Warranty for all seeded and sodded lawns shall be for one (1) year past the date of project Final Completion.

3.12 CLEANUP AND PROTECTION

A. Promptly remove soil and debris, created by lawn work, from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

B. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after lawn is established.

C. Remove nondegradable erosion-control measures after grass establishment period.

END OF SECTION 329200

SECTION 329300 – PLANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Trees
2. Shrubs
3. Perennials
4. Groundcovers

B. Related Sections:

1. Division 31 Section "Site Clearing" for protection of existing trees and plantings, topsoil stripping and stockpiling, and site clearing.
2. Division 31 Section "Earth Moving" for excavation, filling, and rough grading and for subsurface aggregate drainage and drainage backfill materials.
3. Division 32 Section "Turf and Grasses" for lawn.
4. Division 33 Section "Subdrainage" for below-grade drainage of landscaped areas, paved areas, and wall perimeters, if applicable.

1.3 DEFINITIONS

A. Backfill: The earth used to replace or the act of replacing earth in an excavation.

B. Balled and Burlapped Stock: Exterior plants dug with firm, natural balls of earth in which they are grown, with ball size not less than sizes indicated; wrapped, tied, rigidly supported, and drum laced as recommended by ANSI Z60.1.

C. Clump: Where three or more young trees were planted in a group and have grown together as a single tree having three or more main stems or trunks.

D. Container-Grown Stock: Healthy, vigorous, well-rooted exterior plants grown in a container with well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root

mass during shipping and be sized according to ANSI Z60.1 for type and size of exterior plant required.

E. Finish Grade: Elevation of finished surface of planting soil.

F. Multi-Stem: Where three or more main stems arise from the ground from a single root crown or at a point right above the root crown.

G. Planting Soil: Native or imported topsoil, mixed with soil amendments.

H. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill, before placing planting soil.

I. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Verification: For each of the following:

1. Edging materials and accessories, of manufacturer's standard size, to verify color selected.

C. Qualification Data: For qualified landscape Installer.

D. Product Certificates: For each type of manufactured product, from manufacturer, and complying with the following:

1. Manufacturer's certified analysis for standard products.
2. Analysis of other materials by a recognized laboratory made according to methods established by the Association of Official Analytical Chemists, where applicable.

E. Material Test Reports: For existing surface soil and imported topsoil.

F. Planting Schedule: Indicating anticipated planting dates for exterior plants.

G. Warranty: Sample of special warranty.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful establishment of exterior plants.

1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when planting is in progress.

B. Soil-Testing Laboratory Qualifications: An independent laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.

C. Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; deleterious material; pH; and mineral and plant-nutrient content of topsoil.

1. Report suitability of topsoil for plant growth. State-recommended quantities of nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce satisfactory topsoil.

D. Provide quality, size, genus, species, and variety of exterior plants indicated, complying with applicable requirements in ANSI Z60.1, "American Standard for Nursery Stock."

1. Selection of exterior plants purchased under allowances will be made by Architect, who will tag plants at their place of growth before they are prepared for transplanting.

E. Tree and Shrub Measurements: Measure according to ANSI Z60.1 with branches and trunks or canes in their normal position. Do not prune to obtain required sizes. Take caliper measurements 6 inches above the ground for trees up to 4-inch caliper size, and 12 inches above the ground for larger sizes. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip-to-tip.

F. Observation: Architect may observe trees and shrubs either at place of growth or at site before planting for compliance with requirements for genus, species, variety, size, and quality. Architect retains right to observe trees and shrubs further for size and condition of balls and root systems, insects, injuries, and latent defects and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site.

1. Notify Architect of sources of planting materials seven days in advance of delivery to site.

G. Preinstallation Conference: Conduct conference at Project site.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver exterior plants freshly dug.

1. Immediately after digging up bare-root stock, pack root system in wet straw, hay, or other suitable material to keep root system moist until planting.

B. Do not prune trees and shrubs before delivery except as approved by Architect. Protect bark, branches, and root systems from sun scald, drying, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of exterior plants during delivery. Do not drop exterior plants during delivery and handling.

C. Handle planting stock by root ball.

D. Deliver exterior plants after preparations for planting have been completed and install immediately. If planting is delayed more than six hours after delivery, set exterior plants and trees in shade, protect from weather and mechanical damage, and keep roots moist.

1. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.
2. Do not remove container-grown stock from containers before time of planting.
3. Water root systems of exterior plants stored on-site with a fine-mist spray. Water as often as necessary to maintain root systems in a moist condition.

1.7 PROJECT CONDITIONS

A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.

1. Spring Planting: March 1st to May 15th.
2. Fall Planting: October 15th to December 1st.

B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed according to manufacturer's written instructions and warranty requirements.

C. Coordination with Lawns: Plant trees and shrubs after finish grades are established and before planting lawns unless otherwise acceptable to Architect.

1. When planting trees and shrubs after lawns, protect lawn areas and promptly repair damage caused by planting operations.

1.8 WARRANTY

A. Special Warranty: Installer's standard form in which Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Death and unsatisfactory growth, except for defects resulting from lack of adequate maintenance, neglect, abuse by Owner, or incidents that are beyond Contractor's control.
b. Structural failures including plantings falling or blowing over.
c. Faulty operation of tree stabilization and edgings.
d. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

2. Warranty Periods from Date of Substantial Completion:

a. Trees and Shrubs: One year.
b. Ground Cover and Plants: One year.

3. Include the following remedial actions as a minimum:

a. Remove dead exterior plants immediately. Replace immediately unless required to plant in the succeeding planting season.
b. Replace exterior plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
c. A limit of one replacement of each exterior plant will be required except for losses or replacements due to failure to comply with requirements.
d. Provide extended warranty for replaced plant materials; warranty period equal to original warranty period.

1.9 MAINTENANCE SERVICE

A. Initial Maintenance Service for Trees, Shrubs, Ground Cover and Plants: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after each area is planted and continue until plantings are acceptably healthy and well established, but for not less than 60 days past the date of Project Substantial Completion.

PART 2 - PRODUCTS

2.1 TREE AND SHRUB MATERIAL

A. General: Furnish nursery-grown trees and shrubs complying with ANSI Z60.1, with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock free of disease, insects, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.

B. Provide trees and shrubs of sizes, grades, and ball or container sizes complying with ANSI Z60.1 for types and form of trees and shrubs required. Trees and shrubs of a larger size may be used if acceptable to Architect, with a proportionate increase in size of roots or balls.

C. Root-Ball Depth: Furnish trees and shrubs with root balls measured from top of root ball, which shall begin at root flare according to ANSI Z60.1. Root flare shall be visible before planting.

D. Label each tree and shrub with securely attached, waterproof tag bearing legible designation of botanical and common name.

E. If formal arrangements or consecutive order of trees or shrubs is shown, select stock for uniform height and spread, and number label to assure symmetry in planting.

2.2 SHADE AND FLOWERING TREES

A. Type 1 or Type 2 (Slower Growth) Shade Trees: Single-stem trees with straight trunk, well-balanced crown, and intact leader, of height and caliper indicated, complying with ANSI Z60.1 for type of trees required.

1. Provide balled and burlapped trees.
2. Branching Height: One-half of tree height.

B. Small Upright Trees: Branched or pruned naturally according to species and type, with relationship of caliper, height, and branching according to ANSI Z60.1; stem form as follows:

1. Stem Form: Single trunk or multi-trunk clump as indicated.
2. Provide balled and burlapped trees.

C. Small Spreading Trees: Branched or pruned naturally according to species and type, with relationship of caliper, height, and branching according to ANSI Z60.1; stem form as follows:

1. Stem Form: Single trunk or multi-stem clump as indicated.
2. Provide balled and burlapped trees.

2.3 DECIDUOUS SHRUBS

A. Form and Size: Shrubs with not less than the minimum number of canes required by and measured according to ANSI Z60.1 for type, shape, and height of shrub.

1. Shrub sizes indicated are sizes after pruning.
2. Provide balled and burlapped or container-grown shrubs as indicated.

3. Provide balled and burlapped trees.

2.4 GROUND COVER PLANTS

A. Ground Cover: Provide ground cover of species indicated, established and well rooted in pots or similar containers, and complying with ANSI Z60.1 and the following requirements:

2.5 PLANTS

A. Perennials: Provide healthy, field-grown plants from a commercial nursery, of species and variety shown or listed, complying with requirements in ANSI Z60.1.

2.6 TOPSOIL

A. Topsoil: ASTM D 5268, pH range of 5.5 to 7, a minimum of 4 percent organic material content; free of stones 1 inch or larger in any dimension and other extraneous materials harmful to plant growth. Stones shall not exceed 10% by volume.

1. Topsoil Source: Import topsoil or manufactured topsoil from off-site sources. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches deep; do not obtain from bogs or marshes.

2.7 INORGANIC SOIL AMENDMENTS

A. Aluminum Sulfate: Commercial grade, unadulterated.

2.8 ORGANIC SOIL AMENDMENTS

A. Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1/2-inch sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:

1. Organic Matter Content: 50 to 60 percent of dry weight.
2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.

B. Peat: Sphagnum peat moss, partially decomposed, finely divided or granular texture, with a pH range of 3.4 to 4.8.

C. Manure: Well-rotted, composted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, and material harmful to plant growth.

2.9 FERTILIZER

A. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:

1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

2.10 MULCHES

A. Organic Mulch: Free from deleterious materials and suitable as a top dressing of trees and shrubs, consisting of one of the following:

1. Type: Shredded pine bark.

2.11 TREE STABILIZATION MATERIALS

A. Stakes and Guys:

1. Upright and Guy Stakes: Rough-sawn, sound, new hardwood, redwood, or pressure-preservative-treated softwood, free of knots, holes, cross grain, and other defects, 2-by-2-inch nominal by length indicated, pointed at one end.
2. Flexible Ties: Wide rubber or elastic bands or straps of length required to reach stakes or compression springs.

2.12 MISCELLANEOUS PRODUCTS

A. Antidesiccant: Water-insoluble emulsion, permeable moisture retarder, film forming, for trees and shrubs. Deliver in original, sealed, and fully labeled containers and mix according to manufacturer's written instructions.

B. Trunk-Wrap Tape: Two layers of crinkled paper cemented together with bituminous material, 4-inch- wide minimum, with stretch factor of 33 percent.

2.13 PLANTING SOIL MIX

A. Planting Soil Mix: Mix topsoil with the following soil amendments and fertilizers in the following quantities:

1. Ratio of Loose Compost to Topsoil by Volume: 1:4.
2. Ratio of Loose Peat to Topsoil by Volume: 1:4.
3. Weight of Aluminum Sulfate per 1000 Sq. Ft.: As recommended by soil test.
4. Weight of Slow-Release Fertilizer per 1000 Sq. Ft.: As recommended by soil test.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive exterior plants for compliance with requirements and conditions affecting installation and performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities, and lawns and existing exterior plants from damage caused by planting operations.

B. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

C. Lay out individual tree and shrub locations and areas for multiple plantings. Stake locations, outline areas, adjust locations when requested, and obtain Architect's acceptance of layout before planting. Make minor adjustments as required.

D. Lay out exterior plants at locations directed by Architect. Stake locations of individual trees and shrubs and outline areas for multiple plantings.

E. Trunk Wrapping: Inspect tree trunks for injury, improper pruning, and insect infestation; take corrective measures required before wrapping. Wrap trees of 2-inch caliper and larger with trunk-wrap tape. Start at base of trunk and spiral cover trunk to height of first branches. Overlap wrap, exposing half the width, and securely attach without causing girdling.

F. Apply antidesiccant to trees and shrubs using power spray to provide an adequate film over trunks (before wrapping), branches, stems, twigs, and foliage to protect during digging, handling, and transportation.

1. If deciduous trees or shrubs are moved in full leaf, spray with antidesiccant at nursery before moving and again two weeks after planting.

G. Wrap trees and shrubs with burlap fabric over trunks, branches, stems, twigs, and foliage to protect from wind and other damage during digging, handling, and transportation.

3.3 PLANTING BED ESTABLISHMENT

A. Loosen subgrade of planting beds to a minimum depth of 4 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.

1. Thoroughly blend planting soil mix off-site before spreading or spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil mix.

    a. Delay mixing fertilizer with planting soil if planting will not proceed within a few days.
    b. Mix lime with dry soil before mixing fertilizer.

2. Spread planting soil mix to a depth of 12 inches but not less than required to meet finish grades after natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.

    a. Spread approximately one-half the thickness of planting soil mix over loosened subgrade. Mix thoroughly into top 2 inches of subgrade. Spread remainder of planting soil mix.

B. Finish Grading: Grade planting beds to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

C. Before planting, restore planting beds if eroded or otherwise disturbed after finish grading.

3.4 EXCAVATION FOR TREES AND SHRUBS

A. Pits and Trenches: Excavate circular pits with sides sloped inward. Trim base leaving center area raised slightly to support root ball and assist in drainage. Do not further disturb base. Scarify sides of plant pit smeared or smoothed during excavation.

    1. Excavate approximately three times as wide as ball diameter for balled and burlapped stock.

B. Subsoil removed from excavations may not be used as backfill.

C. Obstructions: Notify Architect if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.

    1. Hardpan Layer: Drill 6-inch- diameter holes, 24 inches apart, into free-draining strata or to a depth of 10 feet, whichever is less, and backfill with free-draining material.

D. Drainage: Notify Architect if subsoil conditions evidence unexpected water seepage or retention in tree or shrub pits.

E. Fill excavations with water and allow to percolate away before positioning trees and shrubs.

3.5 TREE AND SHRUB PLANTING

A. Before planting, verify that root flare is visible at top of root ball according to ANSI Z60.1.

B. Set balled and burlapped stock plumb and in center of pit or trench with top of root ball flush with adjacent finish grades.

1. Remove burlap and wire baskets from tops of root balls and partially from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.
2. Place planting soil mix around root ball in layers, tamping to settle mix and eliminate voids and air pockets. When pit is approximately one-half backfilled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed. Water again after placing and tamping final layer of planting soil mix.

C. Set container-grown stock plumb and in center of pit or trench with top of root ball flush with adjacent finish grades.

1. Carefully remove root ball from container without damaging root ball or plant.
2. Place planting soil mix around root ball in layers, tamping to settle mix and eliminate voids and air pockets. When pit is approximately one-half backfilled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed. Water again after placing and tamping final layer of planting soil mix.

D. Organic Mulching: Apply 2-inch minimum thickness of organic mulch extending 12 inches beyond edge of planting pit or trench. Do not place mulch within 3 inches of trunks or stems.

E. Trunk Wrapping: Inspect tree trunks for injury, improper pruning, and insect infestation; take corrective measures required before wrapping. Wrap trees of 2-inch caliper and larger with trunk-wrap tape. Start at base of trunk and spiral cover trunk to height of first branches. Overlap wrap, exposing half the width, and securely attach without causing girdling.

3.6 TREE AND SHRUB PRUNING

A. Remove only dead, dying, or broken branches. Do not prune for shape.

B. Prune, thin, and shape trees and shrubs according to standard horticultural practice. Prune trees to retain required height and spread. Unless otherwise indicated by Architect, do not cut tree leaders; remove only injured or dead branches from flowering trees. Prune shrubs to retain natural character.

3.7 TREE STABILIZATION

A. Trunk Stabilization: Unless otherwise indicated, provide trunk stabilization as follows:

1. Upright Staking and Tying: Stake trees of 2- through 5-inch caliper. Stake trees of less than 2-inch caliper only as required to prevent wind tip-out. Use a minimum of 2 stakes of length required to penetrate at least 18 inches below bottom of backfilled excavation

and to extend dimension shown above grade. Set vertical stakes and space to avoid penetrating root balls or root masses.

2. Use 2 stakes for trees up to 12 feet high and 2-1/2 inches or less in caliper; 3 stakes for trees less than 14 feet high and up to 4 inches in caliper. Space stakes equally around trees.
3. Support trees with bands of flexible ties at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree.

3.8 PLANTING BED MULCHING

A. Mulch backfilled surfaces of planting beds and other areas indicated. Provide mulch ring around trees in lawn areas.

1. Organic Mulch: Apply 2-inch minimum thickness of organic mulch, and finish level with adjacent finish grades. Do not place mulch against plant stems.

3.9 EDGING INSTALLATION

A. Aluminum Edging: Install aluminum edging where indicated according to manufacturer's written instructions. Anchor with aluminum stakes spaced approximately 36 inches apart, driven below top elevation of edging.

3.10 PLANT MAINTENANCE

A. Tree and Shrub Maintenance: Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, restoring planting saucers, adjusting and repairing stakes and guy supports, and resetting to proper grades or vertical position, as required to establish healthy, viable plantings. Spray or treat as required to keep trees and shrubs free of insects and disease. Restore or replace damaged tree wrappings.

B. Ground Cover and Plant Maintenance: Maintain and establish plantings by watering, weeding, fertilizing, mulching, and other operations as required to establish healthy, viable plantings.

3.11 CLEANUP AND PROTECTION

A. During planting, keep adjacent paving and construction clean and work area in an orderly condition.

B. Protect exterior plants from damage due to landscape operations, operations by other contractors and trades, and others. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged plantings.

3.12 DISPOSAL

A. Disposal: Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION 329300

SECTION 331113 – WATER DISTRIBUTION PIPING

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Provide all labor, materials, equipment and services required for furnishing and installing all piping and appurtenances specified herein.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Valves - Utility Services Section 331216

1.3 SUBMITTALS

A. A notarized certification shall be furnished for all pipe and fittings that verifies compliance with all applicable specifications.

B. The requirement for this certification does not eliminate the need for shop drawings submittals in compliance with Section 013323.

C. In accordance with the requirements of the General and Special Conditions and this Section, the following table includes, but is not limited to, the items required to be submitted:

Item Description	Shop Drawings	Product Data	Schedules	Installation Data	Parts Lists	Wiring Diagram	Samples	O & M Manual	Certificates	Warranty	Report	Other
Pipe and Fittings		X							X			
Couplings and Adapters		X										
Detectable UG Tape		X		X								
Tracer Wire		X		X								
Trench Baffles		X		X								
PE Tubing		X										
Corp. Stops and Fittings		X		X								

1.4 EXISTING CONDITIONS

A. The existing piping shown on the Contract Drawings is based on the best available information. The Engineer makes no guarantee as to the accuracy of the locations or type of piping depicted. All new piping which ties into existing lines must be made compatible with that piping.

B. So that piping conflicts may be avoided, Contractor shall open up his trench well ahead of the pipe laying operation to confirm exact locations of existing piping before installing any new piping.

C. Contractor shall provide all fittings and adapters necessary to complete all connections to existing piping.

1.5 UTILITY LINE ACTIVITIES COVERED UNDER NATIONWIDE PERMIT # 12

A. All activities involving utility line construction covered under the US Army Corps of Engineers NATIONWIDE PERMIT # 12 shall meet the following conditions:

1. Utility Line Activities. Activities required for the construction, maintenance, repair, and removal of utility lines and associated facilities in waters of the United States, provided the activity does not result in the loss of greater than 1/2-acre of waters of the United States for each single and complete project. Utility lines: This NWP authorizes the construction, maintenance, or repair of utility lines, including outfall and intake structures, and the associated excavation, backfill, or bedding for the utility lines, in all waters of the United States, provided there is no change in pre-construction contours. This NWP also authorizes temporary structures, fills, and work necessary to conduct the utility line activity.
2. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, 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. 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.
3. Notification: The permittee must submit a pre-construction notification to the US Army Corps district engineer prior to commencing the activity if any of the following criteria are met:

    a) The activity involves mechanized land clearing in a forested wetland for the utility line right-of-way;
    b) A section 10 permit is required;
    c) The utility line in waters of the United States, excluding overhead lines, exceeds 500 feet;
    d) The utility line is placed within a jurisdictional area (i.e., water of the United States), and it runs parallel to or along a stream bed that is within that jurisdictional area;

e) Discharges that result in the loss of greater than 1/10-acre of waters of the United States;
f) Permanent access roads are constructed above grade in waters of the United States for a distance of more than 500 feet; or
g) Permanent access roads are constructed in waters of the United States with impervious materials.

B. All activities involving utility line construction covered under KENTUCKY GENERAL CERTIFICATION of Nationwide Permit # 12 shall meet the following conditions:

The general Water Quality Certification applies to surface waters of the Commonwealth as defined in 401KAR10:001 Chapter 10, Section 1(80): Surface waters means those waters having well-defined banks and beds, either constantly or intermittently flowing, lakes and impounded waters; marshes and wetlands; and any subterranean waters flowing in well-defined channels and having a demonstrable hydrologic connection with the surface.

1. The activity will not occur within surface waters of the Commonwealth identified by the Kentucky Division of Water as Outstanding State or National Resource Water, Cold Water Aquatic Habitat, or Exceptional Waters.
2. The activity will not occur within surface waters of the Commonwealth identified as perpetually protected (e.g. deed restriction, conservation easement) mitigation sites.
3. This general water quality certification does not authorize the installation of utility lines in a linear manner within the stream channel or below the top of the stream bank.
4 For a single crossing, impacts from the construction and maintenance corridor in surface waters shall not exceed 50 feet of bank disturbance.
5. This general certification shall not apply to nationwide permits issued for individual crossings which are part of a larger utility line project where the total cumulative impacts from a single and complete linear project exceed ½ acre of wetlands or 300 linear feet of surface waters. Cumulative impacts include utility line crossings, permanent or temporary access roads, headwalls, associated bank stabilization areas, substations, pole or tower foundations, maintenance corridor, and staging areas.
6. Stream impacts under Conditions 4 and 5 of this certification are defined as the length of bank disturbed. For the utility line crossing and roads, only one bank length is used in calculation of the totals.
7 Stream impacts covered under this General Water Quality Certification and undertaken by those persons defined as an agricultural operation under the Agricultural Water Quality Act must be completed in compliance with the Kentucky Agricultural Water Quality Plan (KWQP).
8. The Kentucky Division of Water may require submission of a formal application for an individual certification for any project if the project has been determined to likely have a significant adverse effect upon water quality or degrade the waters of the Commonwealth so that existing uses of the water body or downstream waters are precluded.
9. Activities that do not meet the conditions of this General Water Quality Certification require an Individual Section 401 Water Quality Certification.
10. Blasting of stream channels, even under dry conditions, is not allowed under this general water quality certification.

11. Utility lines placed parallel to the stream shall be located at least 50 feet from an intermittent or perennial stream, measured from the top of the stream bank. The cabinet may allow construction within the 50-foot buffer if avoidance and minimization efforts are shown, and adequate methods are utilized to prevent soil from entering the stream.
12. Utility line stream crossings shall be constructed by methods that maintain flow and allow for a dry excavation. Water pumped from the excavation shall be contained and allowed to settle prior to re-entering the stream. Excavation equipment and vehicles shall operate outside of the flowing portion of the stream. Spoil material from the excavation shall not be allowed to enter the flowing portion of the stream.
13. The activities shall not result in any permanent changes in pre-construction elevation contours in surface waters or wetlands or stream dimension, pattern or profile.
14. Utility line activities which impact wetlands shall not result in conversion of the area to non-wetland status. Mechanized land clearing of forested wetlands for the installation or maintenance of utility lines is not authorized under this certification.
15. Activities qualifying for coverage under this General Water Quality Certification are subject to the following conditions:

    a. Erosion and sedimentation pollution control plans and Best Management Practices must be designed, installed, and maintained in effective operating condition at all times during construction activities so that violations of state water quality standards do not occur.
    b. Sediment and erosion control measures, such as check-dams constructed of any material, silt fencing, hay bales, etc., shall not be placed within surface waters of the Commonwealth, either temporarily or permanently, without prior approval by the Kentucky Division of Water's Water Quality Certification Section. If placement of sediment and erosion control measures in surface waters is unavoidable, design and placement of temporary erosion control measures shall not be conducted in such a manner that may result in instability of streams that are adjacent to, upstream, or downstream of the structures. All sediment and erosion control devices shall be removed, and the natural grade restored within the completion timeline of the activities.
    c. Measures shall be taken to prevent or control spills of fuels, lubricants, or other toxic materials used in construction from entering the watercourse.
    d. Removal of riparian vegetation shall be limited to that necessary for equipment access.
    e. To the maximum extent practicable, all in-stream work under this certification shall be performed under low-flow conditions.
    f. Heavy equipment, e.g. bulldozers, backhoes, draglines, etc., if required for this project, should not be used or operated within the stream channel. In those instances in which such in-stream work is unavoidable, then it shall be performed in such a manner and duration as to minimize turbidity and disturbance to substrates and bank or riparian vegetation.
    g. Any fill shall be of such composition that it will not adversely affect the biological, chemical, or physical properties of the receiving waters and/or cause violations of water quality standards. If rip-rap is utilized, it should be of such weight and size that bank stress or slump conditions will not be created because of its placement.

h. If there are water supply intakes located downstream that may be affected by increased turbidity and suspended solids, the permittee shall notify the operator when such work will be done.

i. Should evidence of stream pollution or jurisdictional wetland impairment and/or violations of water quality standards occur as a result of this activity (either from a spill or other forms of water pollution), the Kentucky Division of Water shall be notified immediately by calling (800) 928-2380.

16. Non-compliance with the conditions of this general certification or violation of Kentucky state water quality standards may result in civil penalties.

1.6 CONSTRUCTION IN A FLOODPLAIN

A. No material shall be placed in the stream or in the flood plain to form construction pads, coffer dams, access roads, etc. unless prior approval has been obtained from the Environmental and Public Protection Cabinet.

B. The trench shall be backfilled as closely as possible to the original contour. All excess material from construction of the trench shall be disposed of outside the flood plain unless the applicant has received prior approval from the Cabinet to fill within the flood plain.

PART 2 - PRODUCTS

2.1 DUCTILE IRON PIPE AND FITTINGS

A. Ductile iron pipe shall conform to ANSI/AWWA C151/A21.51, latest revision, pressure class 350, with push-on joints unless otherwise noted on Drawings.

B. The interior of the pipe shall be cement-mortar lined with bituminous seal coat in accordance with ANSI/AWWA C104/A21.4, latest revision. Thickness of the lining shall be as set forth in the ANSI/AWWA C104/A21.4 specification unless otherwise directed by the Engineer. The exterior of all pipe, unless otherwise specified, shall receive either coal tar or asphalt base coating a minimum of 1 mil thick.

C. Each piece of pipe shall bear the manufacturer's name or trademark, the year in which it was produced and the letters "DI" or the word "DUCTILE". Pipe manufacturer shall furnish notarized certificate of compliance to the above AWWA or ANSI specifications.

D. Fittings shall be pressure class 350 ductile iron and have mechanical-joints or push-on joints in accordance with ANSI/AWWA C110/A21.10, latest revision and shall conform to the details and dimensions shown therein. Fittings shall have interior cement-mortar lining as specified hereinbefore for the pipe. Compact ductile iron fittings meeting the requirements of ANSI/AWWA C153/A21.53, latest revision, will also be acceptable.

E. Joints for ductile iron pipe and fittings, as described hereinbefore, shall be rubber-gasket joints and be in accordance with ANSI/AWWA C111/A21.11, latest revision. Joints shall have the same pressure rating as the pipe or fitting of which they are a part. Joints shall be installed per the manufacturer's recommendations.

F. Provide ANSI/AWWA C110/A21.10 mechanical joint plugs and locked or restrained pipe joints where indicated on Drawings. Fittings under structures shall be mechanical joint with retainer glands.

2.2 RESTRAINED JOINT DUCTILE IRON PIPE

A. Restrained joint ductile iron pipe shall conform to ANSI/AWWA C151/A21.51, latest revision, pressure class 350, with restrained push-on joints unless otherwise noted on Drawings.

B. The interior of the pipe shall be cement-mortar lined with bituminous seal coat in accordance with ANSI/AWWA C104/A21.4, latest revision. Thickness of the lining shall be set forth in the aforementioned specification unless otherwise directed by the Engineer. The exterior of all pipe, unless otherwise specified, shall receive either coal tar or asphalt base coating a minimum of 1 mil thick.

C. Each piece of pipe shall bear the manufacturer's name or trademark, the year in which it was produced and the letters "DI" or the word "DUCTILE". Pipe manufacturer shall furnish notarized certificate of compliance to the above AWWA or ANSI specifications.

D. Fittings shall be pressure class 350 ductile iron and have restrained push-on joints in accordance with ANSI/AWWA C110/A21.10, latest revision with the exception of the manufacturer's proprietary design dimensions. Fittings shall have interior cement-mortar lining as specified hereinbefore for the pipe. Compact ductile iron fittings meeting the requirements of ANSI/AWWA C153/A21.53, latest revision, will also be acceptable.

E. The use of restrained joints utilizing a friction type connection shall not be accepted.

F. Joints for ductile iron pipe and fittings, as described hereinbefore, shall be rubber-gasket joints and be in accordance with ANSI/AWWA C111/A21.11, latest revision. Joints shall have the same pressure rating as the pipe of fitting of which they are a part. Joints shall be installed per the manufacturer's recommendations.

G. All pipe in the vicinity of a series of bends shall have restrained push-on joints, with lengths as recommended by the Engineer or pipe manufacturer. Pipe at ends left for future connections shall also have restrained push-on joints. All other tees, bends, and dead ends shall have concrete thrust blocking.

H. Restrained joint pipe and fittings shall be FLEX-RING Restrained Joint by American Ductile Iron Pipe, TR FLEX Restrained Joint by U.S. Pipe, SUPER-LOCK Restrained Joint by Clow Water Systems, SNAP-LOCK Restrained Joint by Griffin Pipe, or approved equal.

I. Restrained push-on joint pipe and fittings shall be capable of being deflected after assembly.

J. All restrained joint pipe and fittings shall be fabricated by the same pipe manufacturer.

K. Where spigot end of restrained joint pipe connects with valves or other items that have mechanical-joint ends, connection shall be made with a restrained mechanical-joint gland. Restrained mechanical-joint connection shall be Mechanical- Joint Coupled-Joint by American Ductile Iron Pipe, MECH-LOK Restrained Joint by Griffin Pipe, or approved equal.

2.3 POLYVINYL CHLORIDE PLASTIC (PVC) PIPE

A. AWWA C-900-16

1. 4-inch through 60-inch PVC plastic pipe shall conform to AWWA C-900-16. PVC pipe shall have a maximum laying length of 20 feet, with bell end and elastomeric gasket, and with plain end for cast-iron or ductile-iron fittings. Elastomeric gasket shall conform with the requirements of ASTM F-477. The seal of the National Sanitation Foundation Testing Laboratory must appear on each pipe. The allowable axial deflection (in degrees) must be printed on each length of pipe.

B. ASTM D2241 (Outside Diameter compatible with Iron Pipe O.D.)

1. 1-inch through 36-inch - PVC plastic pipe shall conform to ASTM Specification - D2241 (latest edition); Product Standards PS-22-70 NBS; Standard Dimension Ratio SDR 17 (250 psi); Maximum Length - 20 feet; Pressure Rating - 250 psi at 73.4 degrees F. Elastomeric gasket shall conform with the requirements of ASTM F-477. The seal of the National Sanitation Foundation Testing Laboratory must appear on each pipe.

a. Fittings, adaptors or specials shall be furnished, as required, to connect the plastic pipe to the cast or ductile iron mechanical joint valves, fittings, and pipe.
b. Joints shall be push-on joints conforming to ASTM D-3139.

C. Fittings shall be pressure class 350 ductile iron and have mechanical-joints or push-on joints in accordance with ANSI/AWWA C110/A21.10, latest revision, and shall conform to the details and dimensions shown therein. Fittings shall have interior cement-mortar lining as specified hereinbefore for the pipe. Compact ductile iron fittings meeting the requirements of ANSI/AWWA C153/A21.53, latest revision, will also be acceptable.

D. The basis of acceptance of PVC plastic water main pipe will be a written, notarized certification, accompanied by a copy of test results, that the pipe and pipe material has been sampled, tested and inspected in accordance with the designated standard specifications. These certifications shall be obtained from the manufacturer and delivered to the Engineer's or Owner's representative on the project site. A sufficient number of tests and certifications shall be made so as to be representative of the complete project. Copies of the test results shall be kept on file by the manufacturer and shall be available for review by the Engineer or Owner upon request.

E. Pipe shall be visually inspected on the project site for proper markings which shall include manufacturer's name or trademark, nominal pipe size, pressure rating for water at 73.4 degrees F., plastic pipe material designation code (e.g. PVC 1120), dimension ratio, AWWA or ASTM designation and pressure class with which the pipe complies, and the National Sanitation Foundation NSF 14 Seal of Approval for drinking water.

2.4 HIGH DENSITY POLYETHYLENE PIPE

A. General: High density polyethylene pipe shall be "Driscopipe" as manufactured by Phillips Product Company, Inc., PLEXCO as manufactured by Chevron, POLYPIPE, or equal.

B. Materials for Polyethylene Pipe:

1. The polyethylene pipe and fittings shall be made of polyethylene resins classified in ASTM D 1248 as Type III, Category 5, Grade P34 (pipe designation PE 3408 defined per ASTM D 3035), having specific base resin densities of 0.941 g/cc minimum and 0.955 g/cc maximum respectively; and having melt index less than 0.15 grams/10 min.
2. Pipe made from these resins must have a long-term strength rating of 1,600 psi or more.
3. The polyethylene resin shall contain antioxidants and shall be stabilized with carbon black against ultra-violet degradation to provide protection during processing and subsequent weather exposure.
4. The polyethylene resin compound shall have a resistance to environmental stress cracking as determined by the procedure detailed in ASTM D 1693, Condition B with sample preparation by procedure C of not less than 200 hours.
5. Polyethylene shall have cell classification of 345464C as defined by ASTM 3350-05.

C. Polyethylene Pipe and Fittings:

1. The pipe shall be designed for a pressure rating of 200 psi.
2. Each length of pipe shall be marked, at no more than 10-foot intervals, with the following information:

   Nominal Pipe Size
   Type Plastic Material - PE3408
   Pipe Pressure Rating
   Manufacturer's Name, Trademark and Code

3. All pipe shall be made from virgin material. No rework compound.
4. Pipe shall be homogenous throughout, and be free of visible cracks, holes, foreign material, blisters, or other deleterious faults.
5. Fittings for the polyethylene pipeline shall be molded or fabricated from the same material as specified hereinbefore for the high-density polyethylene pipe.
6. Fittings for bends 22-1/2 degrees or greater shall be provided as shown on the Drawings. For alignment changes of less than 20 degrees deflection, the pipe may be laid in curves with a radius of 100 feet or greater.

7. All run-of-the-pipe fittings shall be fusion welded into the pipeline. Tee branches shall be of the size shown on the Drawings and shall be furnished with flanged ends per ANSI B-16.1. All fittings shall be factory made.
8. Fittings shall be capable of withstanding the same pressure and loading conditions specified for the pipe.
9. Wye branches shall be true wyes.

D. Pipe Jointing:

1. Pipe to be joined by leakproof, thermal, butt fusion joints. All fusion must be done by personnel trained by the pipe supplier using tools approved by the pipe supplier.
2. The fusion machine shall have hydraulic pressure control for fusing 2 pipe ends together; it shall include pressure fusion indicating gauges to correctly monitor fusion pressures. The machines correctly monitor fusion pressures. The machines shall be equipped with an electric or gasoline engine powered facing unit to trim irregularities from the pipe ends. The heating plate on the fusion machine shall be electrically heated and thermostatically controlled and shall contain a temperature gauge for monitoring temperature.
3. Joint strength must be equal to that of adjacent pipe as demonstrated by tensile test. In addition, results of tensile impact testing of joint should indicate a ductile rather than a brittle fracture. External appearance of fusion bead should be smooth without significant juncture groove.
4. Threaded or solvent cement joints and connections are not permitted.

E. Joining, Terminating or Adapting by Mechanical Means:

1. The polyethylene pipe shall be connected to systems or fittings of other materials by means of an assembly consisting of a polyethylene flange adapter butt-fused to the pipe, a backup ring of either cast iron, steel, or high silica aluminum alloy made to ANSI B-16.1 dimensional standards (with modified pressure ratings), bolts of compatible material (insulated from the fittings where necessary) and a gasket of reinforced black rubber, or other material approved by the Engineer, cut to fit the joint. In all cases, the bolts shall be drawing up evenly and in line.
2. Termination of valves, or fittings such as tees, bends, etc., made of other materials shall be by the flange assemblies specified hereinbefore. The pipe adjacent to these joints and to joints themselves must be rigidly supported for a distance of one pipe diameter or 1 foot, whichever is greater, beyond the flange assembly.
3. Appurtenances must be placed on their own foundations, unsupported by the pipe, in accordance with the detail plans.

F. Tools and Procedures:

1. Fusion jointing and other procedures necessary for correct assembly of the polyethylene pipe and fittings will be done only by personnel trained in those skills by the pipe supplier.
2. Only those tools designed for aforementioned procedures and approved by the pipe supplier shall be used for assembly of pipe and fittings to insure proper installation.

2.5 PIPE FOR HORIZONTAL DIRECTIONAL DRILLING INSTALLATION

A. Pipe for Horizontal Directional Drilling Installation shall be Certa-Lok Yelomine IB Restrained Joint PVC as manufactured by CertainTeed Corporation of Valley Forge, PA. or High-Density Polyethylene.

B. All pipe shall meet the ASTM, pressure and all other requirements as described hereinbefore in this specification section.

2.6 COUPLING AND ADAPTORS

A. Flexible couplings shall be of the sleeve type with a middle ring, two wedge shaped resilient gaskets at each end, two follower rings, and a set of steel trackhead bolts. The middle ring shall be flared at each end to receive the wedge portion of the gaskets. The follower rings shall confine the outer ends of the gaskets, and tightening of the bolts shall cause the follower rings to compress the gaskets against the pipe surface, forming a leak-proof seal. Flexible couplings shall be steel with minimum wall thickness of the middle ring or sleeve installed on pipe being 5/16-inch for pipe smaller than 10 inches, 3/8-inch for pipe 10 inches or larger. The minimum length of the middle ring shall be 5-inches for pipe sizes up to 10 inches and 7 inches for pipe 10 inches to 30 inches. The pipe stop shall be removed. Gaskets shall be suitable for 250 psi pressure rating or at rated working pressure of the connecting pipe. Couplings shall be harnessed and be designed for 250 psi.

B. Flanged adapters shall have one end suitable for bolting to a pipe flange and the other end of flexible coupling similar to that described hereinbefore. All pressure piping with couplings or adapters shall be harnessed with full threaded rods spanning across the couplings or adapters. The adapters shall be furnished with bolts of an approved corrosion resistant steel alloy, extending to the adjacent pipe flanges. Flanges on flanged adapter (unless otherwise indicated or required) shall be faced and drilled ANSI B16.1 Class 125.

C. Flexible couplings and flanged adapters shall be as manufactured by Dresser, Smith-Blair, or equal, per the following, unless otherwise specified and/or noted on the Drawings:

D. Steel couplings for joining same size, plain-end, steel, cast iron, and PVC plastic pipe.

Dresser	Smith-Blair
Style 138	411

E. Transition couplings for joining pipe of different outside diameters.

Dresser	Smith-Blair
Style 162 (4" to 12")	413 steel (2" to 24")
Style 62 (2" to 24")	415 steel (6" to 48")

F. Flanged adapters for joining plain-end pipe to flanged pipe, fittings, valves and equipment.

Dresser	Smith-Blair
Style 127 cast (3" to 12")	912 cast (3" to 12")
Style 128 steel (3" to 48" C.I. Pipe)	913 steel (3" and larger)
Style 128 steel (2" to 96" steel pipe)	

2.7 DETECTABLE UNDERGROUND UTILITY WARNING TAPES

A. Detectable underground utility warning tapes which can be located from the surface by a pipe detector shall be installed directly above nonmetallic (PVC, polyethylene, concrete) pipe.

B. The tape shall consist of a minimum thickness 0.35 mils solid aluminum foil encased in a protective inert plastic jacket that is impervious to all know alkalis, acids, chemical reagents and solvents found in the soil.

C. The minimum overall thickness of the tape shall be 5.0 mils and the width shall not be less than 2 inches with a minimum unit weight of 2-1/2 pounds/1 inch x 1,000 feet. The tape shall be color coded and imprinted with the legend as follows:

Type of Utility	Color Code	Legend
Water	Blue	Caution Buried Waer Line Below

D. Detectable underground tape shall be "Detect Tape" as manufactured by Allen Systems, or equal.

E. Installation of detectable tapes shall be per manufacturer's recommendations and shall be as close to the grade as is practical for optimum protection and detectability. Allow a minimum of 18 inches between the tape and the line.

F. Payment for detectable tapes shall be included in the linear foot price bid of the appropriate bid item(s) unless it is listed as a separate payment item in the bid schedule.

2.8 TRACER WIRE

A. Tracer wire shall be 12-gauge copper wire with 30-mil polyethylene jacket. Tracer wire shall be installed with all buried piping, "duct" taped to top of pipe.

B. Split Bolt connectors are required when connecting two pieces of tracer wire. Wire and connector shall be wrapped with electrical tape.

C. Tracer wire shall be brought up into locator boxes with grounding devices. Locator boxes shall be valve boxes with a polystyrene donut that fits around the box to serve as a termination point

for tracer wire. Locator boxes shall be installed at a maximum of 3000 linear feet apart, or where shown on the Drawings.

D. Payment for tracer wire and boxes shall be included in the linear foot price bid of the appropriate bid item(s) unless it is listed as a separate payment item in the bid schedule

2.9 CONCRETE PIPE ANCHORS, THRUST BLOCKS, CRADLE OR ENCASEMENT

A. Where indicated on the Drawings, required by the Specifications or as directed by the Engineer, concrete pipe anchors, thrust blocks, cradles or encasements shall be installed.

B. Concrete shall be 3000 psi, and reinforcing bars shall be installed as indicated on the details.

2.10 PREFABRICATED TRENCH BAFFLES

A. Where indicated on the Drawings, required by the Specifications, or as directed by the Engineer, Contractor shall install pre-fabricated trench baffles in the pipeline trench.

B. The baffle shall be self-supporting, made of ABS (Acrylonitrile Butadiene Styrene) or comparable material, and shall provide a watertight seal around the pipe by use of an elastomeric PVC flexible coupling. The purpose of the baffle is to stop the flow of groundwater along the trench, and around the pipe. The trench baffle shall be "Ripley's Dam" as manufactured by EJP, or equal.

2.11 CONNECTION OF NEW WATER MAINS TO EXISTING SYSTEM

A. The Contractor shall connect the new water main to existing water main where shown on the Drawings or directed by the Engineer, and shall furnish all necessary equipment and materials required to complete the connection.

2.12 POLYETHYLENE (PE) TUBING

A. Customer service tubing, sizes 3/4-inch and 1-inch, shall be Polyethylene (PE) DR-9 (200 psi) and conform to AWWA C901, with a pipe designation of PE 3408 defined per ASTM D 3035 for IPS sizes and ASTM D 2737 for CTS sizes.

2.13 CUSTOMER SERVICE RELOCATIONS AND RE-CONNECTIONS

Where water service lines are disturbed, the Contractor shall reconnect the existing service line to the new water main. The Contractor shall furnish and install the necessary piping, couplings, fittings, etc. necessary to complete the service line re-connection.

A. Service Lines Not Crossing a Road

1. Unless indicated otherwise on the plans, all service lines shall be of PE tubing.
2. Water service connections shall be made in accordance with the details shown on the Drawings and/or set forth herein. Locations of the various sizes shall be as directed by the Engineer and as shown on the Drawings.

B. Service Lines Crossing a County Road or City Streets

1. Same as subparagraph A, except that in general all pipe may be jacked beneath certain paved or blacktopped city streets or county roads, unless solid rock prevents using this method in which case, the open trench method will be used. Schedule 40 steel pipe shall be used as casing pipe unless otherwise indicated by the plans. The open trench method generally will be used on all unpaved city streets, county roads and private driveways. In general, blacktopped private driveways shall also be jacked under. In all cases where lines are under traffic, a minimum cover of 36 inches shall be provided. All backfill shall be compacted by air tampers in layers no greater than 6-inch depth. Specific instructions as to the type of crossing to be installed will be shown on the plans.

C. Service Lines Crossing a State Highway

1. Services shall be jacked or pushed under paving. If solid rock is encountered, trench will be open-cut, pipe placed and backfilled all in accordance with current requirements of the State Highway Department or the crossing will be relocated to permit boring or jacking. Specific details will be shown on the plans. Where required on the plans or by the ENGINEER service pipe shall be encased under highways. Schedule 40 steel pipe shall be used as casing pipe unless otherwise indicated by the plans.

D. Existing Galvanized Iron Services

1. All galvanized services are to be replaced in their entirety, including service piping from the main to the meter, corporation stops, water meters, meter setters, meter boxes, and service piping 5 feet past the meter. Service connections shall be made in accordance with the details shown on the Drawings and/or set forth herein.

2.14 CORPORATION STOPS AND FITTINGS FOR HOUSE SERVICE RECONNECTIONS

A. Corporation stops, of the size required, shall be tapped directly into the water main for Ductile Iron Pipe or by the use of a tapping saddle for PVC pipe.

B. Corporation stops shall have AWWA C800-66 C.S. threaded inlet. Outlets shall be suitable for the type of service piping furnished and laid, and the Contractor shall verify compatibility with "iron pipe size" or "copper tubing size" service piping as required before ordering stops.

C. Corporation stops shall be Ford Meter Box Type F1000, F1001, F1002 (as required); Mueller H-15005, H-15006, H-15008, H-15009 (as required); Hayes Series 5200, or equal.

D. Fittings shall be brass.

2.15 POLYETHYLENE ENCASEMENT FOR DUCTILE IRON PIPE, FITTINGS & VALVES

A. Polyethylene encasement for use with ductile iron pipe shall meet all the requirements for ANSI/AWWA C105/A21.5 (latest edition), Polyethylene Encasement for Ductile Iron Pipe Systems.

B. In addition, polyethylene encasement for use with ductile iron pipe systems shall consist of three layers of co-extruded linear low-density polyethylene (LLDPE), fused into a single thickness of not less than 8 mils.

C. The inside surface of the polyethylene wrap to be in contact with the pipe exterior shall be infused with a blend of anti-microbial biocide to mitigate microbiologically influenced corrosion and a volatile corrosion inhibitor to control galvanic corrosion.

D. Ductile iron pipe and the polyethylene encasement used to protect it shall be installed in accordance with AWWA C600 and ANSI/AWWA C105/A21.5 and also in accordance with all recommendations and practices of the AWWA M41, *Manual of Water Supply Practices - Ductile Iron Pipe and Fittings*. Specifically, the wrap shall be overlapped one foot in each direction at joints and secured in place around the pipe and any wrap at tap locations shall be taped tightly prior to tapping and inspected or any needed repairs following the tap.

E. All installations shall be carried out by personnel trained and equipped to meet these various requirements.

F. The installing contractor shall submit an affidavit stating compliance with the requirements and practices of ANSI/AWWA C150/A21.50, ANSI/AWWA C151/A21.51, ANSI/AWWA C105/A21.5, AWWA C600, and M 41.

PART 3 - EXECUTION

3.1 EXCAVATION FOR PIPELINE TRENCHES

A. Unless otherwise directed by the Engineer, trenches in which pipes are to be laid shall be excavated in open cut to the depths required by field conditions or as specified by the Engineer. In general, this shall be interpreted to mean that machine excavation in earth shall not extend below an elevation permitting the pipe to be properly bedded. Installation shall be in accordance with ANSI/AWWA C600 for ductile iron and Cast Iron O.D. (AWWA) PVC pipe or ASTM F-645 for Iron Pipe O.D. (ASTM) PVC pipe except as modified herein.

B. If the foundation is good firm earth and the machine excavation has been accomplished as set out hereinbefore, the remainder of the material shall be excavated by hand, then the earth pared

or molded to give full support to the lower quadrant of the barrel of each pipe. Where bell and spigot are involved, bell holes shall be excavated during this latter operation to prevent the bells from being supported on undisturbed earth. If for any reason the machine excavation in earth is carried below an excavation that will permit the type of bedding specified above, then a layer of granular material shall be placed so that the lower quadrant of the pipe will be securely bedded in compact granular fill.

C. Excavation may be undercut to a depth below the required invert elevation that will permit laying the pipe in a bed of granular material to provide continuous support for the bottom quadrant of the pipe. When this method is used, the bedding shall be as set out in Paragraph 3.2 hereinafter.

D. Trenches shall be of sufficient width to provide free working space on each side of the pipe and to permit proper backfilling around the pipe, but unless specifically authorized by the Engineer, trenches shall in no case be excavated or permitted to become wider than 2 feet plus the nominal diameter of the pipe at the level of or below the top of the pipe. If the trench does become wider than 2 feet at the level of or below the top of the pipe, special precaution may be necessary, such as providing compacted, granular fill up to top of the pipe or providing pipe with additional crushing strength as determined by the Engineer after taking into account the actual trench loads that may result and the strength of the pipe being used. The Contractor shall bear the cost of such special precautions as are necessary.

E. All excavated materials shall be placed a minimum of 2 feet back from the edge of the trench.

F. Before laying the pipe, the trench shall be opened far enough ahead to reveal obstructions that may necessitate changing the line or grade of the pipeline.

G. The trench shall be straight and uniform so as to permit laying pipe to lines and grades given by the Engineer. It shall be kept free of water during the laying of the pipe and until the pipeline has been backfilled. Removal of trench water shall be at the Contractor's expense. Dry conditions shall be maintained in the excavations until the backfill has been placed. During the excavation, the grade shall be maintained so that it will freely drain and prevent surface water from entering the excavation at all times. When directed by Owner, temporary drainage ditches shall be installed to intercept or direct surface water which may affect work. All water shall be pumped or drained from the excavation and disposed of in a suitable manner without damage to adjacent property or to other work.

H. Minimum cover of 30 inches shall be provided for all pipelines, except those located in the State Highway Right of Way. Those shall have a minimum cover of 42 inches.

3.2 PIPE BEDDING

A. All pipe shall be supported on a bed of granular material, unless the trench has been prepared in accordance with Paragraph 3.1 B. In no case shall pipe be supported directly on rock. Bedding shall not be a separate pay item unless otherwise set out in the Detailed Specifications. Bedding shall be provided in earth bottom trenches, as well as rock bottom trenches. Bedding material

shall be free from large rock, foreign material, frozen earth, and shall be acceptable to the Engineer. Bedding shall be a minimum of 6 inches below pipe barrel.

B. In all cases the foundation for pipes shall be prepared so that the entire load of the backfill on top of the pipe will be carried on the barrel of the pipe so that none of the load will be carried on the bells.

C. Where flexible pipe is used, the bedding shall be placed up to at least the spring line (horizontal center line) of the pipe. The bedding material and procedures shall conform to ASTM D 2321 and any Technical Specifications set out hereinafter. If conditions warrant, the Engineer may require the bedding to be placed above the spring line of the pipe. Granular bedding shall be Size #9-m or ASTM C 33, Size #7 crushed stone, fine gravel, or sand, and is not a separate pay item.

D. Where undercutting and granular bedding is involved, it shall be of such depth that the bottom of the bells of the pipe will be at least three inches above the bottom of the trench as excavated. Undercutting is not a separate pay item.

E. In wet, yielding mucky locations where pipe is in danger of sinking below grade or floating out of line or grade, or where backfill materials are of such a fluid nature that such movements of the pipe might take place during the placing of the backfill, the pipe must be weighted or secured permanently in place by such means as will prove effective. When ordered by the Engineer, yielding and mucky materials in subgrades shall be removed below ordinary trench depth in order to prepare a proper bed for the pipe. Crushed stone or other such granular material, if necessary, as determined by the Engineer to replace poor subgrade material, shall be a separate pay item and classified as "Special Granular Fill". Removal of poor material is not a separate pay item.

F. Installation shall be in accordance with ASTM D 2321 except as modified hereinafter.

3.3 SPECIAL GRANULAR FILL

A. As noted in Paragraph 3.2 E, granular material for "Special Granular Fill" when directed by the Engineer shall be Department of Transportation crushed limestone, Size #57. Payment for "Special Granular Fill" must have approval from the Engineer prior to installation.

3.4 LAYING PIPE

A. The laying of pipe in finished trenches shall be commenced at the lowest point so the spigot ends point in the direction of flow.

B. All pipes shall be laid with ends abutting and true to line and grade as given by the Engineer. Supporting of pipes shall be as set out hereinbefore under "Pipe Bedding" and in no case shall the supporting of pipes on blocks be permitted.

C. Before each piece of pipe is lowered into the trench, it shall be thoroughly inspected to ensure that it is clean. Each piece of pipe shall be lowered separately unless special permission is given otherwise by the Engineer. No piece of pipe or fitting which is known to be defective shall be laid or placed in the lines. If any defective pipe or fitting shall be discovered after the pipe is laid, it shall be removed and replaced with a satisfactory pipe or fitting without additional charge. In case a length of pipe is cut to fit in a line it shall be so cut as to leave a smooth end at right angles to the longitudinal axis of the pipe.

D. Pipe shall not be laid on solid rock. A pad of granular material as specified in Paragraph 3.2 "Pipe Bedding", shall be used as a pipe bedding. Pipe bedding is not a separate pay item. Irregularities in subgrade in an earth trench shall be corrected by use of granular material.

E. When ordered by the Engineer, unsuitable materials in subgrades shall be removed below ordinary trench depth in order to prepare a proper bed for the pipe.

F. When laying of pipe is stopped for any reason, the exposed end of such pipe shall be closed with a plywood or fabricated plug fitted into the pipe bell, so as to exclude earth or other material, and precautions taken to prevent flotation of pipe by runoff into trench.

G. No backfilling (except for securing pipe in place) over pipe will be allowed until the Engineer has had an opportunity to make an inspection of the joints, alignment and grade, in the section laid.

3.5 BACKFILLING PIPELINE TRENCHES

A. Backfilling of pipeline trenches shall be accomplished as shown on the Drawings and with details set forth hereinafter. Before final acceptance, the Contractor will be required to level off all trenches or to bring the trench up to grade. The Contractor shall also remove from roadways, rights-of-way and/or private property all excess earth or other materials resulting from construction. In the event pavement is not placed immediately following trench backfilling in paved areas, the Contractor shall be responsible for maintaining the trench surface in a level condition at proper pavement grade at all times. Under pavement, all trench backfill shall be in accordance with Method C as shown on the Detail Drawings. All other trench backfill shall be in accordance with Method A or B.

B. Method "A" - Backfilling in Open Terrain.

Backfilling of pipeline trenches in open terrain shall be accomplished in the following manner:

1. The lower portion of the trench, from the pipe bedding to a point 12 inches above the top of the pipe, shall be backfilled with material free from rock and/or material acceptable to the Engineer. This material shall be placed in a manner approved by the Engineer and shall be carefully compacted to avoid displacement of the pipe. Compaction shall be accomplished by hand-tamping or by approved mechanical methods.
2. The upper portion of the trench above the compacted portion shall be backfilled with material which is free from large rock. Incorporation of rock having a volume exceeding

one-half cubic foot is prohibited. Backfilling this portion of the trench may be accomplished by any means approved by the Engineer. The trench backfill shall be heaped over or leveled as directed by the Engineer.

C. Method "B" - Backfilling Under Sidewalks & Unpaved Driveways.

Backfilling of pipeline trenches under sidewalks and unpaved driveways shall be accomplished in the following manner:

1. The lower portion of the trench, from the pipe bedding to a point 12 inches above the top of the pipe, shall be backfilled with material free from rock and/or material acceptable to the Engineer. This material shall be placed in a manner to avoid displacement of the pipe. Compaction shall be accomplished by hand-tapping or by approved mechanical methods.
2. The middle portion of the trench, from a point 12 inches above the top of the pipe to a point 6 inches below the grade line, shall be backfilled with material free from rock and/or acceptable to the Engineer. This material shall be placed and compacted in layers of approximately 6 inches. Water (puddling) may be used as required to obtain maximum compaction.

    a. Upon approval of the Engineer, the Contractor may backfill the middle portion of the trench with crushed stone, fine gravel, or sand in lieu of materials which require compaction.

3. The upper portion of the trench shall be temporarily backfilled and maintained with crushed stone or gravel until such time as the sidewalk is constructed or the driveway surface is restored.

D. Method "C" - Backfilling Under Streets, Roads, and Paved Driveways.

Backfilling of pipeline trenches under streets, roads and paved driveways shall be accomplished in the following manner:

1. The lower portion of the trench from the pipe bedding to a point 6 inches below the bottom of the pavement or concrete sub-slab, shall be backfilled with # 9 crushed stone.
2. The upper portion of the trench, from a point 6 inches below the bottom of the pavement or concrete sub-slab to grade, shall be backfilled with a base course of dense graded aggregate. At such time that pavement replacement is accomplished, the excess base course shall be removed as required.

E. Trenches outside existing sidewalks, driveways, streets, and highways shall be backfilled in accordance with Method "A". Trenches within the limits of sidewalk and unpaved driveways shall be backfilled in accordance with Method "B". Trenches within the paving limits of existing streets, highways and driveways shall be backfilled in accordance with Method "C". All methods are shown on the Detail Drawings. When directed by the Engineer, the Contractor shall wet backfill material to assure maximum compaction.

1. Before final acceptance, the Contractor will be required to level off all trenches or to bring the trench up to grade. The Contractor shall also remove from roadways, rights-of-way and/or private property all excess earth or other materials resulting from construction.
2. In the event pavement is not placed immediately following trench backfilling in streets and highways, the Contractor shall be responsible for maintaining the trench surface in a level condition at proper pavement grade at all times.

3.6 SETTLEMENT OF TRENCHES

A. Whenever lines are in, or cross, driveways and streets, the Contractor shall be responsible for any trench settlement which occurs within these rights-of-way within one year from the time of final acceptance of the work. If paving shall require replacement because of trench settlement within this time, it shall be replaced by the Contractor at no extra cost to the Owner. Repair of settlement damage shall meet the approval of the Owner.

3.7 CONCRETE THRUST BLOCKS, CRADLE, ANCHORS OR ENCASEMENT

A. Concrete thrust blocks, cradle, anchors or encasement shall be placed where shown on the Drawings, required by the Specifications, or as directed by the Engineer.

B. For cradle and encasement, concrete shall be 3000 psi and shall be mixed sufficiently wet to permit it to flow under the pipe to form a continuous bed.

C. For thrust blocks and anchors, concrete shall be 3000 psi and shall be formed or be sufficiently stiff to maintain the forms indicated on the Details.

D. In tamping concrete, care shall be taken not to disturb the grade or line of the pipe or injure the joints. Concrete placed outside the specified limits or without authorization from the Engineer will not be subject to payment.

E. Water mains shall have concrete thrust or "kicker" blocks at all pipe intersections and changes of direction to resist forces acting on the pipeline. All reducers (increasers) shall be anchored.

3.8 BITUMINOUS CONCRETE HIGHWAY, STREET AND DRIVEWAY REPLACEMENT

A. The Contractor shall replace those sections of existing roads, streets and driveways required to be removed to install the pipelines under this contract. He shall construct same to the original lines and grades and in such manner as to leave all such surfaces in fully as good or better condition than that which existed prior to the operations.

B. Prior to trenching, the pavement shall be scored or cut to straight edges at least 12 inches outside each edge of the proposed trench to avoid unnecessary damage to the remainder of the

paving. Edges of the existing pavement shall be re-cut and trimmed to square, straight edges after the pipeline has been installed and prior to placing the new base and pavement.

C. Backfilling of the trench shall be in accordance with Method "C" as described hereinbefore. Base course for the paving shall be dense graded crushed limestone furnished and placed in accordance with the current requirements of the Standard Specifications for Road and Bridge Construction of the Department of Transportation, to a depth of 6 inches in roads and streets and 4 inches in driveways.

D. A subslab of reinforced concrete shall be placed for state-maintained highways as indicated on the Drawings. The subslab shall have a minimum thickness of 6 inches. Concrete for the subslab shall be 3000 psi, in accordance with the Details shown on the Drawings.

3.9 UNPAVED DRIVEWAY (CRUSHED STONE) SURFACE REPLACEMENT

A. The Contractor shall replace those sections of existing driveways and parking areas required to be removed to install the pipelines under this contract. He shall construct same to the original lines and grades and in such manner as to leave all such surfaces in fully as good or better condition than that which existed prior to the operations.

B. Material for backfilling of the pipeline trench shall be dense-graded aggregate in accordance with Method "B" as described hereinbefore.

3.10 REMOVING AND REPLACING CONCRETE CURB AND GUTTER OR SIDEWALK

A. The Contractor shall remove the curb and gutter or sidewalk when encountered when required for laying the pipe. Only that portion of the curb and gutter or sidewalk needed to lay the pipe shall be removed.

B. Where concrete curb and gutter or sidewalk is removed or disturbed during the construction work, it shall be replaced, using 3000 psi concrete, in fully as good or better condition than that which existed prior to the Contractor's operation.

3.11 REPLACEMENT OF EXISTING MAILBOXES, CULVERTS, CLOTHESLINE POSTS, FENCES AND OTHER SUCH FACILITIES

A. Existing mailboxes, drainage culverts, clothesline posts, fences and the like shall not be damaged or disturbed unless necessary, in which case, they shall be replaced in as good condition as found as quickly as possible. Existing materials shall be reused in replacing such facilities when materials have not been damaged by the Contractor's operations. Existing facilities damaged by Contractor's operation shall be replaced with new materials of the same type at the Contractor's expense. Work in this category is not a pay item.

B. Replacement of paved drainage ditches within highway right-of-way shall be accomplished in accordance with Department of Transportation specifications.

3.12 PORTLAND CEMENT CONCRETE DRIVEWAY REPLACEMENT

A. Wherever Portland cement concrete driveways are removed, they shall be reconstructed to the original lines and grades and in such manner as to leave all such surfaces in fully as good or better condition than existed prior to the operation.

B. The existing concrete paving shall be sawed or cut to straight edges 12 inches outside the edges of the trench or broken out to an existing joint, as directed by the Engineer. The concrete pavement shall be equal to the existing pavement thickness but not less than 6 inches in thickness for driveways.

C. Pavement shall be reinforced with 6 x 6-W4.0 x W4.0 welded wire reinforcement and shall be constructed with 4500 psi concrete with a maximum water-cement ratio of 0.45 and water reducer to produce a workable mix.

3.13 RIP-RAP STREAM BANK SLOPE PROTECTION

A. The Contractor shall install rip-rap stream bank slope protection at locations directed by the Engineer. Rip-rap slope protection shall be 12 inches thick and shall meet State D.O.T. Standard Specifications.

3.14 TESTING

A. All pressure piping (lines not laid to grade) shall be given a hydrostatic test of at least 1-1/2 times the normal operating pressure of the pipe (at its lowest elevation), but not to exceed the rated working pressure of the pipe or valves. Note: Engineer shall verify test pressure. Loss of pressure during the test shall not exceed 0 psi in a four-hour period and 5 psi in a 24-hour period. Any test results that do not meet both of these requirements shall constitute a failure of the pressure test.

B. No water leakage in pipelines, when tested under the hydrostatic test described above, shall be allowed.

C. Contractor shall furnish a recording gauge and recording pressure charts during duration of test. Recording pressure charts shall be turned over to the Engineer at conclusion of tests. The pressure recording device shall be suitable for outside service, with a range from 0-200 psig, 24-hour clock, and shall be approved by the Engineer.

D. Pipelines shall be tested before backfilling at joints except where otherwise required by necessity or convenience.

E. Duration of test shall be not less than four hours where joints are exposed and not less than 24 hours where joints are covered.

F. Where leaks are visible at exposed joints, evident on the surface where joints are covered, and/or identified by isolating a section of pipe, the joints shall be repaired and leakage must be minimized, regardless of total leakage as shown by test.

G. All pipe, fittings, valves, and other materials found to be defective under test shall be removed and replaced at no additional expense to the Owner.

H. Lines which fail to meet tests shall be repaired and retested as necessary until test requirements are complied with.

I. Where nonmetallic joint compounds are used, pipelines should be held under normal operating pressure for at least three days before testing.

J. The Owner will provide initial water for testing the pressure piping. Should the first test fail to pass, all additional water required for subsequent tests shall be furnished at the Contractor's expense.

K. The cost of testing of pressure piping is incidental and is to be included in the Contractor's unit Contract Price.

3.15 CLEAN UP

A. Upon completion of installation of the piping and appurtenances, the Contractor shall remove all debris and surplus construction materials resulting from the Work. The Contractor shall grade the ground along each side of pipe trenches in a uniform and neat manner leaving the construction area in a shape as near as possible to the original ground line.

3.16 DISINFECTION OF POTABLE WATER LINES

A. The new potable waterlines shall not be placed in service–either temporarily or permanently–until they have been thoroughly disinfected in accordance with AWWA Standard C651 latest edition, and to the satisfaction of the Engineer.

B. After testing, a solution of hypochlorite using HTH or equal shall be introduced into the section of the line being disinfected sufficient to insure a chlorine dosage of at least 50 ppm in the main. While the solution is being applied, the water should be allowed to escape at the ends of the line until tests indicate that a dosage of at least 50 ppm has been obtained throughout the pipe. Open and close all valves and cocks while chlorinating agent is in the piping system. The chlorinated water shall be allowed to remain in the pipe for 24 hours, after which a residual of at least 25 ppm shall be obtained. The disinfection shall be repeated until 25 ppm is obtained after which time the main shall be thoroughly flushed until the residual chlorine content is not greater than 1.0 ppm, and then may be connected to the system. Also, no additional payment will be allowed

for providing taps for chlorine injection and/or flushing, if necessary. The Contractor is responsible for the disposal of highly chlorinated water flushed from the main, and shall follow the requirements of AWWA C655, latest edition, for dechlorinating the disinfecting water.

C. The new water line shall not be put into service until bacteriological samples taken at the points specified herein are examined and shown to be negative after disinfection, following the requirements of "Standard Methods for Examination of Water and Wastewater". Two consecutive sets of acceptable samples, taken at least 24 hours apart shall be collected from the new line. Samples are to be taken and tested at every 1200 feet of new water line, at each branch and at each dead end.

D. If trench water has entered the pipe, or excessive quantities of dirt or debris have entered the pipe, samples shall be taken at intervals of approximately 200 feet and the locations identified. Samples shall be taken of water that has stood in the new line for at least 16 hours after flushing is completed.

E. If the initial disinfection does not produce satisfactory bacteriological results, the new line shall be reflushed and resampled. If samples fail, the line shall be rechlorinated by the continuous-feed or slug method until satisfactory results are obtained.

F. All testing documentation shall be submitted to the Owner.

3.17 ALTERNATE METHOD OF INSTALLATION

A. In lieu of traditional trenching methods for pipe installation, with the approval of the Engineer, the Contractor may choose to install the pipe utilizing the trenchless technology of horizontal directional drilling (HDD). Horizontal directional drilling shall be as specified in Section 330523.

END OF SECTION 331113

LFUCG
Fire Training Academy
Phase 1 Site Development Project
Lexington, Kentucky

Bid #1-2026 January 2026

SECTION 331118 – PIPE INSULATION AND HEAT TRACING

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Provide all labor, materials, equipment and services required to furnish and install all plant process piping as shown on the Drawings and specified herein.

B. Where indicated on the Contract Drawings or stated in the specifications, process piping shall be provided with insulation and heat tracing cables.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Submittals: Section 013323

1.3 SUBMITTALS

A. The Contractor shall comply with the requirements of Section 013323 of these specifications.

B. A notarized certification shall be furnished for all pipe and fittings which verifies compliance with all applicable specifications.

PART 2 - PRODUCTS

2.1 PIPE INSULATION

A. Insulation shall be one-piece fiberglass section insulation (K=0.23 at 75 degrees F) with factory applied white reinforced kraft/foil vapor barrier jacket. Longitudinal jacket laps and butt joints shall be self-sealing using 3-inch-wide lap strips. Insulation shall be one of the following:

1. Johns-Manville "Flame Safe AP-T 500 degrees F."
2. Owens/Corning "Fiberglass 25 ASJ/SSL".
3. Certainteed "Fiberglass 500 Degree Snap-On".

Insulation shall be 1-inch thick, minimum.

B. Finishing Materials:

1. Acceptable manufacturers, insulating cement:

a. Johns-Mansville No. 375.
b. 48 Insulations "Quik-Set".
c. Rockwood Mfg. Co. "Delta-Maid One Shot".

2. Acceptable manufacturers, breather mastic:

a. Benjamin Foster "Sealfas 30-36".
b. Insul-Coustic "Permsure IC-102".
c. Vimasco No. 713.
d. Childers "Chil-Seal CP-50".
e. Epolux "Cadalog 336".

3. Acceptable manufacturers, PVC premolded covers:

a. Johns-Manville "Zeston".
b. Ceel-Co.

4. Temperature Installation - All heat tracing and insulation shall be rated for -10 degrees F.

2.2 HEAT TRACING

A. Heat trace systems for pipes, valves, and fittings shall be in accordance with IEEE 515 and be UL listed. System shall include all necessary components, including heaters and controls to prevent freezing.

B. Provide self-regulating heaters consisting of two 16 AWG tinned-copper bus wires embedded in parallel in a self-regulating polymer core that varies its power output to respond to temperature along its length.

C. Heat trace shall be able to be crossed over itself without overheating and be approved before used directly on plastic pipe. Heater shall be covered by a radiation cross-linked modified polyolefin dielectric jacket in accordance with ASTM D2308.

D. For installation on plastic piping, apply the heater using aluminum tape. Heater shall have an outer braid of tinned-copper and an outer jacket of modified polyolefin in accordance with ASTM D2308, to provide a good ground path and to enhance the heater's ruggedness.

E. Provide heater with self-regulating factor of at least 90 percent in order to provide energy conservation and to prevent overheating.

F. Heat trace shall operate online voltages of 120 volts without the use of transformers.

G. Heater Size for 24-inch pipe: Spiral Wound, 8 watts per foot.

H. System shall be controlled by an ambient sensing thermostat set at 40 degrees F either directly or through an appropriate contactor.

PART 3 - EXECUTION

3.1 INSTALLATION OF PIPELINE INSULATION

A. Piping:
1. Butt all joints firmly together and secure all "self-seal" jacket laps with lap adhesive. Seal all butt joints with joint strips furnished with insulation. Taper all pipe insulation ends and cover with insulating cement.

B. Fittings and valves:

1. Hot lines 2inches and smaller: Valves, unions, and flanges shall not be insulated.
2. Hot and cold lines 2-1/2 inches and larger and cold lines 2 inches and smaller: Valves, unions, and flanges shall be insulated as follows, but insulation shall be removable to facilitate maintenance.
3. Insulate with molded fiberglass fitting segments of pipe covering, or with firmly compressed fiberglass blanket. Secure in-place with 20-gauge galvanized steel wire and finish with a smooth coating of insulating cement. Pipe sizes under 4 inches may be insulated with hydraulic cement. All thicknesses shall be equal to that of adjoining pipe insulation.
4. Finish insulation with two 1/16-inch-thick coats of mastic, applied at not more than 15 square feet per gallon and reinforced with white glass fabric embedded between the coats. (Use breather mastic on hot pipelines and vapor barrier mastic on cold pipelines). Lap the glass fabric on itself and on adjoining pipe insulation.
5. Option: Factory premolded PVC fitting covers may be used. Premolded covers shall overlap the adjoining pipe insulation and jackets and shall be secured at all edges with vapor barrier adhesive on cold pipes. Secure ends of all covers with pressure sensitive vinyl tape which shall overlap both the jacket and the cover at least 1 inch. On fittings where temperature exceeds 250 degrees F, two layers of insulation shall be applied with a few wrappings of twine on the first layer to eliminate any voids or hot spots.

3.2 HEAT TRACING SYSTEM INSTALLATION

A. Heat trace shall be field applied and cut to fit as necessary, linearly along the length of pipe after piping has been pressure tested and approved by the Engineer. Secure the heat trace to piping with cable ties and fiberglass tape. Thermal insulation shall be labeled on the outside, "Electrical Heat Trace."

B. Power connection, end seals, splice kits and tee kit components shall be installed in accordance with IEEE 515 to provide a complete workable system. Connection to the thermostat and ends of the heat tape shall be terminated in a junction box. Cable and conduit connections shall be raintight.

END OF SECTION 331118

SECTION 331216 - VALVES

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Provide all labor, materials, equipment and services required to furnish and install all valves shown on the Drawings and/or specified herein.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification sections, apply to work of this Section.

B. Piping is specified in Division 33 Specification sections.

1.3 SUBMITTALS

A. Descriptive literature, catalog cuts, and dimensional prints clearly indicating all dimensions and materials of construction, shall be submitted on all items specified herein to the Engineer for review before ordering. Comply with provisions of Section 013323.

B. At the time of submission, the Contractor shall, in writing, call Engineer's attention to any deviations that the submittals may have from the requirements of the Engineer's Contract Drawings and Specifications.

C. In accordance with the requirements of the General and Special Conditions and this Section, the following table includes, but is not limited to, the items required to be submitted:

Item Description	Shop Drawings	Product Data	Schedules	Installation Data	Parts Lists	Wiring Diagram	Samples	O & M Manual	Certificates	Warranty	Report	Other
Valves	X	X			X							
Valve Boxes		X										
Access Manhole	X	X										
Yard Hydrant	X	X			X							

Tapping Sleeve, Valve	X	X		X	X							

PART 2 - PRODUCTS

2.1 CHECK VALVES

A. Small diameter plastic (PVC) check valves shall be Chemtrol BC Series 150 psi socketed true union ball check type as manufactured by Chemtrol Industrial Products NIBCO, Inc., Louisville, Kentucky; Hayward Manufacturing Co., Inc., Elizabeth, New Jersey; or Engineer approved equal, and NSF listed for potable water. All gaskets shall be viton material.

2.2 BALL VALVES

A. Plastic ball valves (shut-off valves) shall be Chemtrol TU Series 150 psi threaded true union ball valves as manufactured by Chemtrol Industrial Products NIBCO, Inc., Louisville, Kentucky; Hayward Manufacturing Co., Inc., Elizabeth, New Jersey; or equal, NSF listed for potable water.

B. Valves for PVC shall be manufactured of PVC material and valves for CPVC lines shall be manufactured CPVC material. Install so indicator arrow is in direction of flow.

2.13 VALVE BOXES - BURIED VALVES (EXCEPT AIR RELEASE AND SEWAGE COMBINATION VALVES)

A. Valve boxes shall be of 5-1/4 inch standard cast iron, two-piece, screw type valve box with drop cover marked "WATER", "SEWER", "DRAIN", as applicable. Valve boxes for gate valves larger than 8 inches shall be three-piece. Valve boxes shall be accurately centered over valve operating nut, and backfill thoroughly tamped about them. Valve boxes shall not rest on the valves but shall be supported on crushed stone fill. They shall be set vertically and properly cut and/or adjusted so that the tops of boxes will be at grade in any paving, walk or road surface, and in grass plots, fields, woods or other open terrain. Valve boxes and covers shall be as manufactured by Tyler Corporation, Opelika Foundry, Bingham & Taylor, or equal.

B. Wherever valve boxes fall outside of the pavement, the top of the box shall be set in a cast-in-place concrete slab 18" x 18" x 4" thick with the top of the slab and box flush with the top of the ground. This provision shall apply to all new and all existing valve boxes which fall within the limits of the contract, unless otherwise stated on the plans or ordered by the Engineer.

PART 3 - EXECUTION

3.1 INSTALLATION

A. All valves shall be installed in accordance with details on the Contract Drawings and with the manufacturer's recommendations.

B. All valves shall be anchored in accordance with the details on the Contract Drawings.

END OF SECTION 331216

SECTION 331219 – HYDRANTS

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Provide all labor, materials, equipment and services required for furnishing and installing all hydrants and appurtenances specified herein.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Earthwork: Section 312000

B. Valves - Utilities Services: Section 331216

C. Water Distribution Piping: Section 331113

1.3 SUBMITTALS

A. Submit shop drawings and product data in accordance with Section 013323 of this specification.

B. Descriptive literature, catalog cuts, and dimensional prints clearly indicating all dimensions and materials of construction, shall be submitted on all items specified herein to the Engineer for review before ordering.

C. In accordance with the requirements of the General and Special Conditions and this Section, the following table includes, but is not limited to, the items required to be submitted:

Item Description	Shop Drawings	Product Data	Schedules	Installation Data	Parts Lists	Wiring Diagram	Samples	O & M Manual	Certificates	Warranty	Report	Other
Hydrants	X	X		X	X							

PART 2 - PRODUCTS

2.1 YARD HYDRANTS

A. Yard hydrants shall be installed where described on the Drawings or directed by the Engineer in accordance with the details shown. Hydrants shall be of the frostproof, compression type with all working parts removable without digging up the hydrants. Hydrants shall be equipped with removable handwheel or lever, hose connections (1-1/2-inch size) and bottom connection for 2-inch water line. Hydrants shall be Model M-200 Murdock Manufacturing and Supply Company, American-Darling, Zurn, or equal.

B. All hydrants shall be backfilled to the ground surface with crushed stone.

C. Exposed portions of hydrants shall be factory painted with an enamel finish. Color charts shall be furnished with Shop Drawings for color selection by the Engineer. Below ground portions shall have two coats of Fed. Spec. TT-V-51F Asphalt Varnish.

2.2 FIRE HYDRANTS

A. The Contractor shall furnish and install fire hydrants and auxiliary gate valves where shown on the Drawings or directed by the Engineer. Hydrants shall conform in all respects to the most recent requirements of AWWA C502. Hydrant barrel shall have safety breakage feature above the ground line. All hydrants shall have 6-inch mechanical joint shoe connection, two 2-1/2-inch discharge nozzles, and one 4-1/2-inch pumper nozzle with rubber gasketed caps fitted with cap chains. Cap nuts are to be five (5) sided. Connection threads shall be National Standard Thread. Main valve shall have 5-1/4-inch full opening and be of the compression type opening against water pressure so that valve remains closed should barrel be broken off.

B. Hydrants shall be fully bronze mounted. Main valve shall have a threaded bronze seat ring assembly of such design that it is easily removable by unscrewing from a threaded bronze drain ring. Bronze drain ring shall have multiple ports providing positive automatic drainage as the main valve is opened or closed. Drainage waterways shall be completely bronze to prevent rust and corrosion.

C. The operating nut shall be five-sided bronze or bronze with a five-sided ductile iron cap and mounted so that a counterclockwise motion will open the valve. There must be cast on top an arrow and the word "Open" indicating the direction of turn to open the hydrant.

D. Operating stem shall be equipped with anti-friction thrust bearing to reduce operating torque and assure easy opening. Stop shall be provided to limit stem travel. Stem threads shall be enclosed in a permanently sealed lubricant reservoir protected from weather and the waterway with O-ring seals.

E. Hydrants shall be shop tested to 300 psi pressure with main valve both opened and closed. Under test the valve shall not leak, the automatic drain shall function and there shall be no leakage into the bonnet.

F. Type of shoe connection shall be mechanical joint and size shall be 6 inches.

G. Hydrants shall be given two coats of enamel high visibility paint to be selected by the Owner.

H. Hydrants shall be Mueller Super Centurion Model A-423 or approved equal.

2.3 FLUSH (BLOW-OFF) HYDRANTS

A. Flush type fire hydrants shall comply, where applicable, to AWWA Standard C-502, latest revision. Flush type fire hydrants shall be of the compression type, with the main valve opening against the pressure and closing with the pressure. The main valve opening shall be 2-1/4 inches in diameter. Flush type fire hydrants shall be of a dry barrel design.

B. Flush type fire hydrants shall be rated at 150 psi water working pressure, tested at 300 pounds hydrostatic for structural soundness in the following manner: 300-pound hydrostatic test supplied from the inlet side, first with the main valve closed for the testing of the valve seat; second, with the main valve open for testing of the drain valves and the hydrant barrel.

C. Hydrants shall be constructed of ASTM A-126 Class B cast iron. The main valve of the hydrant shall be made of rubber.

D. The bottom stem threads of the main valve rods shall be fitted with a cap nut for sealing the threads away from the water.

E. Changes in size or shape of the waterway shall be accomplished by means of easy curves. Exclusive of the main valve opening, the net area of the waterway of the barrel and the foot piece at the smallest part shall not be less than 120 percent of that of the net opening of the main valve, except for hydrants with 2-1/4-inch valve opening.

F. Hose and steamer caps shall be individually chained to the hydrant.

G. The operating threads of the hydrant shall be so designed as to avoid the working of any iron or steel parts against either iron or steel. The operating stem and operating nut threads shall be square or acme type.

H. Bonnet shall be weatherproof, free draining, and of a type that will maintain the operating mechanism in readiness for use under freezing conditions.

I. The operating nut shall be provided with a convenient means to afford lubrication to insure ease of operating and the prevention of wear and corrosion. Hydrants shall be of dry barrel type. Hydrant shoe shall have two positive acting non-corrodible drain valves that shall drain the

hydrant completely by opening when the main valve is closed, and also to close tightly when the main valve is open.

J. All like parts of hydrants of the same size and model produced by the same manufacturer shall be interchangeable.

K. Hydrants shall open by turning to the left.

L. Threads on hose and steamer nozzles shall be National Standard unless otherwise specified.

M. Operating nuts and cap nuts shall conform to National Standard unless otherwise specified.

N. Bury shall be 30 inches measuring depth from grade line to bottom of connecting pipe.

O. Auxiliary shut-off (isolation) gate valves shall be of the same manufacturer as the hydrant when required.

P. Hydrants with a 2-inch, 2-1/4-inch 2-1/2-inch, or 3-inch shoe (Style 333) shall be supplied with one 2-1/2-inch hose outlet. Hydrant assembly shall include a cast iron box and cover for installation flush with grade level.

Q. The inside of all hydrants shall be coated in accordance with AWWA standards except for bronze and machined surfaces. Exterior on hydrant nozzle section shall be painted fire hydrant red (or as specified).

R. Hydrant shoe shall have protective, thermosetting epoxy coating applied inside and out before assembly. Prior to application of coating, shoes shall be mechanically and chemically cleaned in compliance with SSPC Standards SP-5 and SP-8. A minimum average dry film thickness of 3 mils shall be applied on interior and exterior surfaces of hydrant shoe. Coating designation to be M&H 0271 epoxy and conform fully to AWWA C550-81, Section 3.

S. Hydrants shall be marked with name of manufacturer, year of manufacture, and size.

2.4 FLUSH HYDRANT BOX

A. Hydrant box and cover shall be cast iron with a minimum diameter of 16 inches and a minimum depth of 10 inches.

B. The hydrant box shall not be attached to the hydrant at any point thus prohibiting loads from being transferred to the hydrant, standpipe, or connecting pipe. Hydrant box, when properly installed with cover, shall withstand a 25,000-pound load.

PART 3 - EXECUTION

3.1 SETTING OF FIRE HYDRANTS

A. Location:

1. Hydrants shall be located as shown or as directed so as to provide complete accessibility and minimize the possibility of damage from vehicles or injury to pedestrians.
2. When placed behind the curb, the hydrant barrel shall be set so that the pumper or hose nozzle cap will be a minimum of 5 feet from the back of curb.
3. When set in the lawn space between the curb and the sidewalk or between the sidewalk and the property line, no portion of the hydrant or nozzle cap shall be within 6 inches of the sidewalk.

B. Position:

1. All hydrants shall be set plumb with not less than 2 cubic feet of crushed stone and shall have their nozzles parallel with the roadway, with the pumper nozzle facing toward the roadway. Hydrants shall be set to the established grade, with nozzles at least 18 inches above the ground, as shown or as directed by the Engineer.

C. Connection to Main:

1. Each hydrant shall be connected to the main with a 6-inch restrained joint ductile iron branch controlled by an independent 6-inch gate valve, unless otherwise specified.

D. Hydrant Drainage in Pervious Soil:

1. Whenever a hydrant is set in soil that is pervious, drainage shall be provided at the base of the hydrant by placing uncrushed coarse aggregate (AASHTO M-43) No. 57 from the bottom of the trench to at least 6 inches above the drain opening in the hydrant and to a distance of 1 foot around the elbow. No drainage system shall be connected to a sewer.

E. Hydrant Drainage in Impervious Soil:

1. Whenever a hydrant is set in clay or impervious soil, a drainage pit 2 feet in diameter and 3 feet deep shall be excavated below each hydrant and filled compactly with uncrushed coarse aggregate (AASHTO M-43) No. 57 under and around the elbow of the hydrant and to a level of 6 inches above the drain opening. No drainage pit shall be connected to a sewer (see Standard Details).

3.2 SETTING OF YARD HYDRANTS

A. Location:

1. Hydrants shall be located as shown on the Contract Drawings or as directed by the Owner or Engineer so as to provide complete accessibility and minimize the possibility of damage from vehicles or injury to pedestrians.

B. Position:

1. All hydrants shall be set plumb with not less than 2 cubic feet of crushed stone. Hydrants shall be set to the established grade, with nozzles at least 36 inches above the ground, as shown on the Details in the Drawings, or as directed by the Owner or Engineer. Hydrants shall be backfilled with crushed stone, which in encased by a section of an 18-inch diameter concrete pipe. (See Standard Details)

C. Connection to Main:

1. Each hydrant shall be connected to the main with a restrained joint ductile iron branch controlled by an independent 2-inch gate valve, unless otherwise specified.

D. Hydrant Drainage in Pervious Soil:

1. Whenever a hydrant is set in soil that is pervious, drainage shall be provided at the base of the hydrant by placing uncrushed coarse aggregate (AAHSTO M-43) No. 57 from the bottom of the trench to at least 6 inches above the drain opening in the hydrant and to a distance of 1 foot around the elbow. No drainage system shall be connected to a sewer.

E. Hydrant Drainage in Impervious Soil:

1. Whenever a hydrant is set in clay or impervious soil, a drainage pit 2 feet in diameter and 3 feet deep shall be excavated below each hydrant and filled compactly with uncrushed coarse aggregate (AASHTO M-43) No. 57 under and around the elbow of the hydrant and to a level of 6 inches above the drain opening. No drainage pit shall be connected to a sewer (see Standard Details).

3.3 SETTING OF FLUSH HYDRANTS

A. Location:

1. Hydrants shall be located as shown on the Contract Drawings or as directed by the Owner or Engineer so as to provide complete accessibility and minimize the possibility of damage from vehicles or injury to pedestrians.

B. Position:

1. Hydrants shall be set plumb and to the established grade.

C. Connection to Main:

1. Hydrants shall be connected to the main by mechanical joint, screwed or flanged shoe. Mechanical joint shoes shall be fitted with strapping lugs.

D. Hydrant Drainage in Pervious Soil:

1. Whenever a hydrant is set in soil that is pervious, drainage shall be provided at the base of the hydrant by placing uncrushed coarse aggregate (AAHSTO M-43) No. 57 from the bottom of the trench to at least 6 inches above the drain opening in the hydrant and to a distance of 1 foot around the elbow. No drainage system shall be connected to a sewer.

E. Hydrant Drainage in Impervious Soil:

1. Whenever a hydrant is set in clay or impervious soil, a drainage pit 2 feet in diameter and 3 feet deep shall be excavated below each hydrant and filled compactly with uncrushed coarse aggregate (AASHTO M-43) No. 57 under and around the elbow of the hydrant and to a level of 6 inches above the drain opening. No drainage pit shall be connected to a sewer (see Standard Details).

F. Hydrant Box:

1. Hydrant box shall be installed at grade and per manufacturer's recommendations. Box shall not be attached to the hydrant at any point.

3.4 ANCHORAGE

A. The bowl of each hydrant shall be tied to the pipe with suitable anchor couplings, as shown on the Standard Details in the Drawings or as directed by the Owner or Engineer.

3.5 FIRE HYDRANT WRENCHES

A. One hydrant wrench shall be furnished for each 10 hydrants or less. When the number of hydrants furnished and installed exceeds 25, one hydrant repair kit shall be supplied at no additional cost to the Owner.

END OF SECTION 331219

LFUCG
Fire Training Academy
Phase 1 Site Development Project
Lexington, Kentucky

Bid #1-2026

January 2026

SECTION 332217 – EXPLOSIONPROOF DUPLEX GRINDER SEWAGE PUMPING STATIONS

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. This work consists of the furnishing of all labor, materials, equipment, and services for manufacturing, assembling, delivering and putting into service all components of the explosionproof grinder pump stations as described in these specifications and shown on the plans.

B. Delegated Design: Design of duplex explosionproof grinder pumping station, including comprehensive engineering analysis by a qualified professional engineer, licensed in the State of Kentucky.

1.2 DESCRIPTION

A. The manufacturer shall furnish complete factory-built and tested Explosionproof Grinder Pump Station(s), each consisting of explosionproof grinder pump(s) suitably mounted in a basin constructed of fiberglass, pump removal system, shut-off valve, anti-siphon valve, and check valve assembled within the basin, electrical alarm/disconnect panel, and all necessary internal electrical wiring and controls.

B. The grinder shall be capable of macerating all material in normal domestic and commercial sewage including reasonable amount of foreign objects such as wood, plastics, glass, rubber, sanitary napkins, disposable diapers and the like into a fine slurry.

1.3 WARRANTY

A. The manufacturer guarantees and warrants that during the first three (3) years of operation after the date of substantial completion, the pumps will operate satisfactorily and continuously according to the pump schedule specified herein, and that due notice has been given by the Owner, he or the pump manufacturer will proceed, within a reasonable time, to adjust, regulate, repair and renew at his own expense or perform such work as is necessary to maintain the guaranteed capacities, efficiencies and performances. Pump warranty shall start after the date of substantial completion.

1.4 ACCEPTABLE MANUFACTURER(S)

A. Acceptable explosionproof grinder pump station manufacturer(s) are the Environment One Corporation, or engineer approved equal.

1.6 RELATED WORK SPECIFIED

A. Earthwork: Section 312000

B. Gravity Sewer Piping: Section 333113

C. Sewage Force Mains: Section 333413

1.5 SUBMITTALS

A. Submit manufacturer's data and shop drawings for the materials specified herein. Comply with all requirements of Section 013300.

B. Delegated Design Submittal: For installed products indicated to comply with performance requirements and design criteria, including analysis data, calculations, and erection drawings signed and sealed by the qualified professional engineer responsible for their preparation.

C. Design Data: Submit calculations prepared under the direct supervision of a professional engineer supporting the explosionproof grinder pump station design including the proposed design dimensions, uplift/buoyancy forces, and hydraulics in accordance with requirements and references indicated. The calculations shall be sealed by a professional engineer licensed in the state in which the project is located.

D. Shop Drawings: Submit shop drawings for explosionproof grinder pump station prepared under direct supervision of a professional engineer licensed in the state in which the project is located. Shop drawings shall include:

1. Complete description in sufficient detail to permit an itemized comparison with the specifications.
2. Dimensions and installation requirements.
3. Descriptive information including manufacturers' catalog cuts and specifications for all components.
4. Electrical schematics and layouts.
5. Hydraulic calculations demonstrating compliance with the specified hydraulic characteristics.
6. Calculations supporting proposed design dimensions and uplift/buoyancy forces.

C. At the time of submission, the Contractor shall, in writing, call the Engineer's attention to any deviations that the submittals may have from the requirements of the Engineer's Contract Drawings and Specifications.

D. The Contractor shall provide a notarized certification indicating that all piping products meet the required Specifications.

1.6 CORROSION PROTECTION

A. All materials exposed to wastewater shall have inherent corrosion protection: i.e., coated cast iron, fiberglass, polyethylene, engineered polypropylene copolymer, stainless steel, bronze, PVC or CPVC.

1.7 SAFETY

A. The explosionproof grinder pump station shall be free from electrical and fire hazards as required in a domestic and commercial environment. As evidence of compliance with this requirement, the completely assembled, factory wired and tested explosionproof grinder pump station shall be U.L. listed. Explosionproof grinder pump station without U.L. listing will not be acceptable.

B. The explosionproof grinder pump shall meet accepted standards for plumbing equipment for use in or near residents and commercial, shall be free from noise, odor or health hazards, and shall have been tested by an independent laboratory to certify its capability to perform as specified in either individual or low pressure sewer system applications.

1.8 OSHA CONFINED SPACE

A. All maintenance tasks for the explosionproof grinder pump station must be possible without entry into the explosionproof grinder pump station (as per OSHA 1910.146 Permit-required confined spaces). "Entry means the action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space."

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Explosionproof grinder pump station shall be manufactured by Environment One Corporation, Niskayuna, New York, or engineer approved approved equal.

2.2 EXPLOSIONPROOF PUMP(S)

A. The explosionproof pump(s) shall be a progressive cavity type capable of delivering 15 GPM against a rated total dynamic head of 0 feet, 11 GPM against a rated total dynamic head of 92

feet, and 7.8 GPM against a rated total dynamic head of 185 feet. The explosionproof pump(s) must also be capable of operating at negative total dynamic head without overloading the motor. Under no conditions shall in-line piping of valving be allowed to create a false apparent head.

B. The explosionproof pump(s) shall be a custom designed, integral, vertical rotor, motor driven, solids handling pump of the progressing cavity type with a single mechanical seal. Double radial O-ring seals are required at all casting joints to minimize corrosion and create a protective barrier. All explosionproof pump(s) castings shall be cast iron, fully epoxy coated to 8-10 mil Nominal dry thickness, wet applied. The rotor shall be through-hardened, highly polished, precipitation hardened stainless steel. The stator shall be of a specifically compounded ethylene propylene synthetic elastomer. This material shall be suitable for domestic and commercial wastewater service. Its physical properties shall include high tear and abrasion resistance, grease resistance, water and detergent resistance, temperature stability, aging properties, and wear resistance. Buna-N is not acceptable as a stator material because it does not exhibit the properties as outlined above and required for wastewater service.

2.3 GRINDER

A. The grinder shall be placed immediately below the pumping elements and shall be direct-driven by a single, one-piece motor shaft. The grinder impeller (cutter wheel) assembly shall be securely fastened to the pump motor shaft by means of a threaded connection attaching the grinder impeller to the motor shaft. Attachment by means of pins or keys will not be acceptable. The grinder impeller shall be a one-piece, 4140 cutter wheel of the rotating type with inductively hardened cutter teeth. The cutter teeth shall be inductively hardened to Rockwell 50 – 60c for abrasion resistance. The shredder ring shall be of the stationary type and the material shall be white cast iron. The teeth shall be ground into the material to achieve effective grinding. The shredder ring shall have a staggered tooth pattern with only one edge engaged at a time, maximizing the cutting torque. These materials have been chosen for their capacity to perform in the intended environment as they are materials with wear and corrosive resistant properties.

B. This assembly shall be dynamically balanced and operate without objectionable noise or vibration over the entire range of recommended operating pressures. The grinder shall be constructed so as to minimize clogging and jamming under all normal operating conditions including starting. Sufficient vortex action shall be created to scour the tank free of deposits or sludge banks which would impair the operation of the pump. These requirements shall be accomplished by the following, in conjunction with the pump:

1. The grinder shall be positioned in such a way that solids are fed in an upward flow direction.
2. The maximum flow rate through the cutting mechanism must not exceed 4 feet per second. This is a critical design element to minimize jamming and as such must be adhered to.
3. The inlet shroud shall have a diameter of no less than 5 inches. Inlet shrouds that are less than 5 inches in diameter will not be accepted due to their inability to maintain the specified 4 feet per second maximum inlet velocity which by design prevents unnecessary jamming of

the cutter mechanism and minimizes blinding of the pump by large objects that block the inlet shroud.

4. The impeller mechanism must rotate at a nominal speed of no greater than 1800 rpm.

C. The grinder shall be capable of reducing all components in normal domestic and commercial sewage, including a reasonable amount of "foreign objects," such as paper, wood, plastic, glass, wipes, rubber and the like, to finely-divided particles which will pass freely through the passages of the pump and the 1-1/4" diameter stainless steel discharge piping.

2.4 ELECTRIC MOTOR

A. The motor shall be a 1 HP, 1725 RPM, 240 Volt, 60 Hertz, 1 Phase, capacitor start, ball bearing, air-cooled induction type with Class F installation, low starting current not to exceed 30 amperes and high starting torque of 8.4 foot pounds. The motor shall be press-fit into the casting for better heat transfer and longer winding life. Inherent protection against running overloads or locked rotor conditions for the pump motor shall be provided by the use of an automatic-reset, integral thermal overload protector incorporated into the motor. This motor protector combination shall have been specifically investigated and listed by Underwriters Laboratories, Inc., for the application. Non-capacitor start motors or permanent split capacitor motors will not be accepted because of their reduced starting torque and consequent diminished grinding capability. The wet portion of the motor armature must be 300 Series stainless. To reduce the potential of environmental concerns, the expense of handling and disposing of oil, and the associated maintenance costs, oil-filled motors will not be accepted.

B. The motor shall be approved by Factory Mutual as explosionproof for use in NEC CLASS I, DIVISION 1, and GROUP C&D HAZARDOUS LOCATIONS.

2.5 MECHANICAL SEAL

A. The pump/core shall be provided with a mechanical shaft seal to prevent leakage between the motor and pump. The seal shall have a stationary ceramic seat and carbon rotating surface with faces precision lapped and held in position by a stainless steel spring.

2.6 TANK

A. The tank shall be a wetwell design consisting of a single wall, laminated fiberglass construction. The resin used shall be of a commercial grade suitable for the environment. The reinforcing material shall be a commercial grade of glass fiber capable of bonding with the selected resin. The inner surface shall have a smooth finish and be free of cracks and crazing. The exterior tank surface shall be relatively smooth with no exposed fiber or sharp projections present.

B. The tank wall and bottom shall be of sufficient thickness and construction to withstand the imposed loading due to saturated soil at the specified burial depth for each available tank height. All station components must function normally when exposed to the external soil and

hydrostatic pressures developed at the specified burial depth. The tank bottom shall be reinforced with a fiberglass plate extending beyond the tank walls to support concrete anchoring, as required, to prevent flotation.

C. The Fiberglass tank shall have a stainless steel discharge bulkhead which terminates outside the tank wall with a 1-1/4" female pipe thread. The discharge bulkhead shall be factory installed and warranted by the manufacturer to be watertight. The tank shall be furnished with a field installed EPDM grommet to accept a 6" PVC inlet pipes.

D. The power and control cable shall connect to the pump by means of the provided NEMA 6P Electrical Quick Disconnect (EQD) and shall enter the tank through a field installed watertight strain relief connector supplied by the manufacturer. An electrical junction box shall not be permitted in the tank. Installation of the inlet grommet and cable strain relief shall require field penetration of the tank wall by the installing party. The tank shall also be vented to prevent sewage gases from accumulating inside the tank by means of a factory-provided, field-installed mushroom vent. The station cover shall be factory drilled to accept the mushroom vent. The tank and stainless steel discharge bulkhead shall be factory-tested to be watertight.

E. The station shall have all necessary penetrations factory sealed and tested. No field penetrations shall be acceptable.

F. All discharge piping shall be constructed of 304 Series Stainless Steel and terminate outside the accessway bulkhead with a stainless steel, 1-1/4 inch female NPT fitting. The discharge piping shall include a stainless steel ball valve rated for 235 psi WOG; PVC ball valves or brass ball/gate valves will not be accepted. The bulkhead penetration shall be factory installed and warranted by the manufacturer to be watertight.

2.7 ELECTRICAL QUICK DISCONNECT

A. The grinder pump core shall include a factory-installed NEMA 6P electrical quick disconnect (EQD) for all power and control functions. The EQD will be supplied with 32', 25' of useable, electrical supply cable (ESC) to connect to the alarm panel. The EQD shall require no tools for assembly, seal against water before the electrical connection is made, and include radial seals to assure a watertight seal regardless of tightening torque. Plug-type connections of the power cable onto the pump housing will not be acceptable due to the potential for leaks and electrical shorts. Junction boxes are not acceptable due to the large number of potential leak points. The EQD shall be so designed to be conducive to field wiring as required.

2.8 CHECK VALVE

A. The pump discharge shall be equipped with a factory installed, gravity operated, flapper-type integral check valve built into the discharge piping. The check valve will provide a full-ported passageway when open, and shall introduce a friction loss of less than 6 inches of water at maximum rated flow. Moving parts will be made of a 300 Series stainless steel and fabric

reinforced synthetic elastomer to ensure corrosion resistance, dimensional stability, and fatigue strength. A nonmetallic hinge shall be an integral part of the flapper assembly providing a maximum degree of freedom to assure seating even at a very low back-pressure. The valve body shall be an injection molded part made of an engineered thermoplastic resin. The valve shall be rated for continuous operating pressure of 235 psi. Ball-type check valves are unacceptable due to their limited sealing capacity in slurry applications.

2.9 ANTI-SIPHON VALVE

A. The pump discharge shall be equipped with a factory-installed, gravity-operated, flapper-type integral anti-siphon valve built into the discharge piping. Moving parts will be made of 300 Series stainless steel and fabric-reinforced synthetic elastomer to ensure corrosion resistance, dimensional stability, and fatigue strength. A nonmetallic hinge shall be an integral part of the flapper assembly, providing a maximum degree of freedom to ensure proper operation even at a very low pressure. The valve body shall be injection-molded from an engineered thermoplastic resin. Holes or ports in the discharge piping are not acceptable on anti-siphon devices due to their tendency to clog from the solids in the slurry being pumped. The anti-siphon port diameter shall be no less than 60% of the inside diameter of the pump discharge piping.

2.10 CORE UNIT

A. The explosionproof grinder pump station shall have an easily removable core assembly containing pump, motor, grinder, all motor controls, check valve, anti-siphon valve, electrical quick disconnect and wiring. The core unit shall seal to the tank deck with a stainless steel latch assembly. The latch assembly must be actuated utilizing a single quick release mechanism requiring no more than a half turn of a wrench. The watertight integrity of the core unit shall be established by a 100% factory test at a minimum of 5 PSIG.

2.11 CONTROLS

A. All necessary motor starting controls shall be located in the cast iron enclosure of the core unit secured by stainless steel fasteners. Locating motor starting controls in a plastic enclosure is not acceptable.

B. Wastewater level sensing controls shall be housed in a separate enclosure from motor starting controls. Level sensor housing must be sealed via a radial type seal; solvents or glues are not acceptable. Level sensing control housing must be integrally attached to pump assembly so that it may be removed from the station with the pump and in such a way as to minimize the potential for the accumulation of grease and debris accumulation, etc. Level sensing housing must be a high-impact thermoplastic copolymer over-molded with a thermo plastic elastomer. The use of PVC for the level sensing housing is not acceptable.

C. Non-fouling wastewater level controls for controlling pump operation shall be accomplished by monitoring the pressure changes in an integral air column connected to a pressure switch. The air column shall be integrally molded from a thermoplastic elastomer suitable for use in wastewater and with excellent impact resistance. The air column shall have only a single connection between the water level being monitored and the pressure switch. Any connections are to be radial sealed with redundant O-rings. The level detection device shall have no moving parts in direct contact with the wastewater and shall be integral to the pump core assembly in a single, readily-exchanged unit. Depressing the push to run button must operate the pump even with the level sensor housing removed from the pump.

D. All fasteners throughout the assembly shall be 300 Series stainless steel. High-level sensing will be accomplished in the manner detailed above by a separate air column sensor and pressure switch of the same type. Closure of the high-level sensing device will energize an alarm circuit as well as a redundant pump-on circuit. For increased reliability, pump ON/OFF and high-level alarm functions shall not be controlled by the same switch. Float switches of any kind, including float trees, will not be accepted due to the periodic need to maintain (rinsing, cleaning) such devices and their tendency to malfunction because of incorrect wiring, tangling, grease buildup, and mechanical cord fatigue. To assure reliable operation of the pressure switches, each core shall be equipped with a factory installed equalizer diaphragm that compensates for any atmospheric pressure or temperature changes. Tube or piping runs outside of the station tank or into tank-mounted junction boxes providing pressure switch equalization will not be permitted due to their susceptibility to condensation, kinking, pinching, and insect infestation. The explosionproof grinder pump will be furnished with a 6 conductor 14 gauge, type SJOW cable, pre-wired and watertight to meet UL requirements with a factory installed NEMA 6P EQD half attached to it.

2.12 ALARM PANEL

A. Each explosionproof grinder pump station shall include a NEMA 4X, UL-listed alarm panel suitable for wall or pole mounting. The NEMA 4X enclosure shall be manufactured of thermoplastic polyester to ensure corrosion resistance. The enclosure shall include a hinged, lockable cover with padlock, preventing access to electrical components, and creating a secured safety front to allow access only to authorized personnel.

B. The alarm panel shall contain two 15-amp, double-pole circuit breaker for the pump core's power circuit and two 15-amp single-pole circuit breaker for the alarm circuit. The panel shall contain a push-to-run feature, an internal run indicator, and a complete alarm circuit. All circuit boards in the alarm panel are to be protected with a conformal coating on both sides and the AC power circuit shall include an auto resetting fuse.

C. The visual alarm lamp shall be inside a red, oblong lens at least 3.75" L x 2.38" W x 1.5" H. Visual alarm shall be mounted to the top of the enclosure in such a manner as to maintain NEMA 4X rating. The audible alarm shall be externally mounted on the bottom of the enclosure, capable of 93 dB @ 2 feet. The audible alarm shall be capable of being deactivated by depressing a push-type switch that is encapsulated in a weatherproof silicone boot and mounted on the bottom of the enclosure (push-to-silence button).

D. The high-level alarm system shall operate as follows:

1. The panel will go into alarm mode if either pump's alarm switch closes. During the initial alarm mode both pumps will run and the alarm light and buzzer will be delayed for a period of time based on user settings (default is 3-1/2 minutes). If the station is still in high-level alarm after the delay, the light and buzzer will be activated.
2. The audible alarm may be silenced by means of the externally mounted push-to-silence button.
3. The visual alarm remains illuminated until the sewage level in the wet well drops below the "off" setting of the alarm switch for both pumps.

E. The entire alarm panel, as manufactured and including any of the following options shall be listed by Underwriters Laboratories, Inc.

2.13 BUCK BOOST TRANSFORMER

A. Manufacturer shall provide a 0.5 KVA, 208V x 240V, 1-phase, 3-wire buck boost transformer with a NEMA 3R non-vented enclosure.

B. Transformer shall be equivalent to an Environmental One #PA0219P02.

2.14 SERVICEABILITY

A. The grinder pump core, including level sensor assembly, shall have two lifting hooks complete with lift-out harness connected to its top housing to facilitate easy core removal when necessary. The level sensor assembly must be easily removed from the pump assembly for service or replacement. All mechanical and electrical connections must provide easy disconnect capability for core unit removal and installation. Each EQD half must include a water-tight cover to protect the internal electrical pins while the EQD is unplugged. A pump push-to-run feature will be provided for field trouble shooting. The push-to-run feature must operate the pump even if the level sensor assembly has been removed from the pump assembly. All motor control components shall be mounted on a readily replaceable bracket for ease of field service.

PART 3 - EXECUTION

3.1 FACTORY TEST

A. Each explosionproof grinder pump shall be submerged and operated for 5 minutes (minimum). Included in this procedure will be the testing of all ancillary components such as, the anti-siphon valve, check valve, discharge assembly and each unit's dedicated level controls and motor controls. All factory tests shall incorporate each of the above listed items. Actual appurtenances and controls which will be installed in the field, shall be particular to the tested pump only. A common set of appurtenances and controls for all pumps will not be acceptable. Certified test results shall be provided during shop drawing review showing the operation of

each explosionproof grinder pump at two (2) different points on its curve, with the maximum pressure no less than 80 psi. The Engineer reserves the right to inspect such testing procedures with representatives of the Owner, at the grinder pump station manufacturer's facility.

B. All completed stations shall be factory leak tested to assure the integrity of all joints, seams and penetrations. All necessary penetrations such as inlets, discharge fittings and cable connectors shall be included in this test along with their respective sealing means (grommets, gaskets etc.).

3.2 DELIVERY

A. All explosionproof grinder pump station units will be delivered to the job site 100 percent completely assembled, including testing, ready for installation. Grinder pump cores will be shipped separately from the tanks. Installing the cores and discharge piping/hose into the tanks is the only assembly step required and allowed due to the workmanship issues associated with other on-site assembly. Explosionproof grinder pump units will be individually mounted on wooden pallets.

3.3 INSTALLATION

A. Contractor shall install grinder pump units in accordance with the manufacturer's Drawings, shop drawings and instructions.

3.4 BACKFILL REQUIREMENTS

A. If pyritic shale is exposed during excavation, provide 60 mils of liquid boot sealer to surface of shale. Back fill to top of shale with lean concrete. See General Structural Notes for material requirements.

B. Proper backfill is essential to the long-term reliability of any underground structure. Several methods of backfill are available to produce favorable results with different native soil conditions. The most highly recommended method of backfilling is to surround the unit to grade using Class I or Class II backfill material as defined in ASTM 2321. Class 1A and Class 1B are recommended where frost heave is a concern; Class 1B is a better choice when the native soil is sand or if a high, fluctuating water table is expected. Class 1, angular crushed stone, offers an added benefit in that it doesn't need to be compacted.

C. Class II, naturally rounded stone, may require more compactive effort, or tamping, to achieve the proper density. If the native soil condition consists of clean compactible soil, with less than 12% fines, free of ice, rocks, roots and organic material, it may be an acceptable backfill. Soil must be compacted in lifts not to exceed one foot to reach a final Proctor Density of between 85% and 90%. Heavy, non-compactible clays and silts are not suitable backfill for this or any underground structure such as inlet or discharge lines.

D. If you are unsure of the consistency of the native soil, it is recommended that a geotechnical evaluation of the material is obtained before specifying backfill.

E. Another option is the use of a flowable fill (i.e., low slump concrete). This is particularly attractive when installing explosionproof grinder pump stations in augured holes where tight clearances make it difficult to assure proper backfilling and compaction with dry materials. Flowable fills should not be dropped more than four feet from the discharge to the bottom of the hole to avoid separation of the constituent materials.

F. Backfill of clean, native earth, free of rocks, roots, and foreign objects, shall be thoroughly compacted in lifts not exceeding 12" to a final Proctor Density of not less than 85%. Improper backfilling may result in damaged accessways. The explosionproof grinder pump station shall be installed at a minimum depth from grade to the top of the 1 1/4" discharge line, to assure maximum frost protection. The finish grade line shall be 1" to 4" below the bottom of the lid, and final grade shall slope away from the explosionproof grinder pump station.

3.5 START-UP AND FIELD TESTING

A. The manufacturer shall provide the services of qualified factory trained technician(s) who shall inspect the placement and wiring of each station, perform field tests as specified herein, and instruct the Owner's personnel in the operation and maintenance of the equipment before the stations are accepted by the Owner.

B. All equipment and materials necessary to perform testing shall be the responsibility of the installing Contractor. This includes, as a minimum, a portable generator and power cable (if temporary power is required), water in each basin (filled to a depth sufficient to verify the high level alarm is operating and to run drawdown tests), and opening of all valves in the system. These steps shall be completed prior to the qualified factory trained technician(s) arrival on site.

C. Upon completion of the installation, the authorized factory technician(s) will perform the following test on each station:

1. Make certain the discharge shut-off valve in the station is fully open.
2. Turn ON the alarm power circuit and verify the alarm is functioning properly.
3. Turn ON the pump power circuit. Initiate the pump operation to verify automatic "on/off" controls are operative. The pump should immediately turn ON.
4. Confirm pumping rate of each explosionproof grinder pump via drawdown test.
5. Consult the Manufacturer's Service Manual for detailed start-up procedures.

E. Upon completion of the start-up and testing, the Manufacturer shall submit to the Engineer the start-up authorization form describing the results of the tests performed for each explosionproof grinder pump station. Final acceptance of the system will not occur until authorization forms have been received for each pump station installed and any installation deficiencies corrected.

3.6 OPERATION AND MAINTENANCE

A. The Contractor shall supply four (4) copies of Operation and Maintenance Manuals to the Owner and the Engineer.

B. The Contractor shall supply one spare grinder pump cores, complete with all operational controls, level sensors, check valve, anti-siphon valve, pump/motor unit, and grinder. The Contractor shall also supply the one spare control panel and level sensor.

END OF SECTION 332217

SECTION 334113 - STORM SEWAGE SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Comply with Kentucky Department of Highways (KYDOH) Standard Specifications for Road and Bridge Construction.

1.2 SUMMARY

A. Related Sections: The following sections contain requirements that relate to this section:

1. Division 31 Section "Earthwork" for excavation and backfill required for storm sewerage system piping and structures.
2. Refer to KYDOH standard specifications for concrete and steel work required for storm sewerage systems.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Section 013300.

B. Product data for drainage piping and specialties.

C. Shop drawings for concrete storm drainage structures, including frames, covers, and grates.

D. In accordance with the requirements of the General and Special Conditions and this Section, the following table includes, but is not limited to, the items required to be submitted:

Item Description	Shop Drawings	Product Data	Schedules	Installation Data	Parts Lists	Wiring Diagram	Samples	O & M Manual	Certificates	Warranty	Report	Other
Pipe	X											
Structures	X											

Frames & Lids	X											
Grates	X											
Appurtenances	X											

1.4 QUALITY ASSURANCE

A. Environmental Compliance: Comply with applicable portions of local environmental agency regulations pertaining to storm sewerage systems.

PART 2 - PRODUCTS

2.1 PIPE AND FITTINGS

A. Reinforced Concrete Sewer Pipe and Fittings: ASTM C76, Class III, Wall B.

1. Joints: Bituminous mastic joints.

B. Corrugated Polyethylene Pipe: AASHTO M 294, Type S, (Smooth Interior).

1. Joints: Per manufacturers recommendation.

2.2 STORM SEWER STRUCTURES

A. Precast Concrete Structures: ASTM C 478 or ASTM C 858, precast reinforced concrete, of depth indicated. Sections shall have provision for rubber gasket joints. Base section slab shall have minimum thickness of 6 inches, riser sections shall have minimum thickness of 4 inches and be 48 inches inside diameter, and top section and grade rings shall match 24-inch frame and grate, unless otherwise indicated.

1. Base Section: Base riser section and separate base slab, or base riser section with integral floor.
2. Riser Sections: Sections shall be of lengths to provide depth indicated.
3. Top Section: Flat slab type with opening to match grade rings.
4. Grade Rings: Provide 2 or 3 reinforced concrete rings, of 6 inches total thickness.
5. Gaskets: ASTM C 443, rubber.
6. Steps: Cast into riser sidewall at 12- to 16-inch intervals.
7. Pipe Connectors: ASTM C 923, resilient, of size required, for each pipe connecting to base section.
8. Channel and Bench: Concrete.

B. Cast-in-Place Catch Basins: Reinforced concrete of dimensions and with appurtenances

indicated.

1. Bottom, Walls, and Top: Reinforced concrete.
2. Channel and Bench: Concrete.

C. Nyloplast Drain Basins.

D. Steps: Wide enough for an adult to place both feet on one step and designed to prevent lateral slippage off the step.

1. Material: Steel-reinforced plastic.

E. Frames and Grates: ASTM ASTM A48-83, Class 35B gray iron (H20 loading).

2.3 CONCRETE AND REINFORCEMENT

A. Concrete: Class A concrete per KYDOH standard specifications.

B. Reinforcement: ASTM A 615, Grade 60, deformed, per KYDOH Standard Specifications.

2.4 OUTFALLS

A. Riprap: KYDOH Class II Channel Lining or as otherwise indicated on the Drawings.

PART 3 - EXECUTION

3.1 EXCAVATION FOR PIPELINE TRENCHES

A. Unless otherwise directed by the Engineer, trenches in which pipes are to be laid shall be excavated in open cut to the depths required by field conditions or as specified by the Engineer. In general this shall be interpreted to mean that machine excavation in earth shall not extend below an elevation permitting the pipe to be properly bedded.

B. Trenches shall be of sufficient width to provide free working space on each side of the pipe and to permit proper backfilling around the pipe, but unless specifically authorized by the Engineer, trenches shall in no case be excavated or permitted to become wider then 610mm plus the nominal diameter of the pipe at the level of or below the top of the pipe. If the trench does become wider than 610mm at the level of or below the level of or below the top of the pipe, special precautions may be necessary, such as providing compacted, granular fill up to top of the pipe or providing pipe with additional crushing strength as determined by the Engineer after taking into account the actual trench loads that may result and the strength of the pipe being used; the Contractor shall bear the cost of such special precautions as are necessary.

C. All excavated materials shall be placed a minimum of 610mm back from the edge of the trench.

D. Before laying the pipe, the trench shall be opened far enough ahead to reveal obstructions that may necessitate changing the line or grade of the pipeline.

E. The trench shall be straight and uniform so as to permit laying pipe to lines and grades given by the Engineer. It shall be kept free of water during the laying of the pipe and until the pipeline has been backfilled. Removal of trench water shall be at the Contractor's expense. Dry conditions shall be maintained in the excavations until the backfill has been placed. During the excavation, the grade shall be maintained so that it will freely drain and prevent surface water from entering the excavation at all times. When directed by Owner, temporary drainage ditches shall be installed to intercept or direct surface water which may affect work. All water shall be pumped or drained from the excavation and disposed of in a suitable manner without damage to adjacent property or to other work.

F. Installation for flexible pipe shall be in accordance with ASTM D-2321 except as modified herein.

G. Installation for concrete pipe shall be in accordance with ACPA "Concrete Pipe Installation Manual."

3.2 DISPOSITION OF EXCAVATED MATERIALS

A. Excess material not needed for storm sewer line trench backfilling purposes shall be disposed of at the Contractor's expense.

3.3 PIPE BEDDING

A. All storm sewer pipe shall be supported on a bed of granular material. In no case shall pipe be supported directly on rock. Bedding shall be of such depth that the bottom of the bells of the pipe will be at least four inches above the bottom of the trench in earth and six inches above the bottom of rock as excavated.

B. In all cases the foundation for pipes shall be prepared so that the entire load of the backfill on top of the pipe will be carried on the barrel of the pipe and insofar as possible where bell and spigot pipe is involved so that none of the load will be carried on the bells.

C. Where flexible pipe is used, the bedding shall be placed up to at least 300mm above the top of the pipe. The bedding material and procedures shall conform to ASTM D-2321 and any Technical Specifications set out hereinafter. Granular bedding shall be Kentucky Department of Highways, Size #9 or ASTM C-33, Size #7 crushed stone, fine gravel, or sand.

D. In wet, yielding and mucky locations where pipe is in danger of sinking below grade or floating out of line or grade, or where backfill materials are of such a fluid nature that such movements of the pipe might take place during the placing of the backfill, the pipe must be weighted or

secured permanently in place by such means as will prove effective. When ordered by the Engineer, yielding and mucky materials in subgrades shall be removed below ordinary trench depth in order to prepare a proper bed for the pipe. Crushed stone if necessary, to replace poor subgrade material shall be a separate pay item.

3.4 LAYING PIPE

A. All pipe shall be inspected upon arrival. If any portion of a shipment is found to be defective in diameter or thickness, or found to be contaminated with fuel exhaust, the entire shipment shall be rejected and removed from the Project. All pipe shall be re-inspected immediately prior to laying for joint scratches, chipped ends and imperfect gasket seats. Any and all defective pipe shall be rejected and removed from the Project.

B. The laying of sewer pipe in finished trenches shall be commenced at the lowest point so that the spigot ends point in the direction of flow.

C. All pipes shall be laid with ends abutting and true to line and grade. They shall be fitted and matched so that when laid in the trench they will form a sewer with a smooth and uniform invert. Supporting of pipes shall be as set out hereinbefore under "Pipe Bedding" and in no case shall the supporting of pipes on blocks be permitted.

D. Before each piece of pipe is lowered into the trench, it shall be thoroughly inspected to insure its being clean. Each piece of pipe shall be lowered separately unless special permission is given otherwise by the Engineer. No piece of pipe or fittings which is known to be defective shall be laid or placed in the lines. If any defective pipe or fitting is discovered after the pipe is laid, they shall be removed and replaced with a satisfactory pipe or fitting without additional charge. In case a length of pipe is cut to fit in a line, it shall be so cut as to leave a smooth end at right angles to the longitudinal axis of the pipe.

E. Irregularities in subgrade in an earth trench shall be corrected by use of granular materials at the Contractor's expense -- a supply of which shall be available at trench side whenever pipe is being laid.

F. When laying of pipe is stopped for any reason, the exposed end of such pipe shall be closed with a plywood, manufactured, or other suitable plug fitted into the pipe bell, so as to exclude earth or other material, and precautions taken to prevent flotation of pipe by runoff into trench.

G. No backfilling (except for securing pipe in place) over pipe will be allowed until the Engineer has had an opportunity to make an inspection of the joints, alignment and grade in the section laid, but such inspection shall not relieve the Contractor of further liability in case of defective joints, misalignment caused by backfilling, and other such deficiencies that are noted later.

3.5 BACKFILLING PIPELINE TRENCHES

A. Place and compact bedding course on trench bottoms and where indicated. Shape bedding

course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits as specified under Section 3.02.

B. Backfill trenches excavated under footings and within 18 inches of bottom of footings; fill with concrete to elevation of bottom of footings.

C. Place and compact initial backfill of subbase material, free of particles larger than 1 inch, to a height of 12 inches over the utility pipe or conduit unless bedding materials is required as specified in Section 3.02.

1. Carefully compact material under pipe haunches and bring backfill evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of utility system.

D. Coordinate backfilling with utilities testing.

E. Fill voids with approved backfill materials while shoring and bracing, and as sheeting is removed.

F. Place and compact final backfill of satisfactory soil material to final subgrade as specified below:

1. Place backfill and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
2. Place backfill and fill materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.
3. Compact soil to not less than the following percentages of maximum dry unit weight according to ASTM D 1557:

a. Under structures, building slabs, steps, and pavements, recompact each layer of backfill or fill material at 95 percent.
b. Under lawn or unpaved areas, compact each layer of backfill or fill material at 85 percent.

3.6 STORM SEWER STRUCTURES

A. Construct structures to sizes and shapes indicated.

B. Set frames and grates to elevations indicated.

1. Provide concrete that will attain minimum 28-day compressive strength of 3,500 psi, unless otherwise indicated.
2. Use epoxy bonding compound as interface between new and existing concrete and piping materials.

C. Protect existing piping and structures to prevent concrete or debris from entering while making tap connections. Remove debris, concrete, or other extraneous material that may accumulate.

3.7 FIELD QUALITY CONTROL

A. Cleaning: Clear interior of piping and structures of dirt and other superfluous material as work progresses. Maintain swab or drag in piping and pull past each joint as it is completed.

B. Interior Inspection: Inspect piping to determine whether line displacement or other damage has occurred.

1. Make inspections after pipe between manholes and manhole locations has been installed and approximately 24 inches of backfill is in place, and again at completion of project.
2. If inspection indicates poor alignment, debris, displaced pipe, infiltration, or other defects, correct such defects and reinspect.

END OF SECTION 334113

CONSTRUCTION DOCUMENTS

LEXINGTON FIRE DEPARTMENT - PHASE 1
SITE DEVELOPMENT OF THE FIRE TRAINING CAMPUS

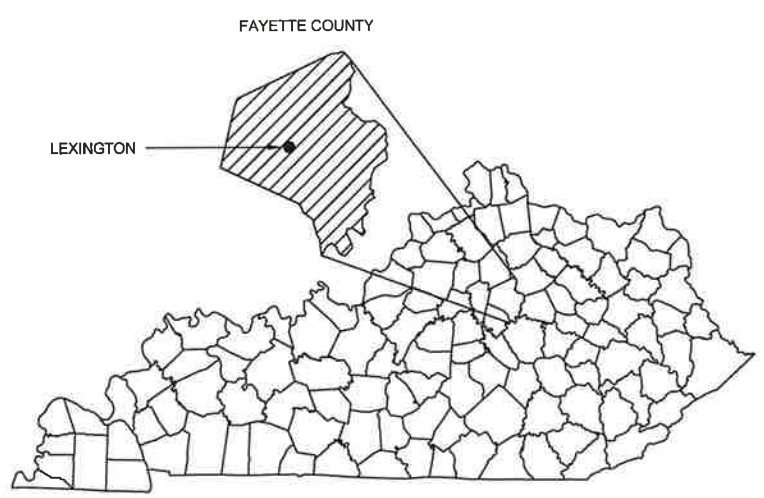
CITY OF LEXINGTON, KENTUCKY

JANUARY 23, 2026

VICINITY MAP



LOCATION MAP



DWG. No. INDEX OF DRAWINGS

G-001	COVER SHEET
	SURVEY BY ENDRIS ENGINEERING (2 SHEETS - SEPARATE PACKAGE)
CE-101	EROSION CONTROL PLAN
CE-501	EROSION CONTROL DETAILS
CD-100	DEMOLITION PLAN
CS-100	OVERALL SITE PLAN
CS-101	ENLARGED SITE PLAN
CS-102	ENLARGED SITE PLAN
CS-103	ENLARGED SITE PLAN
CS-501	SITE DETAILS
CS-502	SITE DETAILS
CS-503	SITE DETAILS
CS-504	SITE DETAILS
CG-100	OVERALL GRADING PLAN
CG-101	ENLARGED GRADING PLAN
CG-102	ENLARGED GRADING PLAN
CG-103	ENLARGED GRADING PLAN
CG-201	ROADWAY PLAN AND PROFILE
CG-202	ROADWAY PLAN AND PROFILE
CG-210	STORM PROFILES
CG-211	STORM PROFILES
CG-401	BRIDGE PLAN AND PROFILE
CU-100	UTILITY PLAN
CU-501	DUPLEX GRINDER PUMP STATION DETAILS
CU-502	UTILITY DETAILS
	BRIDGE PROPOSAL DRAWINGS * DELEGATED DESIGN (6 SHEETS)
	LANDSCAPE
L000	TREE PROTECTION PLAN - EXISTING
L001	TREE PROTECTION PLAN
L500	LANDSCAPE PLAN
L501	LANDSCAPE DETAILS
	STRUCTURAL
BF-001	BRIDGE FOUNDATION NOTES ELEVATIONS SECTIONS
BF-101	BRIDGE FOUNDATION DRILLED SHAFT PLAN
BF-102	BRIDGE FOUNDATION ABUTMENT SLAB BRIDGE PLAN
BF-501	BRIDGE FOUNDATION SECTIONS DETAILS
	ELECTRICAL
E-001	ELECTRICAL STANDARD SYMBOL AND GENERAL NOTES
E-101	ELECTRICAL SITE PLAN
E-401	ELECTRICAL ENLARGED SITE PLAN
E-501	ELECTRICAL DETAILS I
E-502	ELECTRICAL DETAILS II
E-601	ELECTRICAL ONE-LINE DIAGRAMS
E-701	ELECTRICAL SCHEDULES

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LEXINGTON

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT
DIVISION OF GENERAL SERVICES - CAPITAL PROJECT MANAGEMENT
200 EAST MAIN STREET | 4TH FLOOR | LEXINGTON, KY 40507 | 859.258.3900

LFUCG BID NUMBER - 01-2026

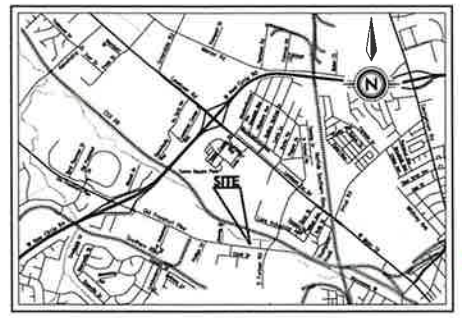
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GRW PROJECT NO. 5300-01
CLIENT PROJECT NO. 1-2026

PRINTED: 1/23/2026 @ 9:18AM

FILE NAME: G:\5300\1-FUCG FT F1\Working Drawings\Auto\CAD\5300-COVER.dwg



VICINITY MAP (SCALE: 1" = 2,500')

FEMA SPECIAL FLOOD HAZARD AREAS

BASED ON AN INSPECTION OF THE FEDERAL EMERGENCY MANAGEMENT AGENCY'S MAP NUMBER 21067C0117C, BOTH WITH A DATE OF REVISION OF MARCH 3, 2014 FOR COMMUNITY NUMBER 210067 (LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, STATE OF KENTUCKY) WHICH IS THE CURRENT FLOOD INSURANCE RATE MAP (FIRM) FOR THE COMMUNITY IN WHICH THE SUBJECT AREA LIES. A PORTION OF THE SUBJECT AREA LIES IN ZONE "AE", AN AREA WHICH IS SUBJECT TO A ONE PERCENT OR GREATER ANNUAL CHANCE OF FLOODING. BASE FLOOD ELEVATIONS HAVE BEEN DETERMINED TO BE 899.8' PER THE FIRM.

UTILITY OWNERS

ELECTRIC
KENTUCKY UTILITIES
500 STONE ROAD,
LEXINGTON, KY
RICHARD COMPTON
(859) 367-4309

WASTE WATER
LFUCG
DIVISION OF WATER QUALITY
LISLE INDUSTRIAL ROAD,
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WATER COMPANY
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CABLE TELEVISION
SPECTRUM
(CHARTER
COMMUNICATIONS)
1575 WINCHESTER ROAD
SUITE 140
LEXINGTON, KY
BRAD DEAN
(859) 317-6391

FIBER INTERNET
WITHERNET
3250 BLAZER PARKWAY
SUITE 100
LEXINGTON, KY 40509
JUDI SMITH
(859) 785-4262

STATE ROADS
TRANSPORTATION CABINET
DEPARTMENT OF HIGHWAYS
DISTRICT OFFICE NO. 7
800 NEWTOWN CT.,
LEXINGTON, KY 40511
(859) 246-2353

Kentucky 811

UNDERGROUND UTILITIES DISCLAIMER

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY OF OBSERVED EVIDENCE ONLY. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED, ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.

ZONING RESTRICTIONS

I-2 (HEAVY INDUSTRIAL)

MINIMUM LOT SIZE:	NO LIMITATION
MINIMUM LOT FRONTAGE	NO LIMITATION
MINIMUM FRONT YARD	20 FEET
MINIMUM EACH SIDE YARD	NO LIMITATION EXCEPT AS NOTED BELOW
MINIMUM REAR YARD	NO LIMITATION EXCEPT AS NOTED BELOW
MINIMUM USEABLE OPEN SPACE	NO LIMITATION
MINIMUM LOT COVERAGE	NO LIMITATION
MAXIMUM HEIGHT OF BUILDING	75', EXCEPT WHEN A SIDE OR REAR YARD ABUTS A PROFESSIONAL OFFICE OR RESIDENTIAL ZONE, THEN A 3:1 HEIGHT TO YARD RATIO

SPECIAL PROVISIONS:

1. ALL BUILDINGS, OUTSIDE STORAGE AREAS, LOADING AND WORKING AREAS (EXCEPT ACCESSORY PARKING) IN CONJUNCTION WITH USES WHICH ARE FIRST PERMITTED IN THE I-2 ZONE SHALL BE LOCATED AT LEAST THREE HUNDRED (300) FEET FROM ANY RESIDENTIAL ZONE AND AT LEAST ONE HUNDRED (100) FEET FROM ANY OTHER ZONE EXCEPT B-4, I-1, OR A-R.

2. LANDSCAPE BUFFER AREAS SHALL BE REQUIRED AS SET FORTH IN ARTICLE 18, AS TO TRANSFER STATIONS. EXCEPT IN ALL CASES AT LEAST A 15-FOOT LANDSCAPE BUFFER SHALL SURROUND THE TRANSFER STATION USE.

3. OUTSIDE STORAGE AND WORKING AREAS (EXCEPT ACCESSORY PARKING) SHALL BE ENCLOSED BY A SOLID WALL OR FENCE, NOT LESS THAN SIX (6) FEET IN HEIGHT.

SETBACK NOTE

THE BUILDING SETBACK LINES SHOWN HEREON ARE BASED ON THE SURVEYOR'S INTERPRETATION OF THE SETBACK REQUIREMENTS FOR THIS PROPERTY. THESE SETBACK LINES ARE SUBJECT TO THE INTERPRETATION OF AN APPROPRIATE GOVERNMENTAL AGENCY (I.E. BUILDING INSPECTION OR PLANNING/ZONING)

LEGEND

FOUND MONUMENT
AS NOTED
NAIL SET WITH ID WASHER (SET, PLS 3310)
24"-LONG, 5/8" DIAMETER REBAR WITH SURVEYOR'S CAP (SET, PLS 3310)
GROUND LIGHT
LIGHT POLE (LP)
STREET LIGHT (SLP)
FIRE HYDRANT (FH)
POWER POLE (PP)
ELECTRIC T.V. & T. PED. (TP)
WATER VALVE (WV)
WATER METER (WM)
POST INDICATOR VALVE (PIV)
GAS METER (GM)
GAS VALVE (GV)
SANITARY MANHOLE
STORM MANHOLE
ELECTRIC METER
SIGNS

GMP GALVANIZED METAL PIPE (STORM)
PVC PLASTIC PIPE
RCP CONCRETE PIPE
MTL METAL PIPE
VCP VITRIFIED CLAY PIPE
MH MANHOLE
INV INVERT ELEVATION
F.L. FLOW LINE ELEVATION
T.C. SURFACE ELEVATION (TOP-OF-CURB)
T.R. SURFACE ELEVATION (TOP-OF-RIM)
FFE FINISHED FLOOR ELEVATION
BFE BASE FLOOD ELEVATION
ICV IRRIGATION CONTROL VALVE
KAWC KENTUCKY AMERICAN WATER COMPANY
PROPERTY LINE
ADJOINING PROPERTY LINE
CHAIN LINK FENCE
BOARD FENCE
WATER LINE
WATER LINE (PER SERVICE MAP – NOT LOCATED)
GAS LINE
GAS LINE (PER SERVICE MAP – NOT LOCATED)
OVERHEAD ELECTRIC
OVERHEAD TELEPHONE/CABLE
UNDERGROUND ELEC PRC
UNDERGROUND CLEAN (NOT LOCATED)
UNDERGROUND FIBER OPTIC LINE (NOT NOT LOCATED)
SANITARY FORCE MAIN (PER PLANS BY LFUCG DIVISION OF WATER QUALITY – NOT NOT LOCATED)
(Per Plan) REFERS TO PLANS OR SERVICE MAPS FOR EXISTING UTILITIES AS

ORIGIN OF BEARINGS AND COORDINATES

THE BEARINGS AND COORDINATES SHOWN HEREON ARE BASED ON KENTUCKY STATE PLANE GRID NORTH, KENTUCKY STATE PLANE NORTH ZONE, NORTH AMERICAN DATUM OF 1983 (NAD 83). PARTICULARLY, THE BEARINGS AND COORDINATES ARE BASED ON A GNSS SURVEY UTILIZING A TRIMBLE R8 GNSS RECEIVER AND THE KYTC VRS SYSTEM

ORIGIN OF ELEVATIONS

THE ELEVATIONS SHOWN HEREON ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988. PARTICULARLY, THE ELEVATIONS ARE BASED ON A GNSS SURVEY UTILIZING A TRIMBLE R8 GNSS RECEIVER AND THE KYTC VRS SYSTEM.

METHOD OF SURVEY

THIS GROUND SURVEY WAS PREPARED USING A TRIMBLE S6 ROBOTIC TOTAL STATION. THE STATE PLANE COORDINATES SHOWN WERE DERIVED FROM A REAL-TIME (VIA CELLULAR COMMUNICATION) OBSERVATION UTILIZING A TRIMBLE R8 GNSS RECEIVER AND THE KYTC VRS SYSTEM.

GRAPHIC SCALE
(IN FEET)
1 inch = 30 ft

LAND SURVEYOR'S CERTIFICATION

I HEREBY DO CERTIFY THAT THIS SURVEY WAS PREPARED BY ME OR UNDER MY DIRECTION; AND THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE LOCATIONS AND ELEVATIONS SHOWN ARE TRUE AND ACCURATE. THE GROUND SURVEY UPON WHICH THIS MAP IS BASED WAS CONCLUDED ON JULY 15, 2024.

STATE OF KENTUCKY
KEVIN W. PHILLIPS
20310
LICENSED PROFESSIONAL LAND SURVEYOR

KEVIN W. PHILLIPS, PLS # 20310 — 08-30-2024 DATE

REVISION NUMBER	REVISION DATE	REVISION SUMMARY

ENDRIS engineering
771 ENTERPRISE DRIVE
LEXINGTON, KY 40510
PH: 859-253-1425
TOLL: 800-613-9244
FAX: 859-233-1436
Land Surveys - Construction Layout - GPS

Prepared For:

State Fire Rescue Training Center - Area 15

1345 Old Frankfort Pike
Lexington, Fayette County, Kentucky 40504

TOPOGRAPHIC SURVEY
LFUCG - Department of General Services - 200 East Main Street - Lexington, KY 40507

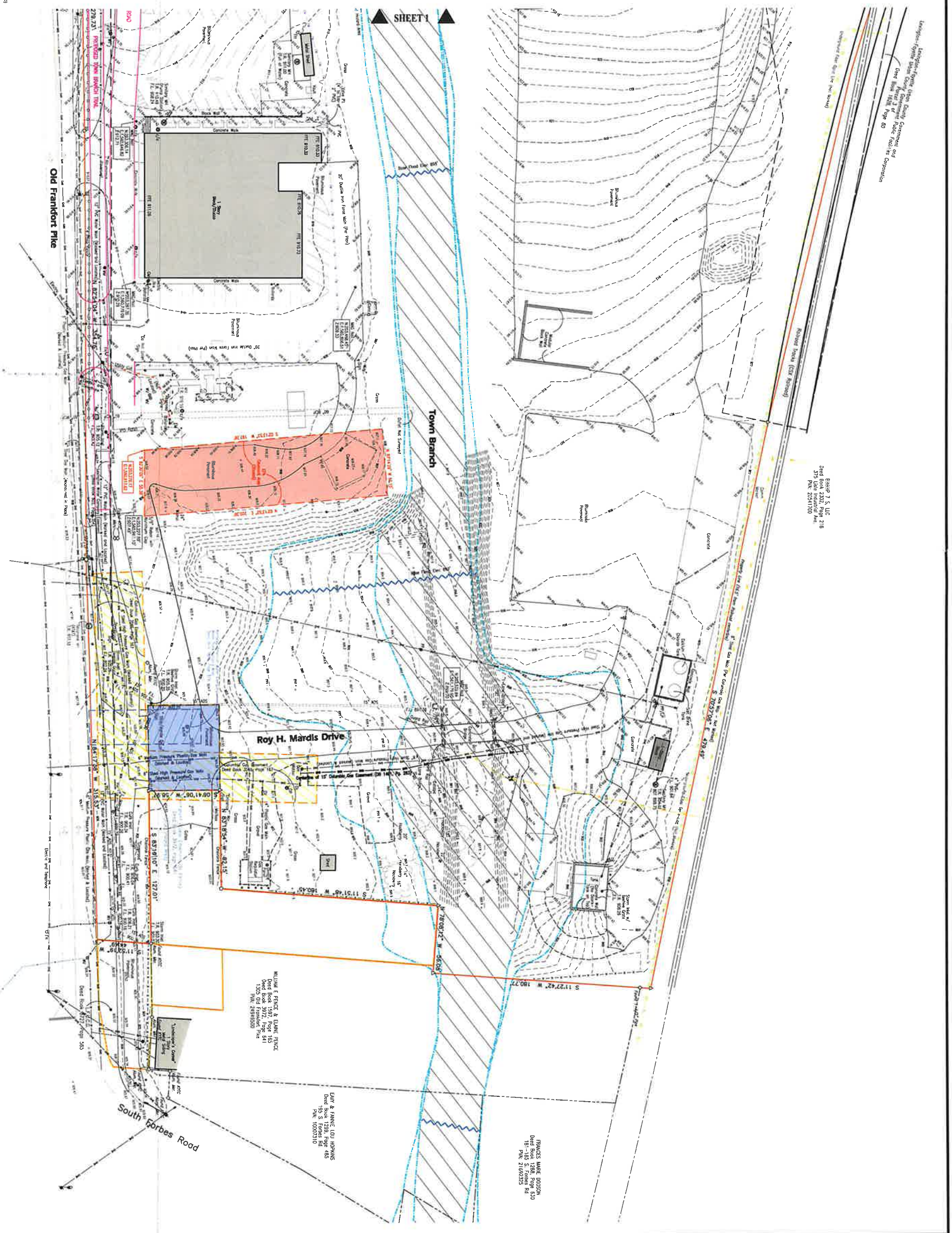
This plan does not represent a boundary survey and shall not be used for property transfer

SURVEY COMPLETED July 15, 2024

JOB NUMBER	4113
DRAWING DATE	08-30-2024
DRAWING FILE	4113 Fire Training 2024
SCALE:	1"=30'

0 30'

SHEET 1 of 2



JOB NUMBER 4113
DRAWING DATE 08-30-2024
DRAWING FILE 4113 LFUCG Fire Training Topo
SCALE: 1" = 30'
0 30'

SURVEY COMPLETED July 15, 2024

This plan and report is prepared for the exclusive use of the party to whom it is addressed. No responsibility is assumed for property transfer

TOPOGRAPHIC SURVEY

State Fire Rescue Training Center - Area 15

1345 Old Frankfort Pike
Lexington, Fayette County, Kentucky 40504

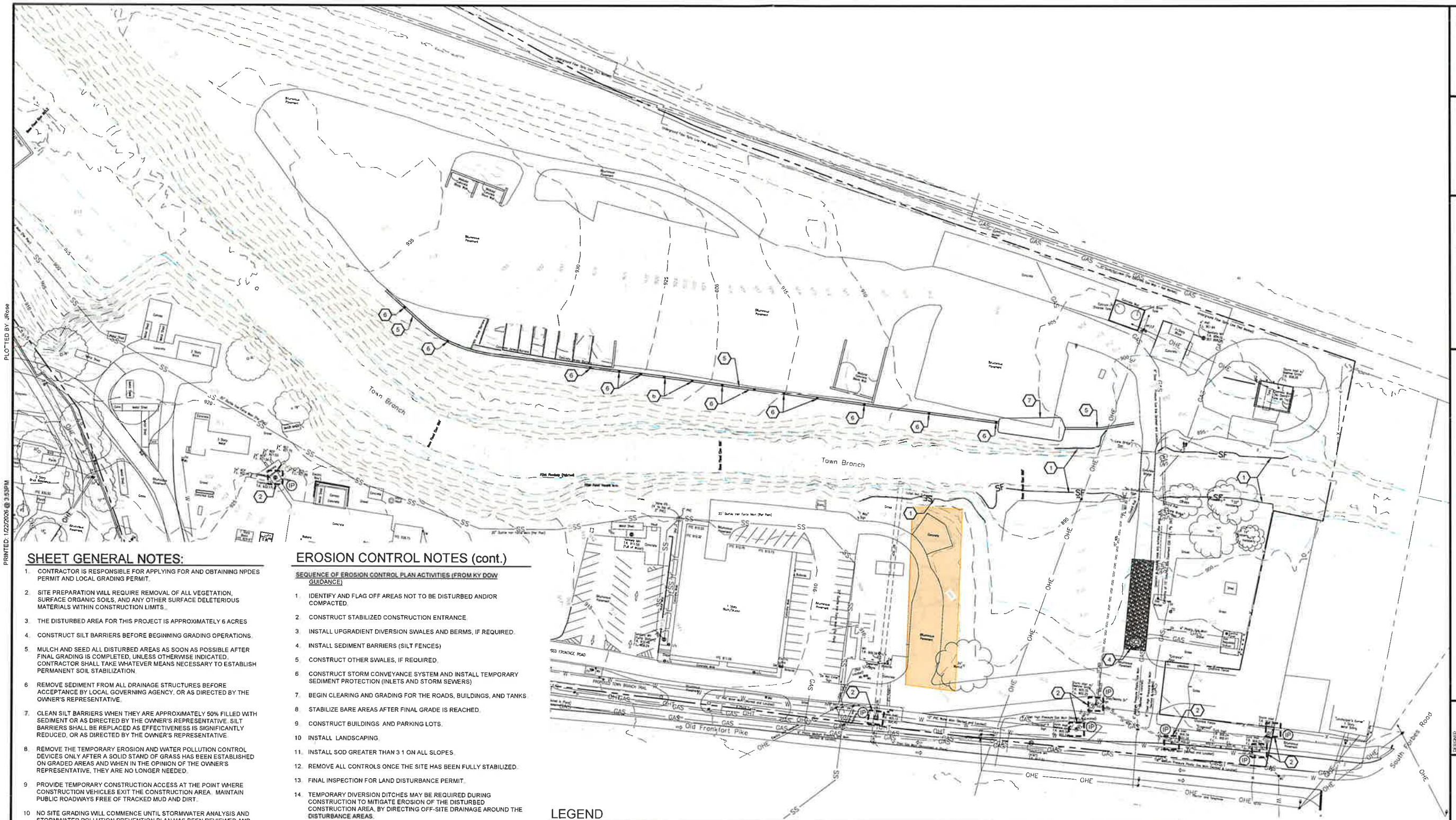
Prepared For:
LFUCG - Department of General Services - 200 East Main Street - Lexington, KY 40507

Prepared For:

ENDRIS engineering
771 ENTERPRISE DRIVE
LEXINGTON, KY 40510
PH: 859-253-1425
TOLL: 800-613-9244
FAX: 859-233-1436
Land Surveys - Construction Layout - GPS

REVISION NUMBER	REVISION DATE	REVISION SUMMARY
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

SHEET 2 of 2



SHEET GENERAL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR APPLYING FOR AND OBTAINING NPDES PERMIT AND LOCAL GRADING PERMIT.
2. SITE PREPARATION WILL REQUIRE REMOVAL OF ALL VEGETATION, SURFACE ORGANIC SOILS, AND ANY OTHER SURFACE DELETERIOUS MATERIALS WITHIN CONSTRUCTION LIMITS.
3. THE DISTURBED AREA FOR THIS PROJECT IS APPROXIMATELY 6 ACRES
4. CONSTRUCT SILT BARRIERS BEFORE BEGINNING GRADING OPERATIONS.
5. MULCH AND SEED ALL DISTURBED AREAS AS SOON AS POSSIBLE AFTER FINAL GRADING IS COMPLETED, UNLESS OTHERWISE INDICATED. CONTRACTOR SHALL TAKE WHATEVER MEANS NECESSARY TO ESTABLISH PERMANENT SOIL STABILIZATION.
6. REMOVE SEDIMENT FROM ALL DRAINAGE STRUCTURES BEFORE ACCEPTANCE BY LOCAL GOVERNING AGENCY, OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
7. CLEAN SILT BARRIERS WHEN THEY ARE APPROXIMATELY 50% FILLED WITH SEDIMENT OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE. SILT BARRIERS SHALL BE REPLACED AS EFFECTIVENESS IS SIGNIFICANTLY REDUCED, OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
8. REMOVE THE TEMPORARY EROSION AND WATER POLLUTION CONTROL DEVICES ONLY AFTER A SOLID STAND OF GRASS HAS BEEN ESTABLISHED ON GRADED AREAS AND WHEN IN THE OPINION OF THE OWNER'S REPRESENTATIVE, THEY ARE NO LONGER NEEDED.
9. PROVIDE TEMPORARY CONSTRUCTION ACCESS AT THE POINT WHERE CONSTRUCTION VEHICLES EXIT THE CONSTRUCTION AREA. MAINTAIN PUBLIC ROADWAYS FREE OF TRACKED MUD AND DIRT.
10. NO SITE GRADING WILL COMMENCE UNTIL STORMWATER ANALYSIS AND STORMWATER POLLUTION PREVENTION PLAN HAS BEEN REVIEWED AND APPROVED BY LFUCG DIVISION OF ENGINEERING. CONTRACTOR SHALL ACQUIRE WRITTEN APPROVAL PRIOR TO SITE DISTRUBING ACTIVITIES.

EROSION CONTROL NOTES (cont.)

SEQUENCE OF EROSION CONTROL PLAN ACTIVITIES (FROM KY DOW GUIDANCE)

1. IDENTIFY AND FLAG OFF AREAS NOT TO BE DISTURBED AND/OR COMPACTED.
2. CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE.
3. INSTALL UPGRADIENT DIVERSION SWALES AND BERMS, IF REQUIRED.
4. INSTALL SEDIMENT BARRIERS (SILT FENCES)
5. CONSTRUCT OTHER SWALES, IF REQUIRED.
6. CONSTRUCT STORM CONVEYANCE SYSTEM AND INSTALL TEMPORARY SEDIMENT PROTECTION (INLETS AND STORM SEWERS)
7. BEGIN CLEARING AND GRADING FOR THE ROADS, BUILDINGS, AND TANKS.
8. STABILIZE BARE AREAS AFTER FINAL GRADE IS REACHED.
9. CONSTRUCT BUILDINGS AND PARKING LOTS.
10. INSTALL LANDSCAPING.
11. INSTALL SOD GREATER THAN 3:1 ON ALL SLOPES.
12. REMOVE ALL CONTROLS ONCE THE SITE HAS BEEN FULLY STABILIZED.
13. FINAL INSPECTION FOR LAND DISTURBANCE PERMIT.
14. TEMPORARY DIVERSION DITCHES MAY BE REQUIRED DURING CONSTRUCTION TO MITIGATE EROSION OF THE DISTURBED CONSTRUCTION AREA, BY DIRECTING OFF-SITE DRAINAGE AROUND THE DISTURBANCE AREAS.

ALL EROSION AND SEDIMENT CONTROL MEASURES MUST BE IN PLACE PRIOR TO ANY DEMOLITION OR LAND DISTURBING ACTIVITY AND MUST REMAIN IN PLACE UNTIL FINAL SEEDING/SODDING. CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL REGULATIONS SET FORTH BY THE "NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM" AND IS RESPONSIBLE FOR WEEKLY EROSION CONTROL INSPECTIONS AND INSPECTIONS ANY TIME AFTER 1/2" OF RAIN. CONTRACTOR SHALL RETAIN THE SERVICES OF A QUALIFIED EROSION CONTROL INSPECTOR TO PERFORM ALL INSPECTIONS.

LEGEND

- EXISTING STREET LIGHT POLE
- EXISTING POWER POLE
- EXISTING TELEPHONE POLE
- EXISTING FIRE HYDRANT
- EXISTING LIGHT POLE
- EXISTING POST INDICATOR VALVE
- EXISTING CLEAN-OUT
- EXISTING SANITARY MANHOLE
- EXISTING SIGN
- EXISTING STORM INLET
- EXISTING STORM MANHOLE
- EXISTING WATER VALVE
- EXISTING WATER METER
- EXISTING GAS METER
- EXISTING GAS VALVE
- EXISTING ELECTRIC METER
- EXISTING CHAIN LINK FENCE
- EXISTING BOARD FENCE
- EXISTING FLOODPLAIN LIMITS
- EXISTING WATER LINE
- EXISTING GAS LINE
- EXISTING OVERHEAD ELECTRIC
- EXISTING OVERHEAD TELEPHONE/CABLE
- EXISTING UNDERGROUND ELECTRIC LINE
- EXISTING UNDERGROUND TELEPHONE/CABLE
- EXISTING UNDERGROUND SANITARY SEWER LINE
- EXISTING UNDERGROUND STORM SEWER LINE
- PROPERTY LINE
- XXX EXISTING CONTOUR
- TEMPORARY SILT FENCE
- IP TEMPORARY INLET PROTECTION
- SCE TEMPORARY CONSTRUCTION ENTRANCE

PATTERNS

- EXISTING EPA COVENANT AREA

SHEET KEYNOTES:

1. TEMPORARY SILT FENCE, SEE DETAIL 1/CE-501
2. TEMPORARY INLET PROTECTION, SEE DETAIL 2/CE-501
3. TEMPORARY EROSION CONTROL BLANKET, SEE DETAIL 3/CE-501
4. TEMPORARY CONSTRUCTION ENTRANCE, SEE DETAIL 4/CE-501
5. TEMPORARY DIVERSION DITCH, SEE DETAIL 5/CE-501
6. TEMPORARY ROCK CHECK DAM, SEE DETAIL 6/CE-501
7. TEMPORARY SEDIMENT POND, SEE DETAIL 7/CE-501

N

SCALE 1"= 50'
50' 25' 0 50' 100'

STATE OF KENTUCKY
RODERICK S SAYLOR 28004 LICENSED PROFESSIONAL ENGINEER
1-23-26

GRW PROJECT NO. 5300-01
CLIENT PROJECT NO. 1-2026

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CONSTRUCTION DOCUMENTS

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EROSION CONTROL PLAN

LFUCG FIRE TRAINING
CITY OF LEXINGTON, KENTUCKY

DESIGNED	DRAWN	REVIEWED	APPROVED
JCR	AMH	RSS	RSS

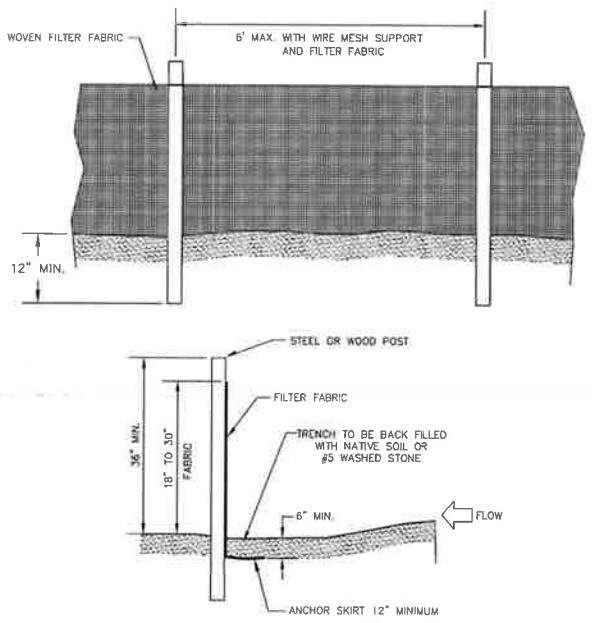
REVISIONS

NO	DESCRIPTION	DATE	BY

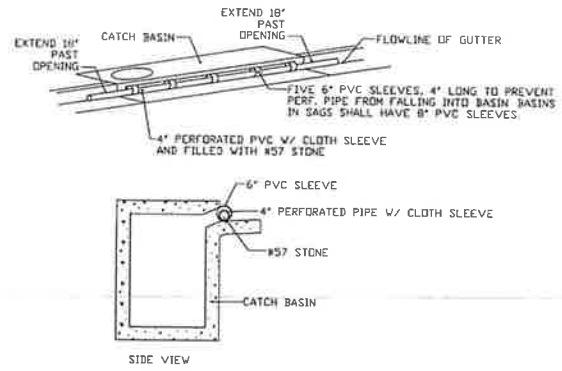
SCALE CHECK: THIS BAR SHOULD MEASURE EXACTLY 1" WHEN PLOTTED

DATE: JANUARY 23, 2026
SCALE: 1"=50'
SHEET NO: CE-101

PLOTTED BY: JRose
PRINTED: 1/22/2026 @ 1:53PM
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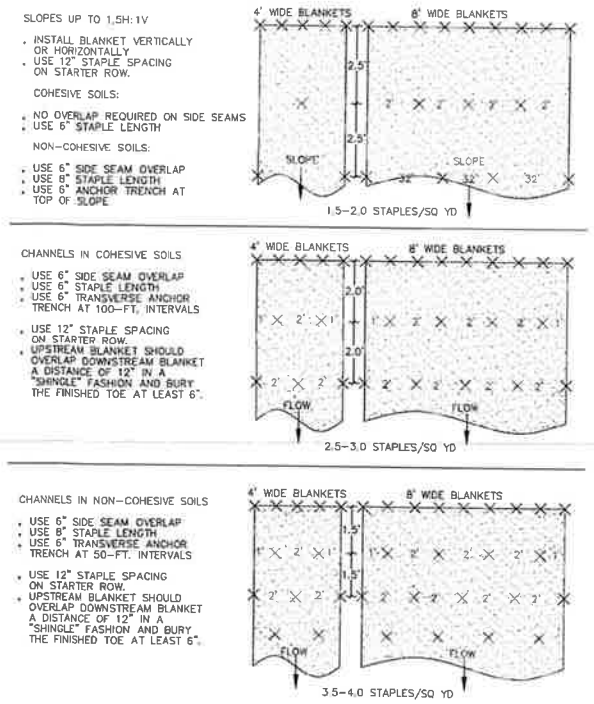


1 TEMPORARY SILT FENCE
NOT TO SCALE

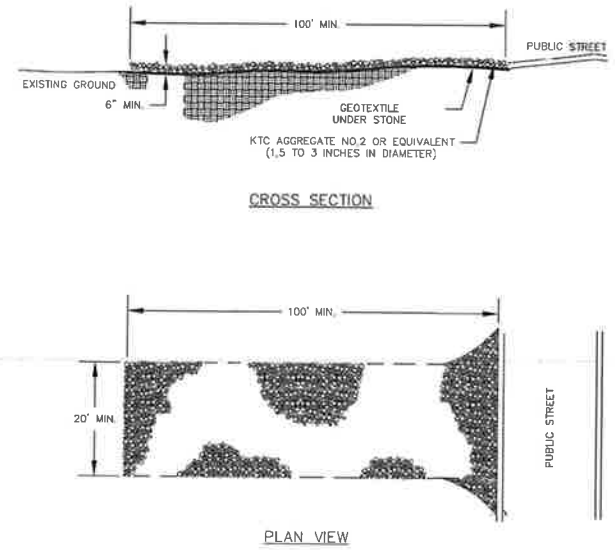


CATCH BASIN INLET PROTECTION DETAIL
N.T.S.

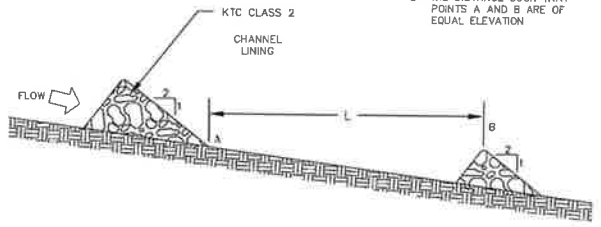
2 SILT TRAP TYPE C
NOT TO SCALE



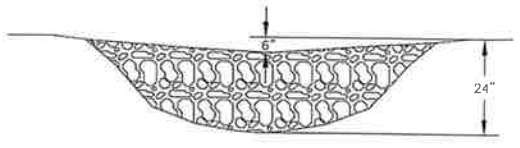
3 EROSION CONTROL BLANKET
NOT TO SCALE



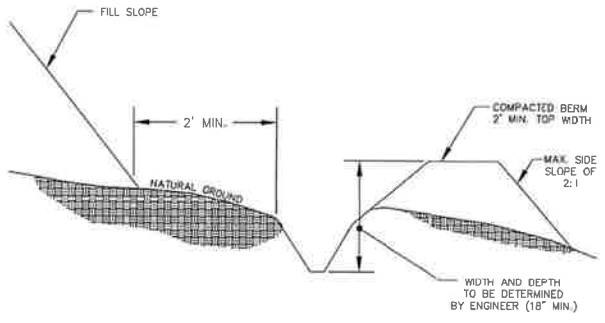
4 TEMPORARY ENTRANCE
NOT TO SCALE



LONGITUDINAL SECTION SHOWING SPACING BETWEEN CHECK DAMS

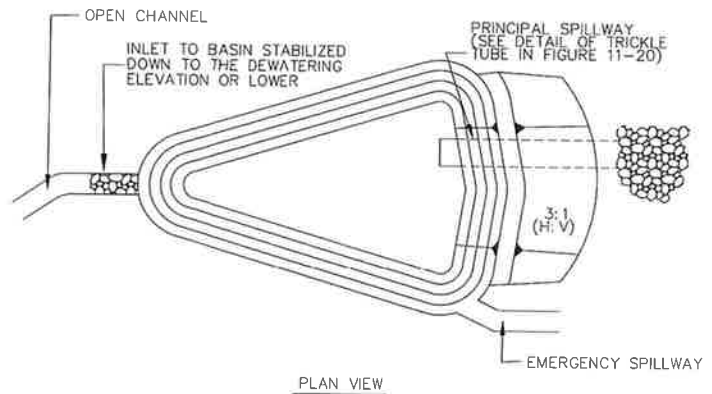


SECTION ACROSS CHANNEL



5 TEMPORARY DIVERSION DITCH
NOT TO SCALE

6 TEMPORARY ROCK CHECK DAM
NOT TO SCALE



PLAN VIEW
N.T.S.

7 TEMPORARY SEDIMENT POND
NOT TO SCALE

STATE OF KENTUCKY
RODERICK S. SAYLOR 28004
LICENSED PROFESSIONAL ENGINEER
1-23-26

CONSTRUCTION DOCUMENTS

GRW PROJECT NO. 5300-01
CLIENT PROJECT NO. 1-2026

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EROSION CONTROL DETAILS

LFUCG FIRE TRAINING
CITY OF LEXINGTON, KENTUCKY

DESIGNED	JCR
DRAWN	AMH
REVIEWED	RSS
APPROVED	RSS

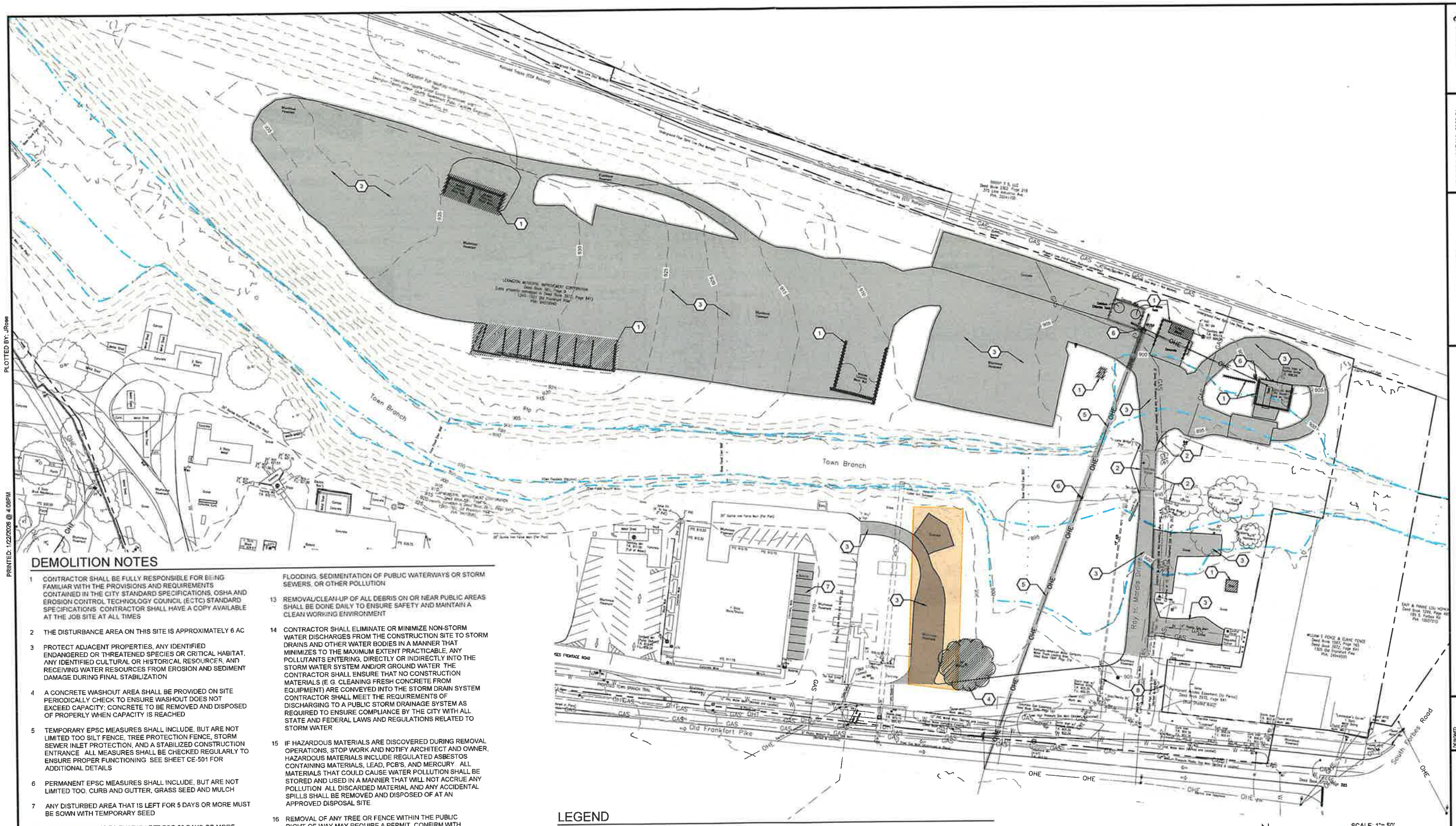
REVISIONS

NO	DESCRIPTION	DATE	BY

THIS ITEM PRODUCED ELECTRONICALLY FOR PLOTTING

DATE: JANUARY 23, 2026
SCALE: N.T.S.
SHEET NO.: CE-501

PLOTTED BY: JRose
PRINTED: 1/22/2026 @ 4:08PM
FILE NAME: G:\5300-LFUCG FT P1\Working Drawings\AutoCAD\5300-CE-501.dwg

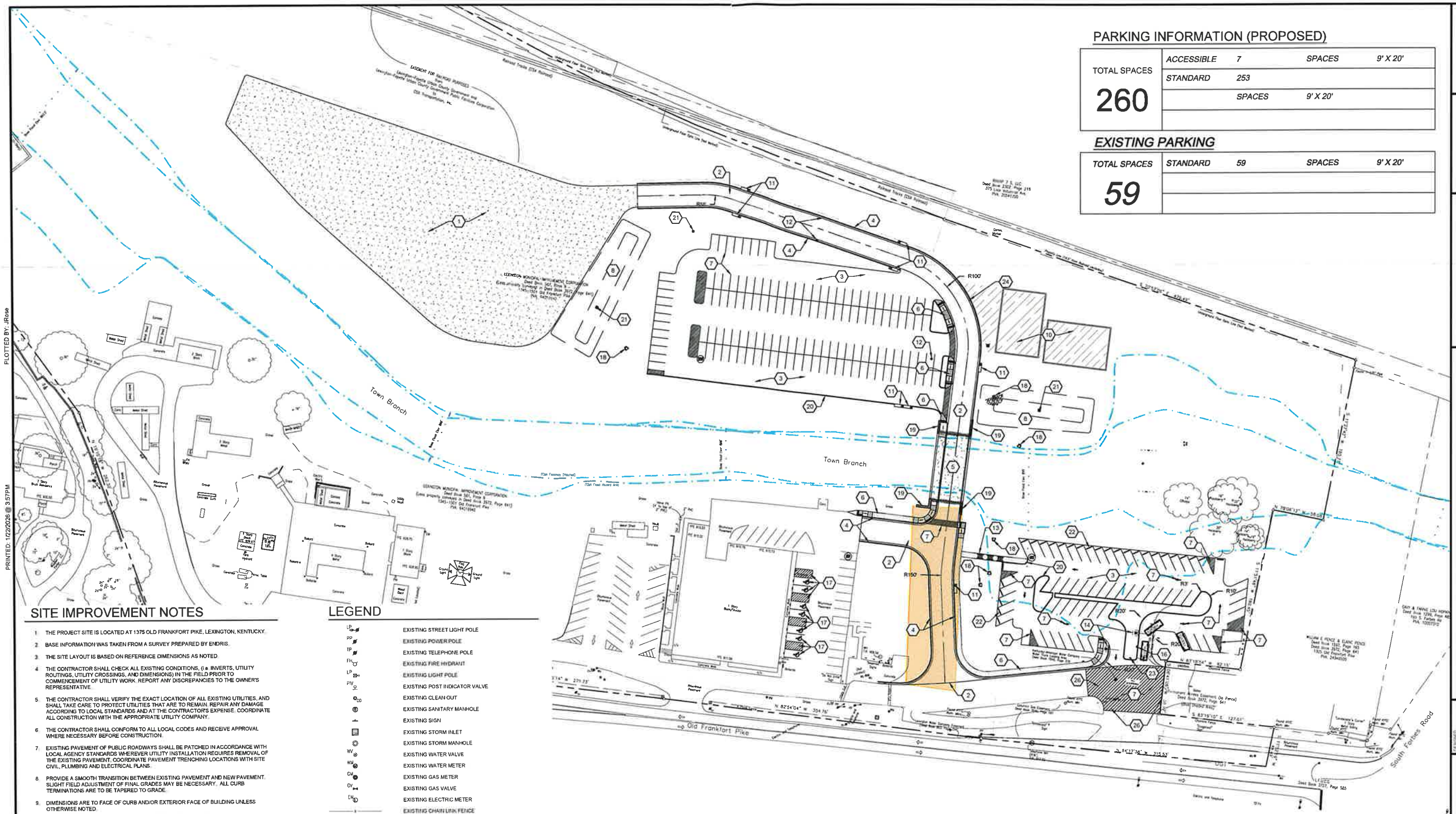

Town Branch
Town Branch
Old Frankfort Pike
South Peters Road
Roy H. Morris Dr.
FRONTAGE ROAD
LEXINGTON WATERFOWL IMPROVEMENT CORPORATION
Deed Book 361, Page 34
Deed Book 3512, Page 641
1243-1251 Old Frankfort Pike
PVA: 34010040
Waterfowl Preserve
Waterfowl Preserve
Waterfowl Preserve
Waterfowl Preserve
Waterfowl Preserve
Waterfowl Preserve
Nissan U S. LLC
Deed Book 3302, Page 218
375 Lee Jeans Ave.
PVA: 2041100
Deed Book 3572, Page 163
1303 Old Frankfort Pike
PVA: 2494000

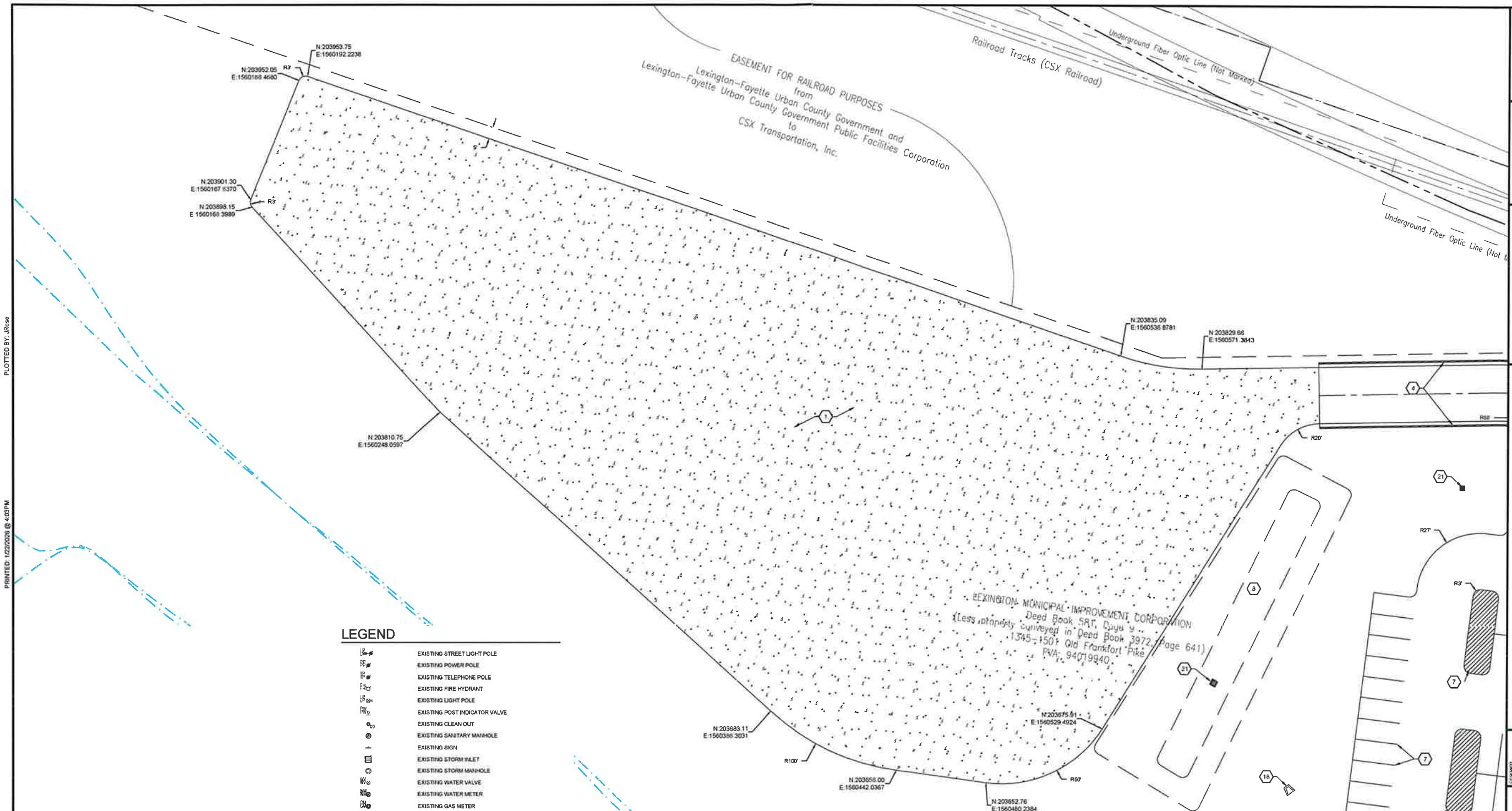
PARKING INFORMATION (PROPOSED)

TOTAL SPACES 260	ACCESSIBLE	7	SPACES	9' X 20'
	STANDARD	253		
		SPACES	9' X 20'	

EXISTING PARKING

TOTAL SPACES 59	STANDARD	59	SPACES	9' X 20'


Town Branch
Town Branch
Old Frankfort Pike
South Forbes Road
R100'
R150'
R100'
R100'
R100



LEGEND

- EXISTING STREET LIGHT POLE
- EXISTING POWER POLE
- EXISTING TELEPHONE POLE
- EXISTING FIRE HYDRANT
- EXISTING LIGHT POLE
- EXISTING POST INDICATOR VALVE
- EXISTING CLEAN OUT
- EXISTING SANITARY MANHOLE
- EXISTING SIGN
- EXISTING STORM INLET
- EXISTING STORM MANHOLE
- EXISTING WATER VALVE
- EXISTING WATER METER
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- EXISTING GAS LINE
- EXISTING OVERHEAD ELECTRIC
- EXISTING OVERHEAD TELEPHONE/CABLE
- EXISTING UNDERGROUND ELECTRIC LINE
- EXISTING UNDERGROUND TELEPHONE/CABLE
- EXISTING UNDERGROUND SANITARY SEWER LINE
- EXISTING UNDERGROUND STORM SEWER LINE
- PROPERTY LINE
- EXISTING FLOODPLAIN LIMITS
- NEW PARKING COUNT

SHEET KEYNOTES:

1. PROPOSED CONCRETE PAVEMENT DRIVING PAD, SEE 3/CS-501 FOR DETAIL. ALTERNATE TO BE HEAVY DUTY ASPHALT, SEE 2/CS-501 FOR DETAIL
2. PROPOSED HEAVY DUTY PAVEMENT, SEE 2/CS-501 FOR DETAIL
3. PROPOSED LIGHT DUTY PAVEMENT. SEE 1/CS-501 FOR DETAIL
4. PROPOSED LFUCG STANDARD CURB AND GUTTER. SEE 4/CS-501 FOR DETAIL
5. PROPOSED PREFABRICATED VEHICULAR BRIDGE WITH PEDESTRIAN SIDEWALK. SEE SEPARATE BRIDGE DRAWINGS USED AS BASIS OF DESIGN
6. PROPOSED CONCRETE SIDEWALK. SEE 5/CS-501 FOR DETAIL
7. PROPOSED PAVEMENT STRIPING. SEE 6/CS-503 FOR DETAIL
8. PROPOSED STORMWATER BIORETENTION AREA. SEE 1/CS-502 FOR DETAIL
9. NOT USED
10. FUTURE POLE BARN PAD
11. PROPOSED LFUCG CURB BOX INLET, SEE 2/CS-502 FOR DETAIL
12. PROPOSED STORM SEWER MANHOLE. SEE 8/CS-501 FOR DETAIL
13. PROPOSED CONCRETE STAIRCASE WITH HANDRAIL. SEE 1-2/CS-504 FOR DETAILS
14. PROPOSED TRAFFIC ARM WITH A NEW 3/4HP, 208V/1-PHASE HYSECURITY "STRONGARM 14F" OPERATOR. PROVIDE COMPELTE WITH UL 254 SAFETY DEVICES – GATE EDGE SENSORS, PHOTO EYES (TRANSMITTER/RECEIVER), INSIDE/OUTSIDE OBSTRUCTION LOOPS AND RESET LOOPS. TRAFFIC ARM CONTROLLER TO RECEIVE TM-619 PROGRAMMABLE TIMER OR EQUAL. SEE ELECTRICAL DRAWINGS AND SEE DETAIL 3/CS-502 FOR ADDITIONAL INFORMATION
15. NOT USED
16. PROPOSED INTERCOM PEDESTAL WITH CONCRETE BOLLARDS
17. PROPOSED ADA STRIPING AND SIGNAGE. SEE 2-3/CS-503 FOR DETAIL
18. PROPOSED LFUCG STORM HEADWALL. SEE 4/CS-502 FOR DETAIL
19. PROPOSED CONCRETE WINGWALLS. SEE STRUCTURAL PLANS FOR DETAILS
20. PROPOSED KYTC STANDARD HEADER CURB. SEE 15/CS-501 FOR DETAIL
21. PROPOSED LFUCG STANDARD AREA INLET. SEE 7/CS-501
22. PROPOSED RUBBER WHEEL STOP. SEE 6/CS-503 FOR DETAIL
23. PROPOSED DIRECTIONAL SIGNAGE. "KEEP RIGHT"
24. PROPOSED LFUCG STANDARD TYPE 4 ROLL CONCRETE CURB. SEE 3/CS-504 FOR DETAIL
25. PROPOSED KYTC CLASS II CHANNEL LINING. SEE 4/CS-504 FOR DETAIL
26. DEEDED ACCESS TO LANDSCAPER'S CORNER TO REMAIN CLEAR DURING CONSTRUCTION
27. PROPOSED PARKING LOT SIGNAGE. "LEXINGTON FIRE DEPARTMENT ONLY" (18"X24" OR 24"X30")
28. PROPOSED WAYFINDING SIGNAGE. "LEXINGTON FIRE DEPARTMENT - TRAINING ACADEMY" WITH WEST FACING ARROW TOWARDS EXISTING ACADEMY (24"X30")
29. PROPOSED SIGNAGE. "NO PUBLIC ACCESS - LEXINGTON FIRE DEPARTMENT PRIVATE PROPERTY"
30. PROPOSED SIDEWALK HANDRAIL WITH BRONZED ANODIZED FINISH. SEE 2/CS-504 FOR DETAIL
31. PROPOSED DETECTABLE WARNING. SEE 5/CS-504 FOR DETAIL

PATTERNS

- DENOTES NEW HEAVY DUTY ASPHALT PAVEMENT
- DENOTES NEW LIGHT DUTY ASPHALT PAVEMENT
- DENOTES NEW CONCRETE PAVING
- DENOTES NEW PAVEMENT STRIPING
- EXISTING EPA COVENANT AREA

STATE OF KENTUCKY
RODERICK S. SAYLOR
28004
LICENSED PROFESSIONAL ENGINEER
1-23-26

CONSTRUCTION DOCUMENTS

GRW PROJECT NO. 5300-01

CLIENT PROJECT NO. 1-2026

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ENLARGED SITE PLAN

LFUCG FIRE TRAINING
CITY OF LEXINGTON, KENTUCKY

DESIGNED	DRAWN	REVIEWED	APPROVED
JCR	JCR	RSS	RSS

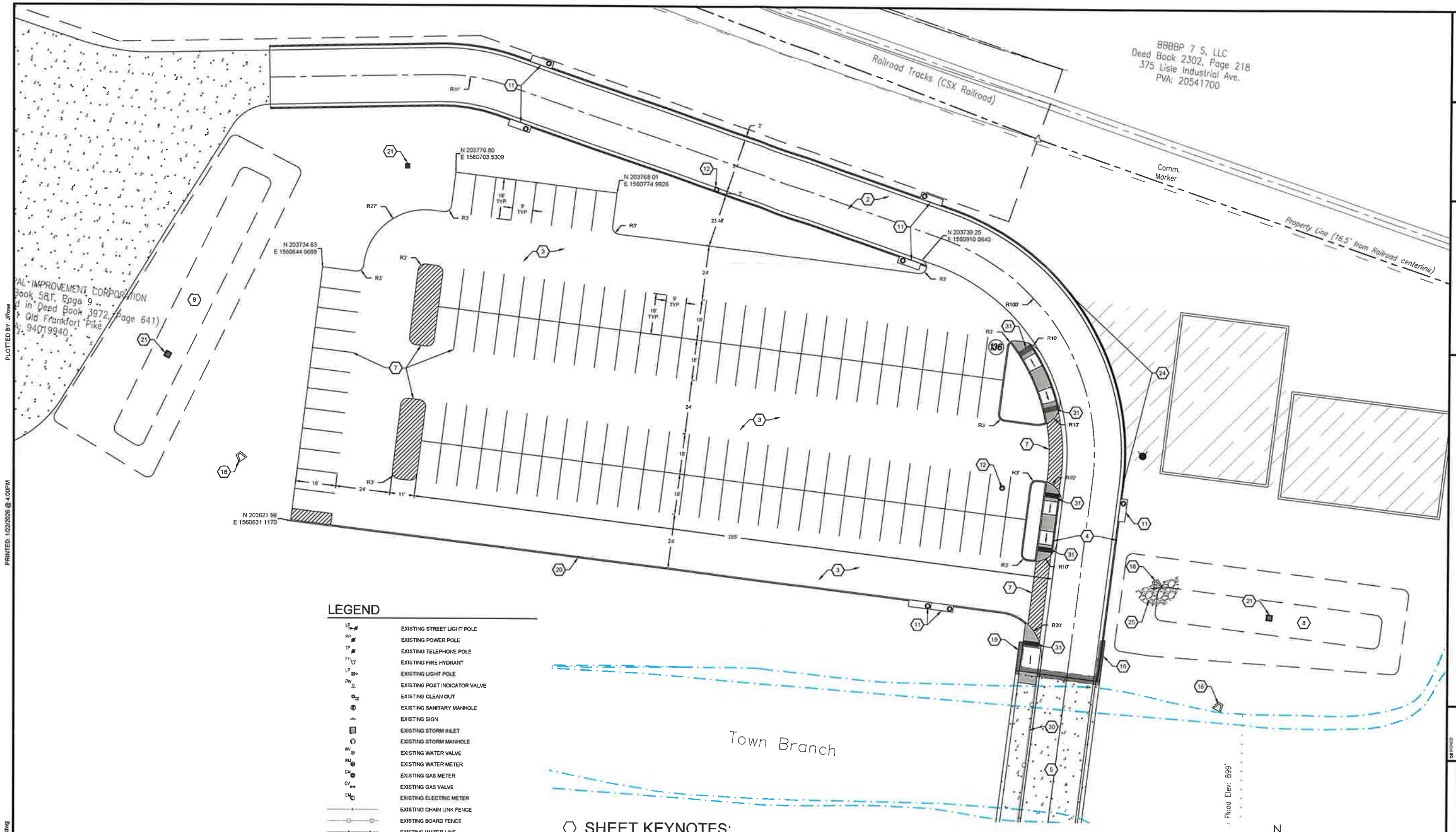
REVISIONS

NO	DESCRIPTION	DATE	BY

SCALE CHECK — find MARK SHOULD MEASURE EXACTLY 1"/4"/8"/16"/32"

DATE: JANUARY 23, 2026
SCALE: 1"=20'
SHEET NO.: CS-101

PLOTTED BY: JRose
PRINTED: 1/22/2026 @ 4:03PM
FILE NAME: G:\5300-LFUCG FT P\1\Working Drawings\AutoCAD\5300-CS-101.dwg



LEGEND

- EXISTING STREET LIGHT POLE
- EXISTING POWER POLE
- EXISTING TELEPHONE POLE
- EXISTING FIRE HYDRANT
- EXISTING LIGHT POLE
- EXISTING POST INDICATOR VALVE
- EXISTING CLEAN OUT
- EXISTING SANITARY MANHOLE
- EXISTING SIGN
- EXISTING STORM INLET
- EXISTING STORM MANHOLE
- EXISTING WATER VALVE
- EXISTING WATER METER
- EXISTING GAS METER
- EXISTING GAS VALVE
- EXISTING ELECTRIC METER
- EXISTING CHAIN LINK FENCE
- EXISTING BOARD FENCE
- EXISTING WATER LINE
- EXISTING GAS LINE
- EXISTING OVERHEAD ELECTRIC
- EXISTING OVERHEAD TELEPHONE/CABLE
- EXISTING UNDERGROUND ELECTRIC LINE
- EXISTING UNDERGROUND TELEPHONE/CABLE
- EXISTING UNDERGROUND SANITARY SEWER LINE
- EXISTING UNDERGROUND STORM SEWER LINE
- PROPERTY LINE
- EXISTING FLOODPLAIN LIMITS
- NEW PARKING COUNT

SHEET KEYNOTES:

1. PROPOSED CONCRETE PAVEMENT DRIVING PAD, SEE 3/CS-501 FOR DETAIL. ALTERNATE TO BE HEAVY DUTY ASPHALT, SEE 2/CS-501 FOR DETAIL
2. PROPOSED HEAVY DUTY PAVEMENT, SEE 2/CS-501 FOR DETAIL
3. PROPOSED LIGHT DUTY PAVEMENT, SEE 1/CS-501 FOR DETAIL
4. PROPOSED LFUCG STANDARD CURB AND GUTTER. SEE 4/CS-501 FOR DETAIL
5. PROPOSED PREFABRICATED VEHICULAR BRIDGE WITH PEDESTRIAN SIDEWALK, SEE SEPARATE BRIDGE DRAWINGS USED AS BASIS OF DESIGN
6. PROPOSED CONCRETE SIDEWALK. SEE 5/CS-501 FOR DETAIL
7. PROPOSED PAVEMENT STRIPING, SEE 6/CS-503 FOR DETAIL
8. PROPOSED STORMWATER BIORETENTION AREA. SEE 1/CS-502 FOR DETAIL
9. NOT USED
10. FUTURE POLE BARN PAD
11. PROPOSED LFUCG CURB BOX INLET. SEE 2/CS-502 FOR DETAIL
12. PROPOSED STORM SEWER MANHOLE. SEE 8/CS-501 FOR DETAIL
13. PROPOSED CONCRETE STAIRCASE WITH HANDRAIL. SEE 1-2/CS-504 FOR DETAILS
14. PROPOSED TRAFFIC ARM WITH A NEW 3/4HP, 208V/1-PHASE HYSECURITY "STRONGARM 14F" OPERATOR. PROVIDE COMPELTE WITH UL 254 SAFETY DEVICES – GATE EDGE SENSORS, PHOTO EYES (TRANSMITTER/RECEIVER). INSIDE/OUTSIDE OBSTRUCTION LOOPS AND RESET LOOPS. TRAFFIC ARM CONTROLLER TO RECEIVE TM-619 PROGRAMMABLE TIMER OR EQUAL. SEE ELECTRICAL DRAWINGS AND SEE DETAIL 3/CS-502 FOR ADDITIONAL INFORMATION
15. NOT USED
16. PROPOSED INTERCOM PEDESTAL WITH CONCRETE BOLLARDS
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18. PROPOSED LFUCG STORM HEADWALL. SEE 4/CS-502 FOR DETAIL
19. PROPOSED CONCRETE WINGWALLS. SEE STRUCTURAL PLANS FOR DETAILS
20. PROPOSED KYTC STANDARD HEADER CURB. SEE 15/CS-501 FOR DETAIL
21. PROPOSED LFUCG STANDARD AREA INLET. SEE 7/CS-501
22. PROPOSED RUBBER WHEEL STOP. SEE 6/CS-503 FOR DETAIL
23. PROPOSED DIRECTIONAL SIGNAGE. "KEEP RIGHT"
24. PROPOSED LFUCG STANDARD TYPE 4 ROLL CONCRETE CURB. SEE 3/CS-504 FOR DETAIL
25. PROPOSED KYTC CLASS II CHANNEL LINING. SEE 4/CS-504 FOR DETAIL
26. DEEDED ACCESS TO LANDSCAPER'S CORNER TO REMAIN CLEAR DURING CONSTRUCTION
27. PROPOSED PARKING LOT SIGNAGE, "LEXINGTON FIRE DEPARTMENT ONLY" (16"X24" OR 24"X30")
28. PROPOSED WAYFINDING SIGNAGE, "LEXINGTON FIRE DEPARTMENT - TRAINING ACADEMY ' WITH WEST FACING ARROW TOWARDS EXISTING ACADEMY (24"X30")
29. PROPOSED SIGNAGE "NO PUBLIC ACCESS - LEXINGTON FIRE DEPARTMENT PRIVATE PROPERTY"
30. PROPOSED SIDEWALK HANDRAIL WITH BRONZED ANODIZED FINISH. SEE 2/CS-504 FOR DETAIL
31. PROPOSED DETECTABLE WARNING. SEE 5/CS-504 FOR DETAIL

N

SCALE: 1"= 20'

20' 10' 0 20' 40'

PATTERNS

- DENOTES NEW HEAVY DUTY ASPHALT PAVEMENT
- DENOTES NEW LIGHT DUTY ASPHALT PAVEMENT
- DENOTES NEW CONCRETE PAVING
- DENOTES NEW PAVEMENT STRIPING
- EXISTING EPA COVENANT AREA

STATE OF KENTUCKY
RODERICK S. SAYLOR
28004
LICENSED PROFESSIONAL ENGINEER
1-23-26

CONSTRUCTION DOCUMENTS

GRW PROJECT NO. 5300-01

CLIENT PROJECT NO. 1-2026

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ENLARGED SITE PLAN

LFUCG FIRE TRAINING
CITY OF LEXINGTON, KENTUCKY

DESIGNED	JCR
DRAWN	JCR
REVIEWED	RSS
APPROVED	RSS

REVISIONS

NO	DESCRIPTION	DATE	BY

THIS MARK SHOULD MEASURE EXACTLY 1" WHEN PLOTTED

SCALE CHECK

DATE: JANUARY 23, 2026

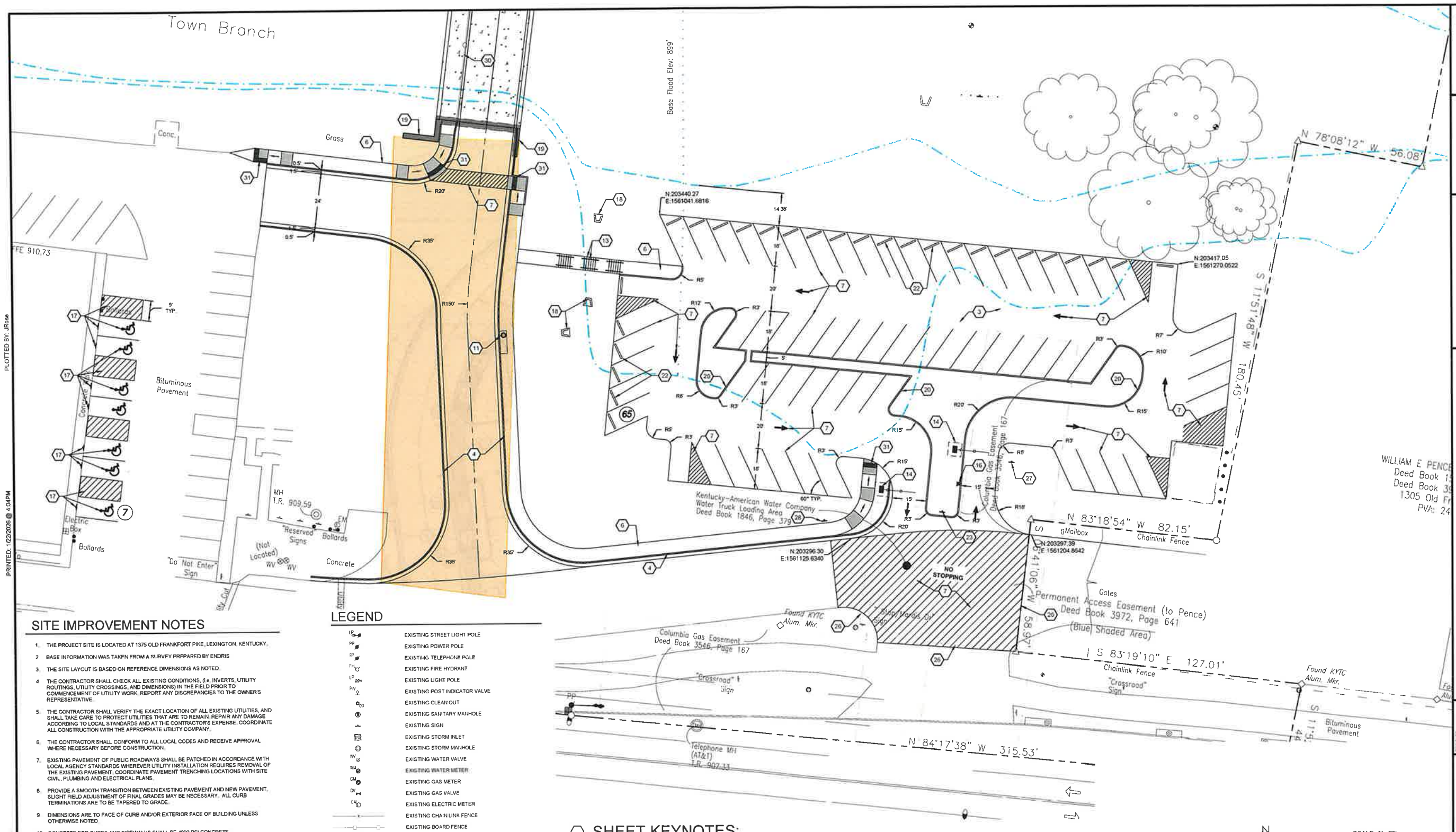
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SHEET NO.: CS-102

PLOTTED BY: JRose

PRINTED: 1/22/2026 @ 4:00PM

FILE NAME: G:\5300-LFUCG FT P1\Working Drawings\AutoCAD\5300-CS-102.dwg



SITE IMPROVEMENT NOTES

1. THE PROJECT SITE IS LOCATED AT 1375 OLD FRANKFORT PIKE, LEXINGTON, KENTUCKY.
2. BASE INFORMATION WAS TAKEN FROM A SURVEY PREPARED BY ENDRIS
3. THE SITE LAYOUT IS BASED ON REFERENCE DIMENSIONS AS NOTED.
4. THE CONTRACTOR SHALL CHECK ALL EXISTING CONDITIONS, (I.e. INVERTS, UTILITY ROUTINGS, UTILITY CROSSINGS, AND DIMENSIONS) IN THE FIELD PRIOR TO COMMENCEMENT OF UTILITY WORK. REPORT ANY DISCREPANCIES TO THE OWNER'S REPRESENTATIVE.
5. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF ALL EXISTING UTILITIES, AND SHALL TAKE CARE TO PROTECT UTILITIES THAT ARE TO REMAIN. REPAIR ANY DAMAGE ACCORDING TO LOCAL STANDARDS AND AT THE CONTRACTOR'S EXPENSE. COORDINATE ALL CONSTRUCTION WITH THE APPROPRIATE UTILITY COMPANY.
6. THE CONTRACTOR SHALL CONFORM TO ALL LOCAL CODES AND RECEIVE APPROVAL WHERE NECESSARY BEFORE CONSTRUCTION.
7. EXISTING PAVEMENT OF PUBLIC ROADWAYS SHALL BE PATCHED IN ACCORDANCE WITH LOCAL AGENCY STANDARDS WHEREVER UTILITY INSTALLATION REQUIRES REMOVAL OF THE EXISTING PAVEMENT. COORDINATE PAVEMENT TRENCHING LOCATIONS WITH SITE CIVIL, PLUMBING AND ELECTRICAL PLANS.
8. PROVIDE A SMOOTH TRANSITION BETWEEN EXISTING PAVEMENT AND NEW PAVEMENT. SLIGHT FIELD ADJUSTMENT OF FINAL GRADES MAY BE NECESSARY. ALL CURB TERMINATIONS ARE TO BE TAPERED TO GRADE.
9. DIMENSIONS ARE TO FACE OF CURB AND/OR EXTERIOR FACE OF BUILDING UNLESS OTHERWISE NOTED.
10. CONCRETE FOR CURBS AND SIDEWALKS SHALL BE 4000 PSI CONCRETE.
11. ANY WORK UNACCEPTABLE TO THE OWNER'S REPRESENTATIVE OR TO THE LOCAL GOVERNING AUTHORITY SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER.
12. ALL SIDEWALKS & HANDICAP RAMPS SHALL BE BUILT TO ADA STANDARDS.
13. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR EXACT BUILDING DIMENSIONS
14. THE CONTRACTOR SHALL PAVE IN THE DIRECTION OF TRAFFIC.
15. THE CONTRACTOR WILL BE REQUIRED TO ADJUST GRADES OF INTERSECTING STREETS, ALLEYS, PUBLIC ENTRANCES AND PRIVATE DRIVES AS DIRECTED BY THE ENGINEER.
16. ALL ROADWAY AND SIDEWALK CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS AND SPECIFICATIONS OF LOCAL AND/OR STATE GOVERNING AGENCY.
17. ALL CONSTRUCTION MATERIALS AND INSTALLATION SHALL CONFORM TO LOCAL AND/OR GOVERNING AGENCY REGULATIONS AND SPECIFICATIONS.
18. ALL PAVEMENT MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE LOCAL GOVERNING AGENCY AND KYTC STANDARDS AND SPECIFICATIONS.
19. ALL PAINTED TEXT SHALL BE PER CURRENT MUTCD REQUIREMENTS.
20. THE CONTRACTOR SHALL INSTALL NECESSARY TRAFFIC CONTROL SAFETY BARRICADES, LIGHTING, AND OTHER REQUIRED CONTROL MEASURES TO SECURE THE WORK AREA FROM EXISTING TRAFFIC AND TO ASSURE PUBLIC SAFTEY.
22. THE CONTRACTOR IS RESPONSIBLE FOR FULLY MAINTAINING THE SITE UNTIL THE WORK IS ACCEPTED IN TOTAL BY THE OWNER.
23. ANY DEFICIENCIES WITHIN THE SITE PRIOR TO TOTAL ACCEPTANCE BY THE OWNER MUST BE REPLACED IN KIND PER STANDARD DRAWINGS AND SPECIFICATIONS.

LEGEND

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N

SCALE: 1"= 20'
20' 10' 0 20' 40'

PATTERNS

- DENOTES NEW HEAVY DUTY ASPHALT PAVEMENT
- DENOTES NEW LIGHT DUTY ASPHALT PAVEMENT
- DENOTES NEW CONCRETE PAVING
- DENOTES NEW PAVEMENT STRIPING
- EXISTING EPA COVENANT AREA

PLOTTED BY: JRose
PRINTED: 1/22/2026 @ 4:04PM
FILE NAME: G:\5300-LFUCG FT P1\Working Drawings\Auto\CAD\5300-CS-103.dwg

RODERICK S. SAYLOR 28004 LICENSED PROFESSIONAL ENGINEER
STATE OF KENTUCKY
1-23-26

CONSTRUCTION DOCUMENTS

GRW PROJECT NO. 5300-01
CLIENT PROJECT NO. 1-2026

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ENLARGED SITE PLAN

LFUCG FIRE TRAINING
CITY OF LEXINGTON, KENTUCKY

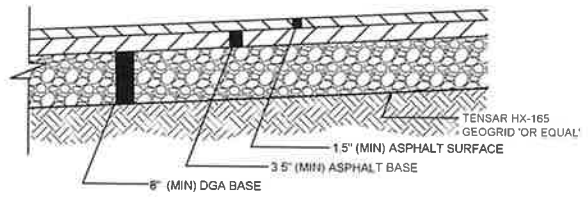
DESIGNED	DRAWN	REVIEWED	APPROVED
JCR	JCR	RSS	RSS

REVISIONS

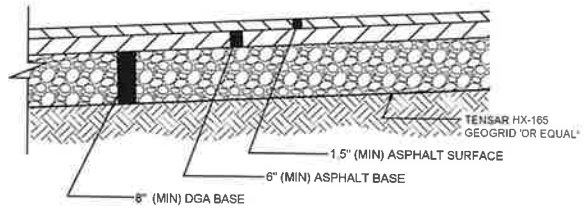
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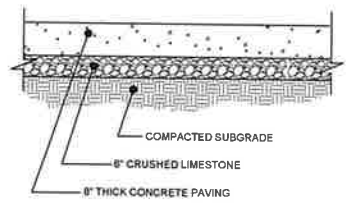
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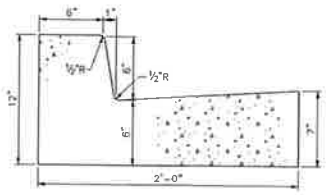
1 TYP. LIGHT DUTY ASPHALT PAVEMENT
NOT TO SCALE



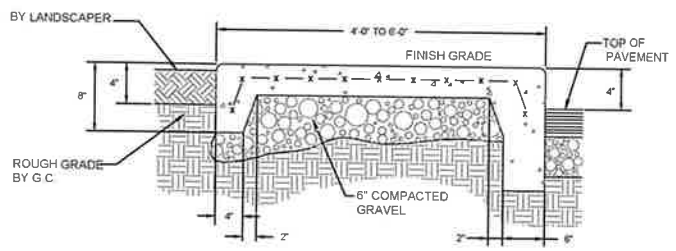
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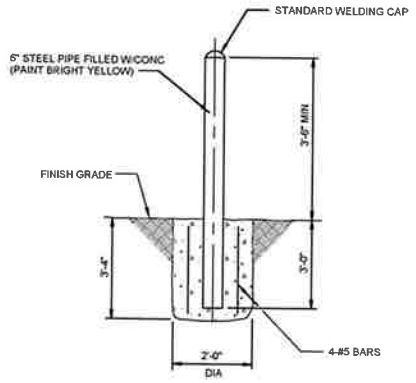
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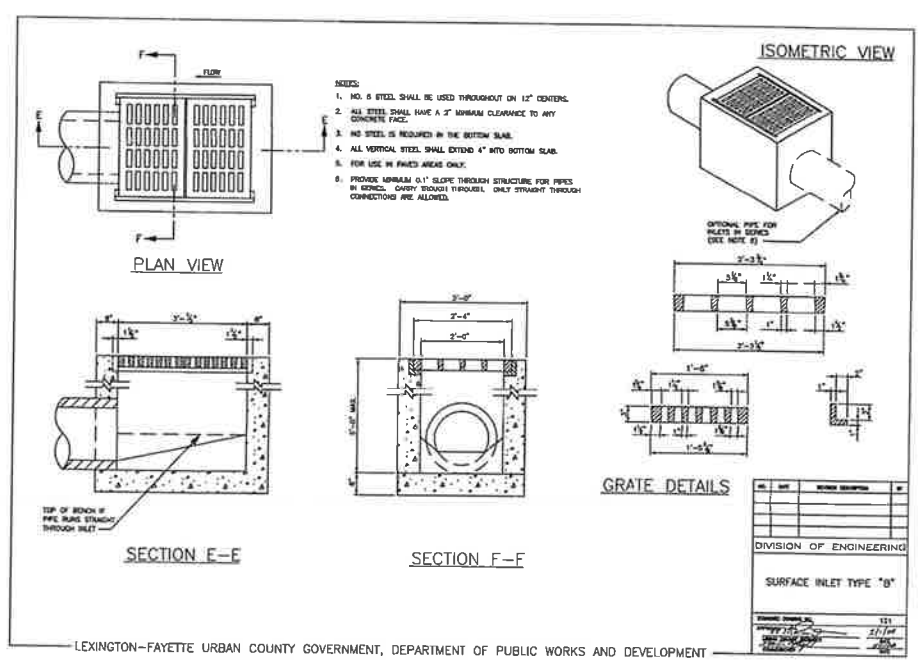
4 LFUCG STANDARD CURB AND GUTTER
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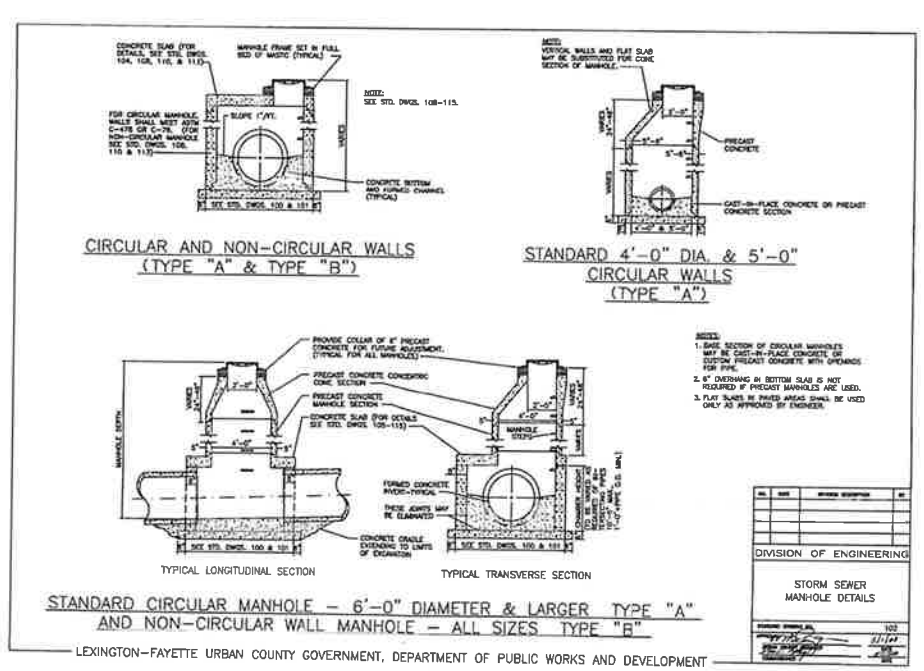
5 CONCRETE SIDEWALK
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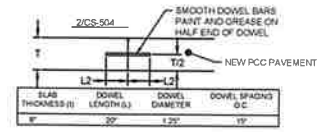
6 BOLLARD DETAIL
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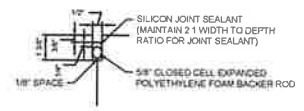
7 LFUCG STANDARD SURFACE INLET
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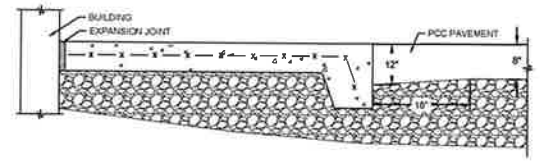
8 LFUCG STANDARD STORM SEWER MANHOLE
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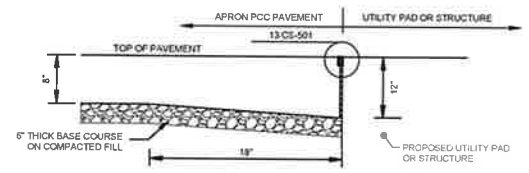
9 "F" DOWELED CONSTRUCTION JOINT
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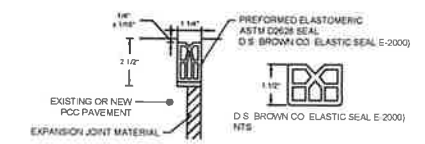
10 JOINT SEALANT DETAIL
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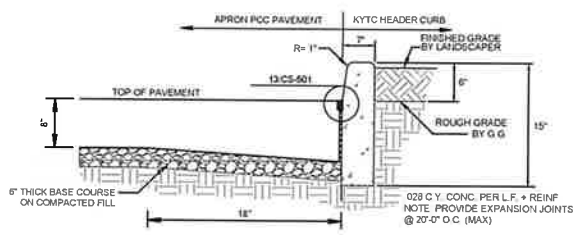
11 "T" THICKENED EDGE EXPANSION JOINT TO SIDWALK TO BUILDING
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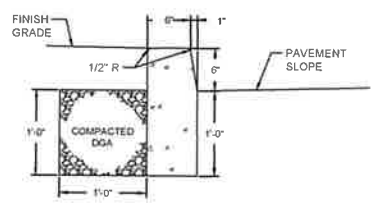
12 "B" EXPANSION JOINT
NOT TO SCALE



13 "B" EXPANSION JOINT
NOT TO SCALE



14 "B" EXPANSION JOINT @ CURB
NOT TO SCALE



15 KYTC HEADER CURB
NOT TO SCALE

PLOTTED BY: JRose
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RODERICK S. SAYLOR 28004 LICENSED PROFESSIONAL ENGINEER
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CONSTRUCTION DOCUMENTS

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SITE DETAILS

LFUCG FIRE TRAINING
CITY OF LEXINGTON, KENTUCKY

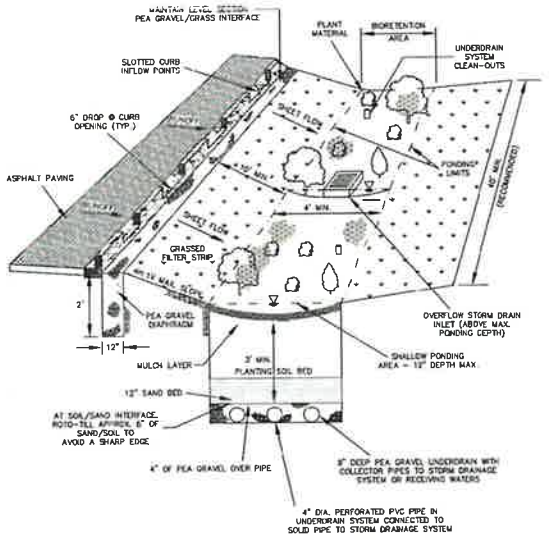
DESIGNED	DRAWN	REVIEWED	APPROVED
JCR	JCR	RSS	RSS

REVISIONS

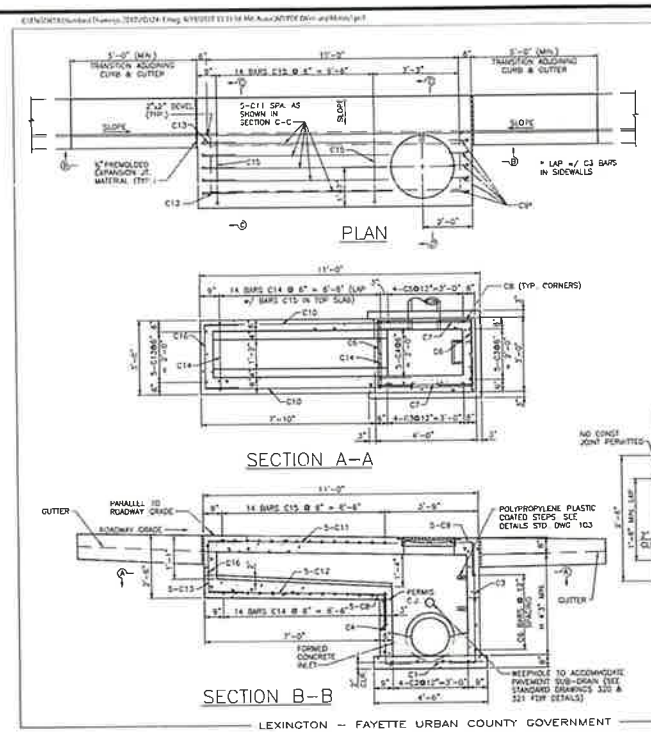
NO.	DATE	DESCRIPTION	BY
3			

THIS BARRA SHOULD MEASURE EXACTLY 1" WHEN PLOTTED
SCALE CHECK

DATE
JANUARY 23, 2026
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AS NOTED
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CS-501



1 LFUCG BIORETENTION SYSTEM
NOT TO SCALE



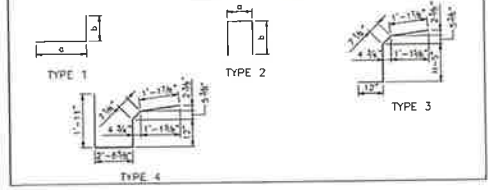
LEXINGTON
DIVISION OF ENGINEERING
CURB BOX INLET TYPE "C"
4'X3' BOX
SINGLE PIPE
15" OR LESS
124-1

BILL OF REINFORCEMENT

MARK	TYPE	SIZE	NO.	LENGTH FT	LENGTH IN	LOCATION	a FT	a IN	b FT	b IN	c FT	c IN	d FT	d IN
C1	STR	#3	7	4	2	FOOTING								
C2	STR	#3	4	3	2	FOOTING								
C3	1	#3	9	m+(1'-10")		CHAMBER WALLS	1	0	m+10"					
C4	1	#5	5	m-6"		CHAMBER WALLS	1	0	m+(1'-4")					
C5	2	#5	4	m+(2'-4")		CHAMBER WALLS								
C6	STR	#5	7*	2	8	CHAMBER WALLS								
C7	STR	#5	6*	3	8	CHAMBER WALLS								
C8	1	#5	19*	2	8	CORNERS	1	4	1	4				
C9	1	#4	4	2	1	CHAMFER WALLS & TOP	1	4	0	9				
C10	STR	#5	5	10	8	THROAT & APRON								
C11	STR	#5	5	7	2	TOP SLAB								
C12	STR	#5	5	7	2	THROAT								
C13	2	#5	5	4	8	END THROAT	2	1	1	4				
C14	4	#5	14	7	1	THROAT & APRON								
C15	1	#5	18	4	5	THROAT	1	11	2	6				
C16	2	#5	1	5	1	END THROAT	2	5	4					

* NO. OF BARS REQUIRED FOR m=4'-0" ADD OR DEDUCT 2-C8, 2-C7 & 1-C8 FOR EACH 1'-0" INCREASE OR DECREASE IN H

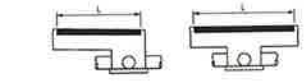
BAR TYPES



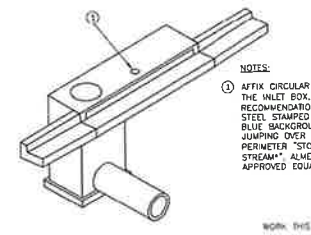
NOTES:
1. CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3500 PSI. STEEL REINFORCEMENT SHALL BE ASTM A-615, GRADE 60. ALL EXPOSED EDGES SHALL BE BEVELLED ¾" UNLESS OTHERWISE SHOWN.
2. THIS DRAWING DEPICTS A CURB BOX INLET IN A GRADE SITUATION. FOR CURB BOX INLET IN SAG SITUATION, DETAILS SHALL BE MODIFIED AS INDICATED IN DETAIL "A".
3. THE STANDARD OPENING LENGTH IS 10'-0" AS DETAILED HERE. THIS LENGTH MAY BE INCREASED OR DECREASED BASED ON HYDRAULIC ANALYSIS AND APPROVAL BY THE LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT ENGINEER. MODIFICATION TO THE OPENING LENGTH WILL REQUIRE MODIFICATION OF LENGTH OF BARS C10, C11, & C12 AND INCREASE OR DECREASE IN NUMBER OF BARS C14 & C15 MAINTAINING THE SAME MAXIMUM SPACING SHOWN ON THIS DRAWING.
4. MAXIMUM "H" FOR APPLICATION OF THIS DRAWING SHALL BE 5 FEET.
5. FIELD BEND OR CUT BARS C3, C5, C6 & C7 AS NECESSARY WHERE PIPES PENETRATE CHAMBER WALLS.
6. FOR CURB BOX INLET IN CURVE WITH CURB RADIUS OF LESS THAN 25', LONGITUDINAL BARS C10, C11 & C12 SHALL BE SHOP FABRICATED RADIALLY.

LEXINGTON – FAYETTE URBAN COUNTY GOVERNMENT

2 LFUCG 10' CURB BOX INLET DETAIL
NOT TO SCALE



DETAIL 'A'
APPLICABLE SITUATIONS

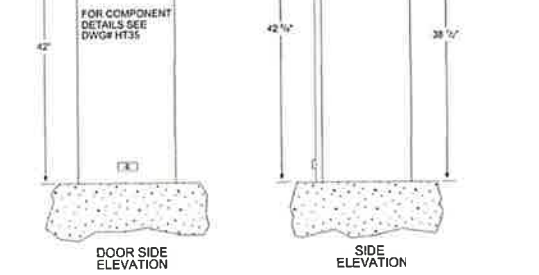


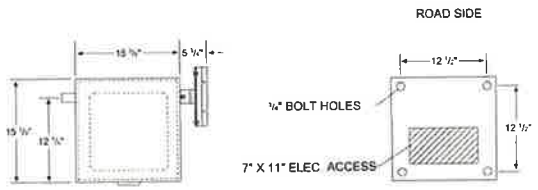
NOTES:
① AFFIX CIRCULAR MARKER TO THE TOP OF THE INLET BOX, PER MANUFACTURER'S RECOMMENDATIONS: 4" DIAMETER STAINLESS STEEL STAMPED DISK WITH BAKED ENAMEL BLUE BACKGROUND. LOGO OF FISH JUMPING OVER WAVES WITH TEXT ON PERIMETER "STORM DRAIN * DRAINS TO STREAMS". ALMETEK INDUSTRIES OR APPROVED EQUAL

WORK THIS DWG WITH STD. DWG. 124-1

LEXINGTON
DIVISION OF ENGINEERING
CURB BOX INLET TYPE "C"
4'X3' BOX
SINGLE PIPE
15" OR LESS
124-2

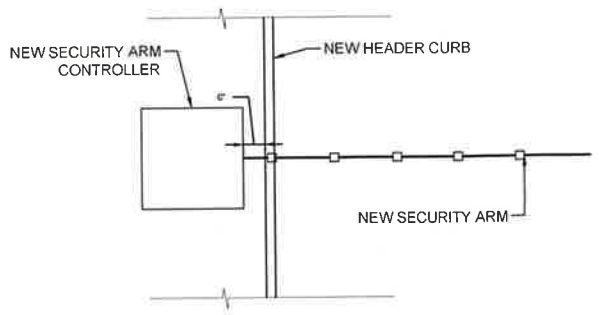
LEXINGTON – FAYETTE URBAN COUNTY GOVERNMENT



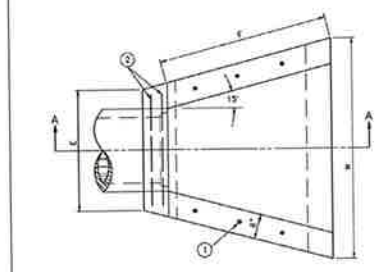


NOTE
ARM BRACKET CAN ATTACH ON LEFT OR RIGHT SIDE

NOTE:
MINIMUM RECOMMENDED SLAB 20' X 20' X 32" OR TO THE FROST LINE, IF DEEPER.



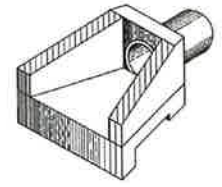
3 VEHICULAR TRAFFIC ARM 'HYSECURITY STRONGARM' OR EQUAL
NOT TO SCALE



PIPE DIA.	DIMENSIONS B	C	E	F	L	W	T	CLASS 'C' CONC. C.Y.	REINF. STEEL LBS.
15"	0'-7 1/2"	2'-0"	2'-11"	3'-5 3/8"	4'-0"	4'-10 3/4"	2 1/4"	0.90	10
18"	0'-9"	2'-3"	3'-0"	3'-11 15/16"	4'-6"	5'-4 15/16"	2 1/2"	0.97	11
21"	0'-10 1/2"	2'-6"	3'-3"	4'-5 7/16"	5'-0"	5'-11 7/8"	2 3/4"	1.11	12
24"	1'-0"	2'-9"	3'-6"	5'-0"	5'-6"	6'-5 7/8"	3"	1.38	12
27"	1'-1 1/2"	3'-0"	3'-9"	5'-6 7/16"	6'-0"	6'-11 7/16"	3 1/4"	1.62	13

SHEET NOTES:
① 6 #4 x 1'-0" DOWELS
② 4 #4 x ("E" DIMENSION MINUS 4")
③ SLOPE SHALL BE WARPED TO FIT HEADWALL WHEN PIPE IS SKEWED AND / OR NORMAL SLOPE VARIES FROM 2:1.

NOTES:
1. REINFORCING STEEL MINIMUM GRADE 40, EVENLY SPACED (MIN. SPACING 12" O.C.)
2. VOLUME DISPLACED BY PIPE COMPUTED USING INSIDE DIAMETER OF PIPE.
3. WING ANGLES AND / OR DIMENSIONS MAY BE ALTERED DURING CONSTRUCTION TO ACCOMMODATE FLOW OF WATER.
4. APRON BETWEEN WINGS SHALL BE SLOPED IN DIRECTION OF FLOW EQUAL TO SLOPE OF PIPE, BUT NOT TO EXCEED 5%. FRONT FACE OF HEADWALL SHALL REMAIN VERTICAL.
5. CHAIN LINK FENCE IS REQUIRED ON ALL HEADWALLS WHEN VERTICAL FACE "C" IS GREATER THAN 30".
6. ALL EXPOSED EDGES ARE TO HAVE ¾" CHAMFER.
7. SKEWED PIPE REQUIRES SPECIAL DESIGN



LEXINGTON
DIVISION OF ENGINEERING
PIPE CULVERT HEADWALLS
0° SKEW
15"–27" CIRCULAR PIPE
153

LEXINGTON – FAYETTE URBAN COUNTY GOVERNMENT

4 LFUCG STORM HEADWALL DETAIL
NOT TO SCALE

CONSTRUCTION DOCUMENTS

COMMONWEALTH OF KENTUCKY
RODERICK S. SAYLOR
28004
LICENSED PROFESSIONAL ENGINEER
1-28-26

GRW PROJECT NO. 5300-01
CLIENT PROJECT NO. 1-2026

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SITE DETAILS

LFUCG FIRE TRAINING
CITY OF LEXINGTON, KENTUCKY

DESIGNED	DRAWN	REVIEWED	APPROVED
JCR	JCR	RSS	RSS

REVISIONS

NO	DESCRIPTION	DATE	BY

THIS MARK SHOULD MEASURE EXACTLY 1" IF PRINTED AT FULL SIZE

DATE
JANUARY 23, 2026

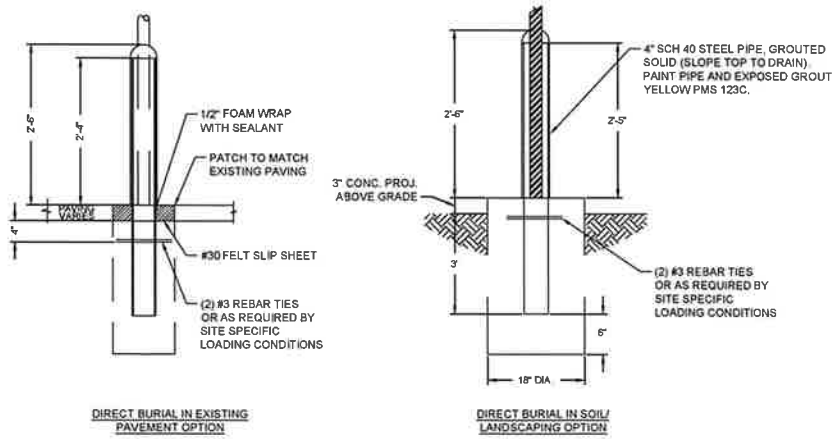
SCALE
AS NOTED

SHEET NO
CS-502

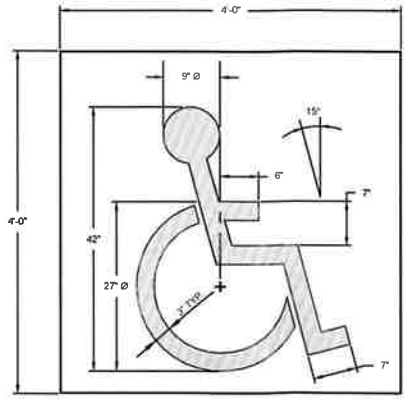
PLOTTED BY: JRose

PRINTED: 1/22/2026 @ 3:53PM

FILE NAME: G:\5300-LFUCG FT P1\Working Drawings\Auto\CAD\5300-CS-502.dwg



1 SIGN DETAIL
NOT TO SCALE



INTERNATIONAL SYMBOL OF ACCESSIBILITY
PER ANSI A117.1-1986 REQUIREMENTS

NOTE.

1 USE PAINT WHICH CONTRASTS WITH BACKGROUND

2 THIS SIGN TO BE FURNISHED AND INSTALLED BY G C

SHADED AREAS REPRESENT ADA PARKING OR LEVEL LANDING. MAX 2.0% CROSS SLOPE IN ANY DIRECTION.

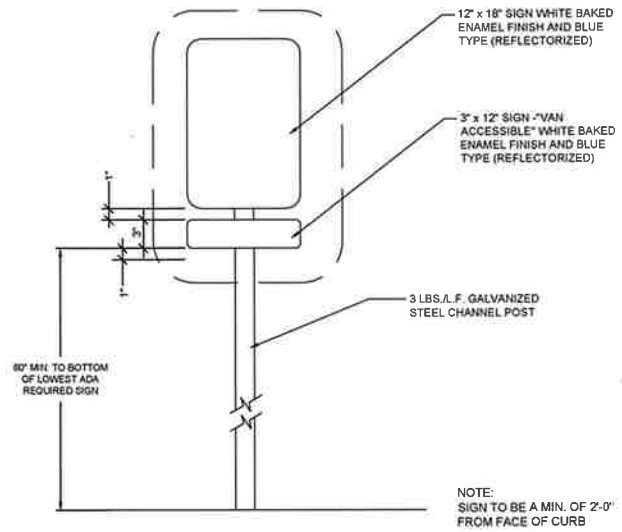
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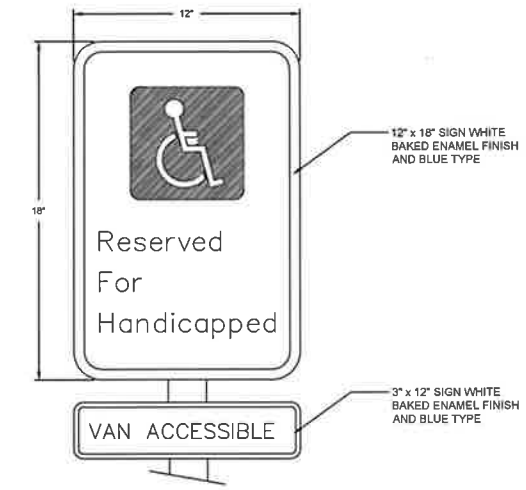
1 ALL H/C PARKING AREAS MUST HAVE A 1.50 (2%) SLOPE MAX IN ALL DIRECTIONS

2 ACCESS ROUTES MUST HAVE A 1:20 (5%) RUNNING SLOPE MAX. & A 1.50 (2%) CROSS SLOPE MAX

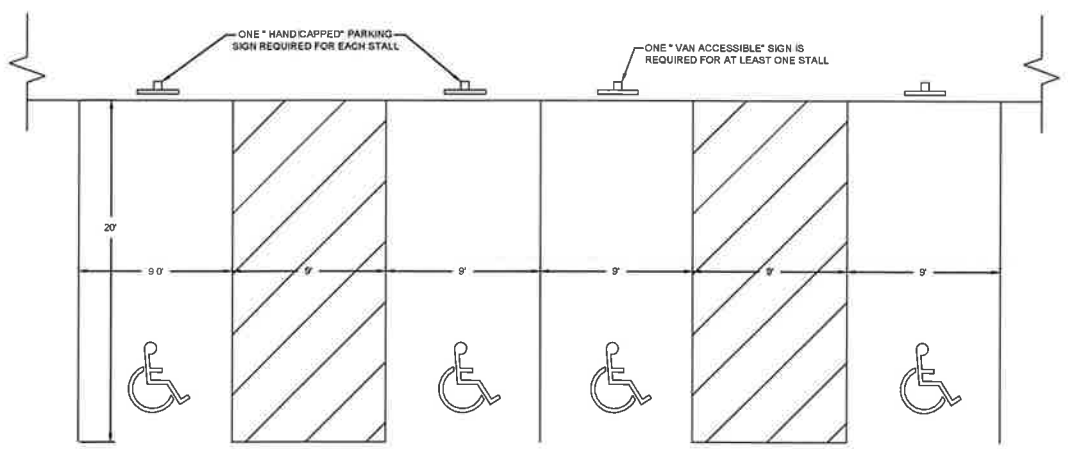
3 ALL SIDEWALK RAMPS MUST HAVE A 1.12 (8.33%) RUNNING SLOPE MAX & A 1:50 (2%) CROSS SLOPE MAX

2 ADA STRIPING DETAIL
NOT TO SCALE





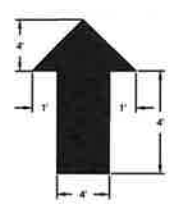
3 ADA SIGNAGE DETAIL
NOT TO SCALE



NOTE:

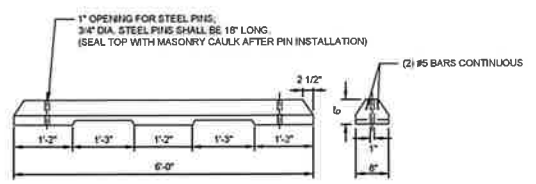
1. ALL H/C PARKING AREAS MUST HAVE A 1:50 (2%) SLOPE MAX. IN ALL DIRECTIONS
2. ACCESS ROUTES MUST HAVE A 1:20 (5%) RUNNING SLOPE MAX. & A 1:50 (2%) CROSS SLOPE MAX.

4 ADA PARKING DETAIL
NOT TO SCALE



APPLY TWO COATS OF WATERBORNE PAINT (PER FS TT-P-1952) OR SOLVENT BORNE PAINT (PER FS AA-2886 OR AASHTO M248). TRAFFIC-LANE MARKING PAINT OVER CLEANED PAVING SURFACE ACCORDING TO LAYOUT SHOWN ON THE SITE PLAN. PAINT WHITE OR AS REQUIRED BY CITY CODE.

5 DIRECTIONAL STRIPING DETAIL
NOT TO SCALE



6 WHEELSTOP DETAIL
NOT TO SCALE

PLOTTED BY: JRose

PRINTED: 1/22/2026 @ 4:01PM

FILE NAME: G:\5500-LFUCG FT P1\Working Drawings\Autoc\CAD\5500-CS-503.dwg

ROADERICK S. SAYLOR 28004 LICENSED PROFESSIONAL ENGINEER
STATE OF KENTUCKY
1-23-26

CONSTRUCTION DOCUMENTS

GRW PROJECT NO. 5300-01

CLIENT PROJECT NO. 1-2026

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SITE DETAILS

LFUCG FIRE TRAINING
CITY OF LEXINGTON, KENTUCKY

DESIGNED	JCR
DRAWN	JCR
REVIEWED	RSS
APPROVED	RSS

REVISIONS

NO	DESCRIPTION	DATE	BY

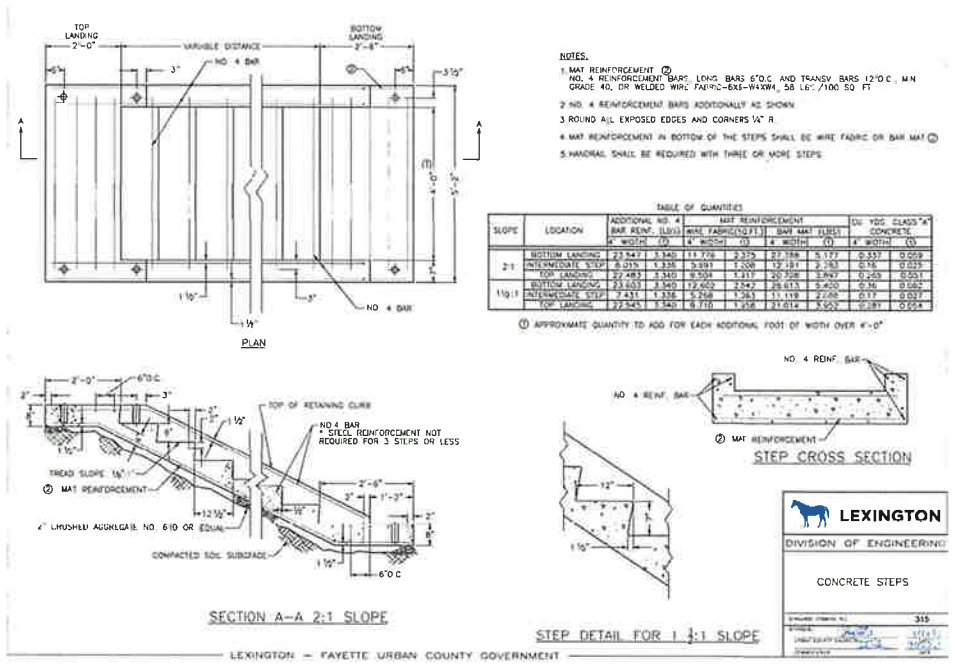
THIS MARK SHOULD MEASURE EXACTLY 1"WHEN PLOTTED

SCALE CHECK

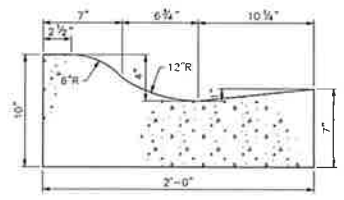
DATE
JANUARY 23, 2026

SCALE
AS NOTED

SHEET NO
CS-503

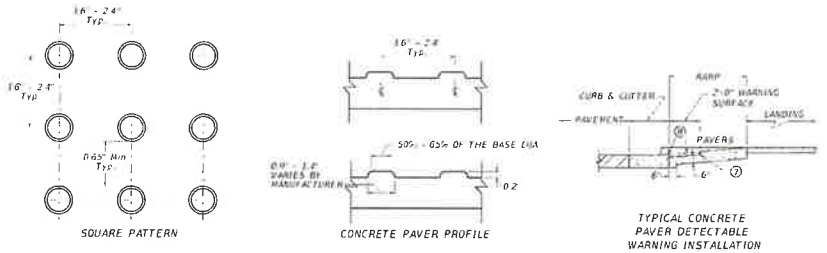


1 LFUCG CONCRETE STAIRS
NOT TO SCALE



TYPE 4
(RESIDENTIAL LOCAL STREETS ONLY)

3 LFUCG TYPE 4 ROLL CURB
NOT TO SCALE



- NOTES -

BID ITEM AND UNIT TO BID
DETECTABLE WARNINGS SF

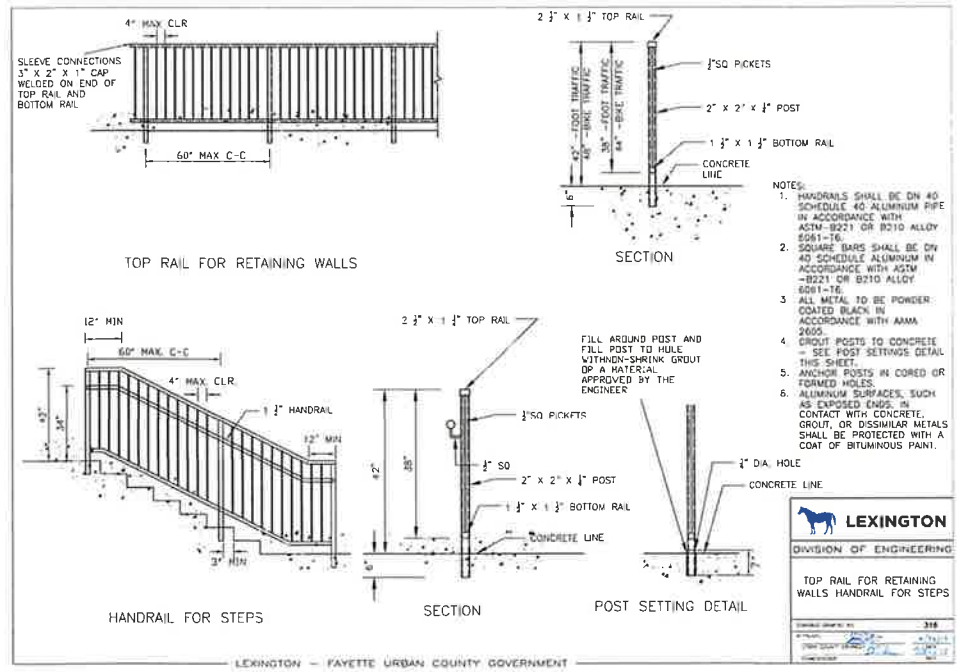
1. LANDINGS WILL PROVIDE A LEVEL AREA (MAX. 2% GRADE OR CROSS SLOPE) AT APPROXIMATE STREET ELEVATION, A 4' SQUARE LEVEL LANDING IS THE REQUIRED MINIMUM. SEE NOTE 4 ON CUR. STD. DWG. RPM-170.
2. DETECTABLE WARNINGS SHALL BE INSTALLED USING CONCRETE PAVERS IN ACCORDANCE WITH THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
3. JOINTS AROUND PAVERS SHALL BE FILLED WITH DRY MORTAR. MORTAR SHALL BE BRUSHED IN WITH A COARSE BROOM. SAND WILL NOT BE ALLOWED.
4. COMMERCIAL DRIVEWAYS WITH TRAFFIC CONTROL DEVICES REQUIRE ADA SIDEWALK TREATMENTS WITH DETECTABLE WARNINGS.
5. CONCRETE PAVERS SHALL BE CONCRETE WITH A MINIMUM THICKNESS OF 3".
6. CONCRETE PAVERS SHALL BE A COLOR HOMOGENOUS THROUGHOUT THE PAVER, THAT COLOR SHALL CONTRAST VISUALLY WITH THE ADJOINING SURFACES, EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT. THE DEPARTMENT WILL ALLOW EITHER YELLOW OR RED AS COLORS.

⑦ CONCRETE PAVERS SHALL BE SET IN MORTAR.
⑧ DETECTABLE WARNING SURFACE BEGINS AT BACK OF CURB.

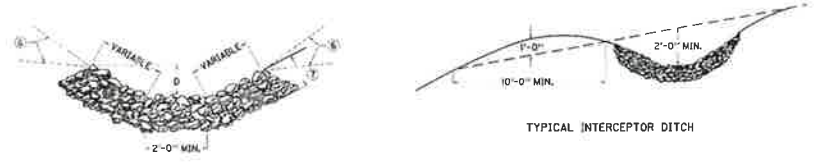
USE WITH CUR. STD. DWGS RPM-130, RPM-177

KENTUCKY DEPARTMENT OF HIGHWAYS
DETECTABLE WARNINGS
STANDARD DRAWING NO. RDD-010-02

5 KYTC DETECTABLE WARNING DETAIL
NOT TO SCALE



2 LFUCG HANDRAIL DETAIL
NOT TO SCALE



- NOTES -

BID ITEMS AND UNIT TO BID
CHANNEL LINING CLASS II TON
CHANNEL LINING CLASS III TON

1. CHANNEL LINING WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER TON FOR EACH CLASS.
2. CHANNEL LINING WILL NOT BE REQUIRED IN THE BOTTOM OF THE DITCH WHERE SOLID ROCK IS ENCOUNTERED.
3. CHANNEL LINING ESTIMATED ON THE BASIS OF 0.50 TON PER SQ. YD. PER FT. OF DEPTH.
4. WIDEN CHANNEL LINING NEAR OUTLET END OF STRUCTURE AS DIRECTED BY THE ENGINEER.
5. FROM THE TOP OF THE LINING TO THE ORIGINAL GROUNDLINE.
6. ALTERNATE LOCATION OF GROUNDLINE.
7. 15" MIN. CLASS II, OR 24" MIN. CLASS III.
8. D = DEPTH TO PROTECT, T = THICKNESS. (SEE PLAN NOTES FOR THESE VALUES)

KENTUCKY DEPARTMENT OF HIGHWAYS
CHANNEL LINING CLASS II AND III
STANDARD DRAWING NO. RDD-040-05

4 KYTC CLASS II CHANNEL LINING DETAIL
NOT TO SCALE

COMMONWEALTH OF KENTUCKY
RODERICK S. SAYLOR 28004
LICENSED PROFESSIONAL ENGINEER
1-23-26

GRW PROJECT NO. 5300-01
CLIENT PROJECT NO. 1-2026

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SITE DETAILS

LFUCG FIRE TRAINING
CITY OF LEXINGTON, KENTUCKY

REVISIONS			
NO	DESCRIPTION	DATE	BY

SCALE CHECK: 1 THIS BAR IS 1 INCH ON ORIGINAL DRAWING. IF NOT, SCALE DRAWING ACCORDINGLY

DESIGNED JCR
DRAWN JCR
REVIEWED RSS
APPROVED RSS

DATE
JANUARY 23, 2026

SCALE
AS NOTED

SHEET NO
CS-504

PLOTTED BY: JRose
PRINTED: 1/22/2026 @ 4:00PM
FILE NAME: G:\5300\4-FUCG FT P1\Working Drawings\AutoCAD\5300-CS-504.dwg

STRUCTURE TABLE	
STRUCTURE #	DETAILS
A1-CB	RIM = 916.25 A1 INV OUT = 909.816 I.E. 909.81 (12" RCP)
A2-CI	RIM = 915.20 A1 INV IN = 909.030 A2.1 INV IN = 909.210 A2 INV OUT = 909.000 I.E. 909.03 (12" RCP) I.E. 909.00 (12" RCP) I.E. 909.21 (12" RCP)
A2.1-CI	RIM = 915.22 A2.1 INV OUT = 911.119 I.E. 911.12 (12" RCP)
A3-MH	RIM = 910.12 A2 INV IN = 906.240 A3 INV OUT = 906.314 I.E. 906.21 (12" RCP) I.E. 906.24 (12" RCP)
A4-CI	RIM = 908.30 A3 INV IN = 904.751 A4.1 INV IN = 904.853 A4 INV OUT = 904.500 I.E. 904.50 (15" RCP) I.E. 904.75 (12" RCP) I.E. 904.63 (12" RCP)

STRUCTURE TABLE	
STRUCTURE #	DETAILS
A4.1-CI	RIM = 908.30 A4.1 INV OUT = 904.907 I.E. 904.91 (12" RCP)
A5-MH	RIM = 906.60 A5.1 INV IN = 902.710 A4 INV IN = 902.744 A5 INV OUT = 902.720 I.E. 902.72 (18" RCP) I.E. 902.71 (18" RCP) I.E. 902.74 (15" RCP)
A5.1-CI	RIM = 906.53 A5.2 INV IN = 903.027 A5.1 INV OUT = 903.030 I.E. 903.03 (12" RCP) I.E. 903.03 (18" RCP)
A5.2-CI	RIM = 906.46 A5.2 INV OUT = 903.090 I.E. 903.09 (12" RCP)
A6-CI	RIM = 907.11 A5 INV IN = 902.314 A6 INV OUT = 902.314 I.E. 902.31 (18" RCP) I.E. 902.31 (18" RCP)

STRUCTURE TABLE	
STRUCTURE #	DETAILS
A7-HDWL	RIM = 904.21 A6 INV IN = 902.000 I.E. 902.00 (18" RCP)
B1-CI	RIM = 906.69 B1 INV OUT = 896.751 I.E. 896.75 (12" RCP)
B2-HDWL	RIM = 899.90 B1 INV IN = 898.230 I.E. 898.23 (12" RCP)
B3-HDWL	RIM = 899.71 B3 INV OUT = 896.040 I.E. 898.04 (12" RCP)
B4-HDWL	RIM = 899.10 B3 INV IN = 897.438 I.E. 897.44 (12" RCP)

STRUCTURE TABLE	
STRUCTURE #	DETAILS
OV1-CBI	RIM = 925.64 OV1 INV OUT = 920.671 I.E. 920.67 (12" RCP)
OV1-HDWL	RIM = 921.83 OV1 INV IN = 920.164 I.E. 920.16 (12" RCP)
OV2-CBI	RIM = 902.76 OV2 INV OUT = 899.178 I.E. 899.18 (12" RCP)
OV2-HDWL	RIM = 900.66 OV2 INV IN = 898.991 I.E. 898.99 (12" RCP)

PIPE CHART			
PIPE NO.	LENGTH (FEET)	SIZE (INCHES)	SLOPE (%)
A1	55	12	1.42%
A2	88	12	3.13%
A2.1	31	12	6.21%
A3	88	12	1.66%
A4	110	15	1.60%
A4.1	30	12	0.91%
A5	54	18	0.75%
A5.1	58	18	0.55%
A5.2	10	12	0.63%
A6	38	18	0.83%
B1	26	12	2.00%
B3	35	12	1.72%
OV1	54	12	0.93%
OV2	44	12	0.42%

GRADING AND DRAINAGE NOTES

1. THE CONTRACTOR/BUILDER SHALL SLOPE ALL FINISH GRADES TO PROVIDE POSITIVE DRAINAGE. FLAT AND PONDING AREAS WILL NOT BE ACCEPTABLE
2. PROPOSED SPOT ELEVATIONS AND CONTOURS SHALL BE REVIEWED BY CONTRACTOR PRIOR TO GRADING ACTIVITIES TO ENSURE POSITIVE DRAINAGE. ANY ISSUES OR DISCREPANCIES SHOULD BE BROUGHT TO THE ENGINEERS ATTENTION
3. GRADES MAY BE FIELD ADJUSTED TO ACCOMMODATE ANY EXISTING SURFACE OR SUBSURFACE SITE CONDITIONS, WHEN APPROVED BY THE ENGINEER
4. CONTRACTOR SHALL LOCATE ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION OF PROPOSED STORM SEWER. IF EXISTING UTILITIES ARE DIFFERENT THAN SHOWN ON THE PLAN THEN THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY
5. SPOT ELEVATIONS SHOWN ARE AT EDGE OF PAVEMENT UNLESS OTHERWISE NOTED
6. CONTRACTOR IS RESPONSIBLE FOR NOTIFYING THE CIVIL ENGINEERS OF ANY ON-SITE DISCREPANCIES
7. ALL BACKFILL AND FILLS SHALL MEET COMPACTION REQUIREMENTS AS LISTED BELOW, AS COMPARED TO MAXIMUM DRY DENSITY (ASTM D698). APPLIED COMPACTION EFFORT SHOULD BE UNIFORM
8. 98% IN STRUCTURAL AREAS (BUILDING PAD, FILL SLOPES, POND BERM, ETC.)
9. 95% IN PAVED AREAS
10. 90% IN LANDSCAPE AREAS
11. MAINTAIN MOISTURE CONTENT OF COMPACTED FILL WITH MOISTURE PLUS +2.5% TO -2% OF OPTIMUM MOISTURE (ASTM D698)
12. POSITIVE DRAINAGE TO TIE TO NEAREST DRAINAGE FEATURE MUST BE MAINTAINED AT ALL TIMES. NO PONDING WILL BE PERMITTED

STORMWATER MANAGEMENT AREAS

THE WATER QUANTITY AND WATER QUALITY REQUIREMENTS WERE CALCULATED PER LFUCG STORMWATER MANUAL, SECTION 1.8 - STORMWATER CRITERIA FOR REDEVELOPMENT PROJECTS. AS SHOWN BELOW, THE PROPOSED IMPERVIOUS AREA DID NOT INCREASE FROM THE EXISTING / BASELINE CONDITION. FOR THIS REASON, NO DETENTION WAS REQUIRED. SINCE THE BASELINE IMPERVIOUS AREA WAS NOT REDUCED BY 20%, WATER QUALITY WAS PROVIDED WITH BIORETENTION AREAS AS DESCRIBED IN THE CALCULATIONS BELOW.

BASELINE CONDITION
IMPERVIOUS AREA = 308,802 SF (7.09 AC)
PERVIOUS AREA = 207,681 SF (4.77 AC)
TOTAL AREA = 516,483 SF (11.86 AC)

PROPOSED CONDITION
IMPERVIOUS AREA = 308,802 SF (7.09 AC)
PERVIOUS AREA = 207,681 SF (4.77 AC)
TOTAL AREA = 516,483 SF (11.86 AC)

WATER QUALITY CALCULATION
IF (A x 0.6) < B S.A.
WQV = (B - A x 0.8) x 1.2"/12 = 4,154 CF

WHERE A = BASELINE IMPERVIOUS AREA
B = IMPERVIOUS AREA AFTER REDEVELOPMENT

BIORETENTION AREAS
THE SITE WAS EVALUATED BASED ON THREE WATERSHED AREAS: (1) NORTH TRAINING PAD (2) NORTH TOWN BRANCH PROPERTY AND (3) SOUTH TOWN BRANCH PROPERTY. THE REQUIRED WATER QUALITY VOLUME WAS DIVIDED BETWEEN THE TWO NORTH PROPERTIES AS DESCRIBED BELOW.

NORTH TRAINING PAD WATERSHED
IMPERVIOUS AREA = 67,578 SF (1.55 AC) OR 32.5% OF TOTAL REDEVELOPED IMPERVIOUS AREA
BIORETENTION AREA PROVIDED FOR 2,362 CF (56.9% OF WQV REQUIRED)

NORTH TOWN BRANCH PROPERTY WATERSHED
IMPERVIOUS AREA = 61,683 SF (1.40 AC) OR 29.4% OF TOTAL REDEVELOPED IMPERVIOUS AREA
BIORETENTION AREA PROVIDED FOR 1,792 CF (43.1% OF WQV REQUIRED)

SOUTH TOWN BRANCH PROPERTY WATERSHED
IMPERVIOUS AREA = 79,020 SF (1.81 AC) OR 38.0% OF TOTAL REDEVELOPED IMPERVIOUS AREA
BIORETENTION AREA NOT PROVIDED DUE TO LACK OF AVAILABLE SPACE.

LEGEND

- EXISTING STREET LIGHT POLE
- EXISTING POWER POLE
- EXISTING TELEPHONE POLE
- EXISTING FIRE HYDRANT
- EXISTING LIGHT POLE
- EXISTING POST INDICATOR VALVE
- EXISTING CLEAN OUT
- EXISTING SANITARY MANHOLE
- EXISTING SIGN
- EXISTING STORM INLET
- EXISTING STORM MANHOLE
- EXISTING WATER VALVE
- EXISTING WATER METER
- EXISTING GAS METER
- EXISTING GAS VALVE
- EXISTING ELECTRIC METER
- EXISTING CHAIN LINK FENCE
- EXISTING BOARD FENCE
- EXISTING WATER LINE
- EXISTING GAS LINE
- EXISTING OVERHEAD ELECTRIC
- EXISTING OVERHEAD TELEPHONE/CABLE
- EXISTING UNDERGROUND ELECTRIC LINE
- EXISTING UNDERGROUND TELEPHONE/CABLE
- EXISTING UNDERGROUND SANITARY SEWER LINE
- EXISTING UNDERGROUND STORM SEWER LINE
- PROPERTY LINE
- EXISTING FLOODPLAIN LIMITS
- EXISTING GRADE SPOT ELEVATION
- EXISTING CONTOUR
- PROPOSED CONTOUR
- FINISH GRADE SPOT ELEVATION
- BOTTOM OF CURB SPOT ELEVATIONS
- TOP OF CURB SPOT ELEVATIONS

PATTERNS

- DENOTES NEW HEAVY DUTY ASPHALT PAVEMENT
- DENOTES NEW LIGHT DUTY ASPHALT PAVEMENT
- DENOTES NEW CONCRETE PAVING
- DENOTES NEW PAVEMENT STRIPING
- EXISTING EPA COVENANT AREA

N

SCALE: 1"= 50'
50' 25' 0 50' 100'

RODERICK S. SAYLOR 28004 LICENSED PROFESSIONAL ENGINEER
STATE OF KENTUCKY
1-23-26

CONSTRUCTION DOCUMENTS

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OVERALL GRADING PLAN

LFUCG FIRE TRAINING
CITY OF LEXINGTON, KENTUCKY

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JCR	JCR	RSS	RSS

REVISIONS			
NO	DESCRIPTION	DATE	BY

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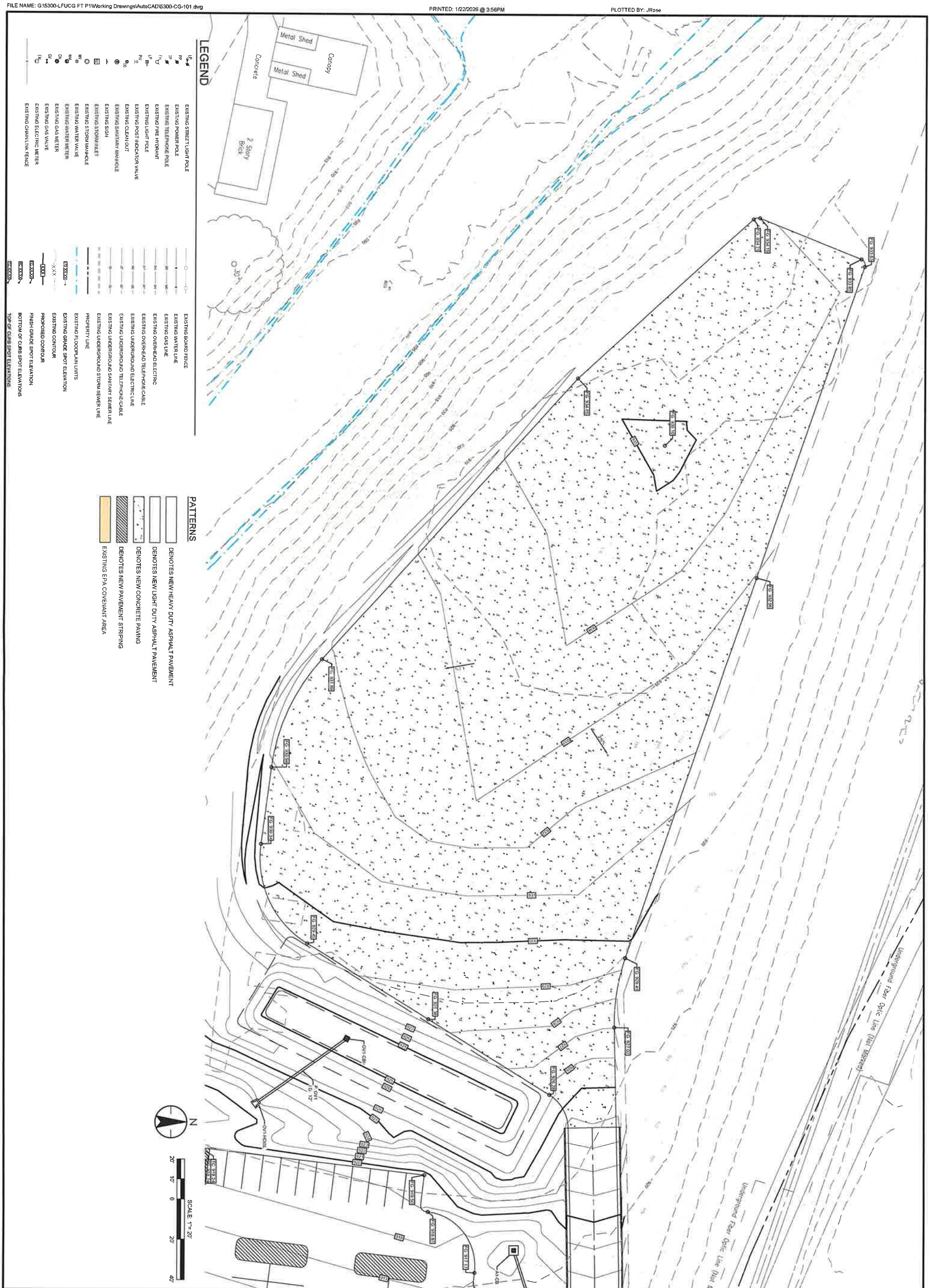
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1"=50'
SHEET NO
CG-100

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FILE NAME: G:\5300-LFUCG FT P1\Working Drawings\AutoCAD\5300-CG-101.dwg

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LEGEND

- EXISTING STREET LIGHT POLE
- EXISTING POWER POLE
- EXISTING TELEPHONE POLE
- EXISTING FIRE HYDRANT
- EXISTING LIGHT POLE
- EXISTING POST INDICATOR VALVE
- EXISTING CLEAN OUT
- EXISTING SANITARY MANHOLE
- EXISTING SIGN
- EXISTING STORM INLET
- EXISTING STORM MANHOLE
- EXISTING WATER VALVE
- EXISTING WATER METER
- EXISTING GAS METER
- EXISTING GAS VALVE
- EXISTING ELECTRIC METER
- EXISTING CHAIN LINK FENCE
- EXISTING BOARD FENCE
- EXISTING WATER LINE
- EXISTING GAS LINE
- EXISTING OVERHEAD ELECTRIC
- EXISTING OVERHEAD TELEPHONE/CABLE
- EXISTING UNDERGROUND ELECTRIC LINE
- EXISTING UNDERGROUND TELEPHONE/CABLE
- EXISTING UNDERGROUND SANITARY SEWER LINE
- EXISTING UNDERGROUND STORM SEWER LINE
- PROPERTY LINE
- EXISTING FLOODPLAIN LIMITS
- EXISTING GRADE SPOT ELEVATION
- EXISTING CONTOUR
- PROPOSED CONTOUR
- FINISH GRADE SPOT ELEVATION
- BOTTOM OF CURB SPOT ELEVATIONS
- TOP OF CURB SPOT ELEVATIONS

PATTERNS

- DENOTES NEW HEAVY DUTY ASPHALT PAVEMENT
- DENOTES NEW LIGHT DUTY ASPHALT PAVEMENT
- DENOTES NEW CONCRETE PAVING
- DENOTES NEW PAVEMENT STRIPING
- EXISTING EPA COVENANT AREA

CG-101

SHEET NO

1"=20'

SCALE

JANUARY 23, 2026

DATE

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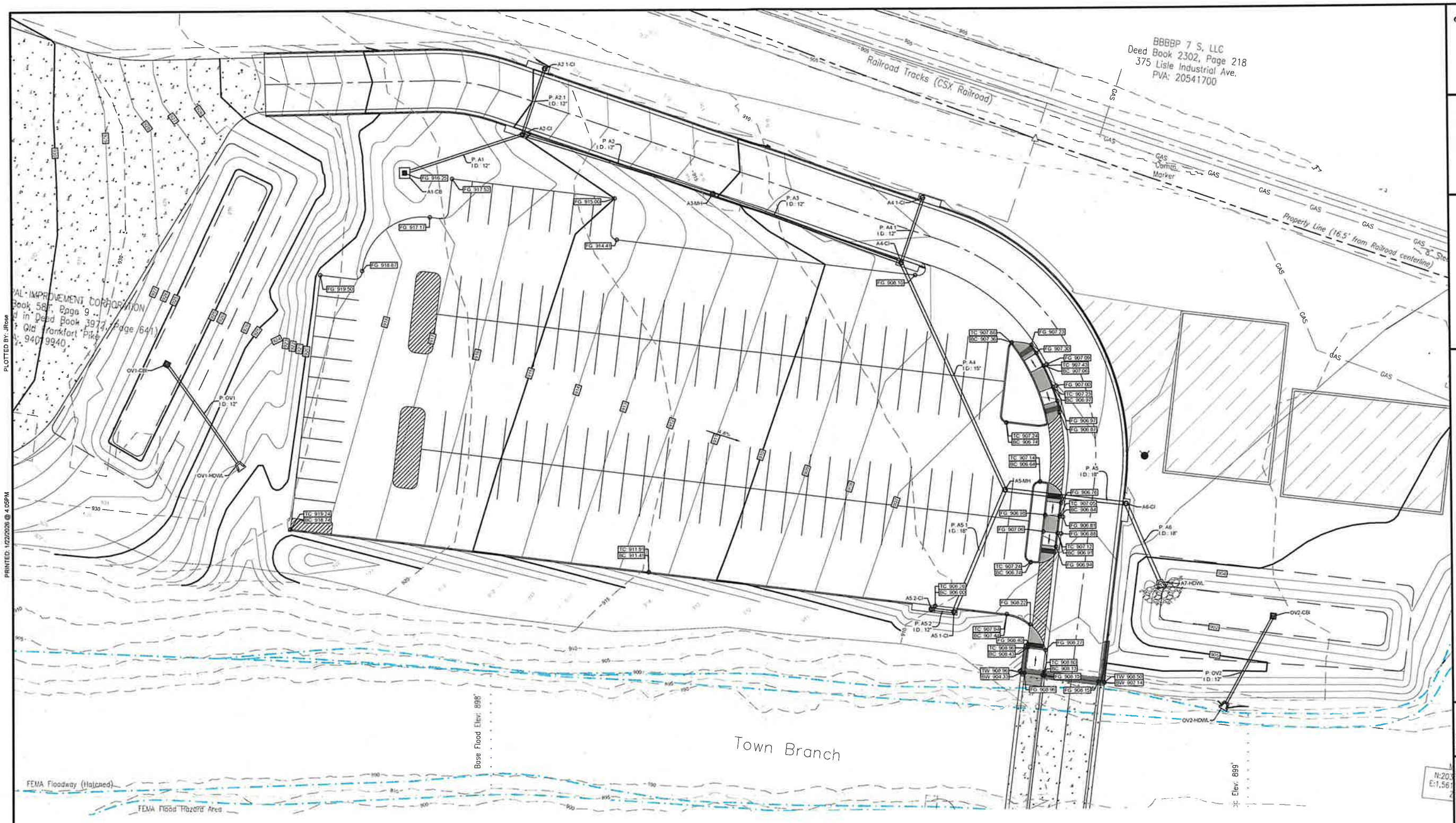
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STATE OF KENTUCKY
S. RODERICK SAYLOR
28004
LICENSED PROFESSIONAL ENGINEER
1-23-26

CONSTRUCTION DOCUMENTS



LEGEND

EXISTING STREET LIGHT POLE	EXISTING BOARD FENCE
EXISTING POWER POLE	EXISTING WATER LINE
EXISTING TELEPHONE POLE	EXISTING GAS LINE
EXISTING FIRE HYDRANT	EXISTING OVERHEAD ELECTRIC
EXISTING LIGHT POLE	EXISTING OVERHEAD TELEPHONE/CABLE
EXISTING POST INDICATOR VALVE	EXISTING UNDERGROUND ELECTRIC LINE
EXISTING CLEAN OUT	EXISTING UNDERGROUND TELEPHONE/CABLE
EXISTING SANITARY MANHOLE	EXISTING UNDERGROUND SANITARY SEWER LINE
EXISTING SIGN	EXISTING UNDERGROUND STORM SEWER LINE
EXISTING STORM INLET	PROPERTY LINE
EXISTING STORM MANHOLE	EXISTING FLOODPLAIN LIMITS
EXISTING WATER VALVE	EXISTING GRADE SPOT ELEVATION
EXISTING WATER METER	EXISTING CONTOUR
EXISTING GAS METER	PROPOSED CONTOUR
EXISTING GAS VALVE	FINISH GRADE SPOT ELEVATION
EXISTING ELECTRIC METER	BOTTOM OF CURB SPOT ELEVATIONS
EXISTING CHAIN LINK FENCE	TOP OF CURB SPOT ELEVATIONS

PATTERNS

- DENOTES NEW HEAVY DUTY ASPHALT PAVEMENT
- DENOTES NEW LIGHT DUTY ASPHALT PAVEMENT
- DENOTES NEW CONCRETE PAVING
- DENOTES NEW PAVEMENT STRIPING
- EXISTING EPA COVENANT AREA

N

SCALE 1"= 20'
20' 10' 0 20' 40'

COMMONWEALTH OF KENTUCKY
RODERICK S. BAYLOR 28004 LICENSED PROFESSIONAL ENGINEER
1-23-26

CONSTRUCTION DOCUMENTS

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CITY OF LEXINGTON, KENTUCKY

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JCR	JCR	RSS	RSS

REVISIONS

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Town Branch

Base Flood Elev. 899'

Outlet

Grass

Conc

Per Plan)

FF 910.73

Concrete Walk

Bituminous Pavement

20" Ductile Iron Force Main

Bollards

Electric Box

GM

GAS

"Do Not Enter Sign

MH
T.R. 909.59
c/o

"Reserved" Signs

(Not Located)

Concrete

EM

Bollards

WV

WM

Gas Valve

Gas Meter

Electric Meter

Telephone Pedestal

Electric and Telephone Manhole

Storm Inlet
T.R. 905.12
F.L. 895.42

N 82°54'04" W 354.76'

6" Plastic Medium Pressure Gas Main (Marked & Located)

4" Steel Gas Main

12" PVC Water Main (Marked and Located)

Lexington Water Company Easement (Deed Book 803, Page 354)

Columbia Gas Easement Deed Book 3546, Page 167

8" Steel High Pressure Gas Main (Marked and Located)

"Crossroad" Sign

Storm Inlet w/ Beehive Grate
T.R. 905.29
F.L. 900.24

Found KYTC Alum. Mkr.

Storm Inlet
Beehive Grate
T.R. 905.39
F.L. 900.25

Kentucky American Water Company Water Truck Loading Area Deed Book 1846, Page 379

NO STOPPING

Gates

Permanent Access Easement (to Pence) Deed Book 3972, Page 441 (Blue) Shaded Area

S 83°19'10" E 127.01'

N 78°08'12" W 56.08'

S 11°51'48" W 180.45'

N 83°18'54" W 82.15'

Chainlink Fence

Mailbox

Curb Inlet
T.R. 906.34
F.L. 900.26

Curb Inlet
T.R. 906.04
F.L. 900.41

Curb Inlet
T.R. 906.21
F.L. 900.16

Storm Inlet
T.R. 903.30
F.L. 901.02

Found KYTC Alum. Mkr.

Bituminous

4" Plastic Gas Main

Control Panel
Gas Regulator Station

Columbia Gas Easement (DB 144, Pg. 265)

8" Steel High Pressure Gas Main (Marked and Located)

Columbia Gas Easement Deed Book 3546, Page 167

Centerline of 15" Columbia Gas Easement

14" Catalpa

16" Hackberry

22" Hackberry

20" Hackberry

14" Hackberry to 16" Hackberry

WILLIAM E PENCE
Deed Book 1
Deed Book 3
1305 Old F
PVA: 24

N

SCALE: 1"= 20'
20' 10' 0 20' 40'

LEGEND

- EXISTING STREET LIGHT POLE
- EXISTING POWER POLE
- EXISTING TELEPHONE POLE
- EXISTING FIRE HYDRANT
- EXISTING LIGHT POLE
- EXISTING POST INDICATOR VALVE
- EXISTING CLEAN OUT
- EXISTING SANITARY MANHOLE
- EXISTING SIGN
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- EXISTING UNDERGROUND SANITARY SEWER LINE
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- EXISTING FLOODPLAIN LIMITS
- EXISTING GRADE SPOT ELEVATION
- EXISTING CONTOUR
- PROPOSED CONTOUR
- FINISH GRADE SPOT ELEVATION
- BOTTOM OF CURB SPOT ELEVATIONS
- TOP OF CURB SPOT ELEVATIONS

PATTERNS

- DENOTES NEW HEAVY DUTY ASPHALT PAVEMENT
- DENOTES NEW LIGHT DUTY ASPHALT PAVEMENT
- DENOTES NEW CONCRETE PAVING
- DENOTES NEW PAVEMENT STRIPING
- EXISTING EPA COVENANT AREA

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STATE OF KENTUCKY
RODERICK S SAYLOR 28004
LICENSED PROFESSIONAL ENGINEER
1-23-26

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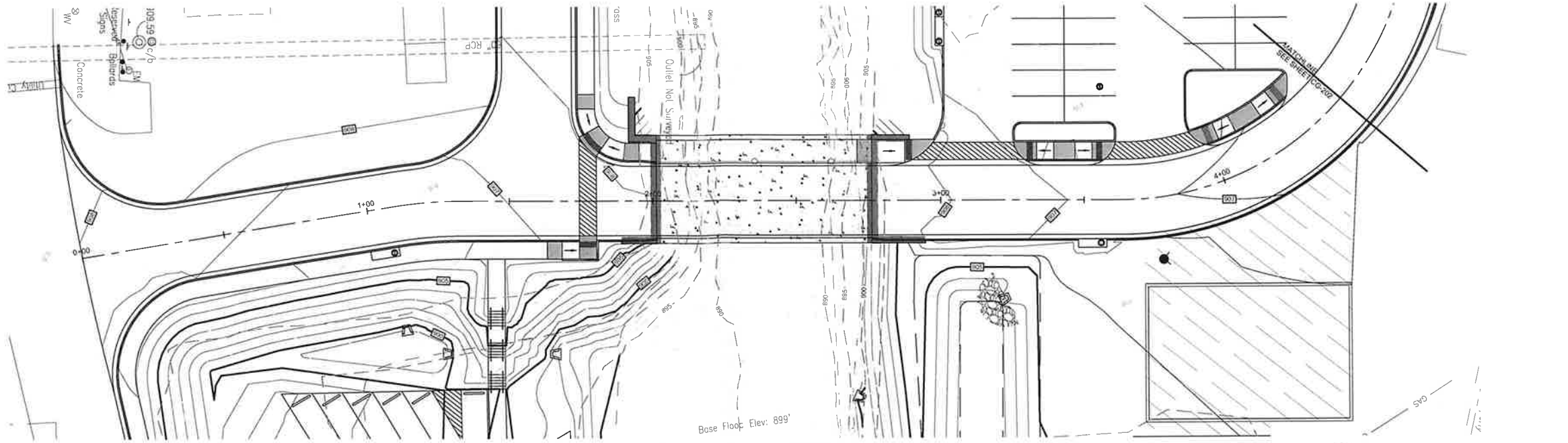
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DATE
JANUARY 23, 2026

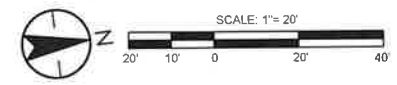
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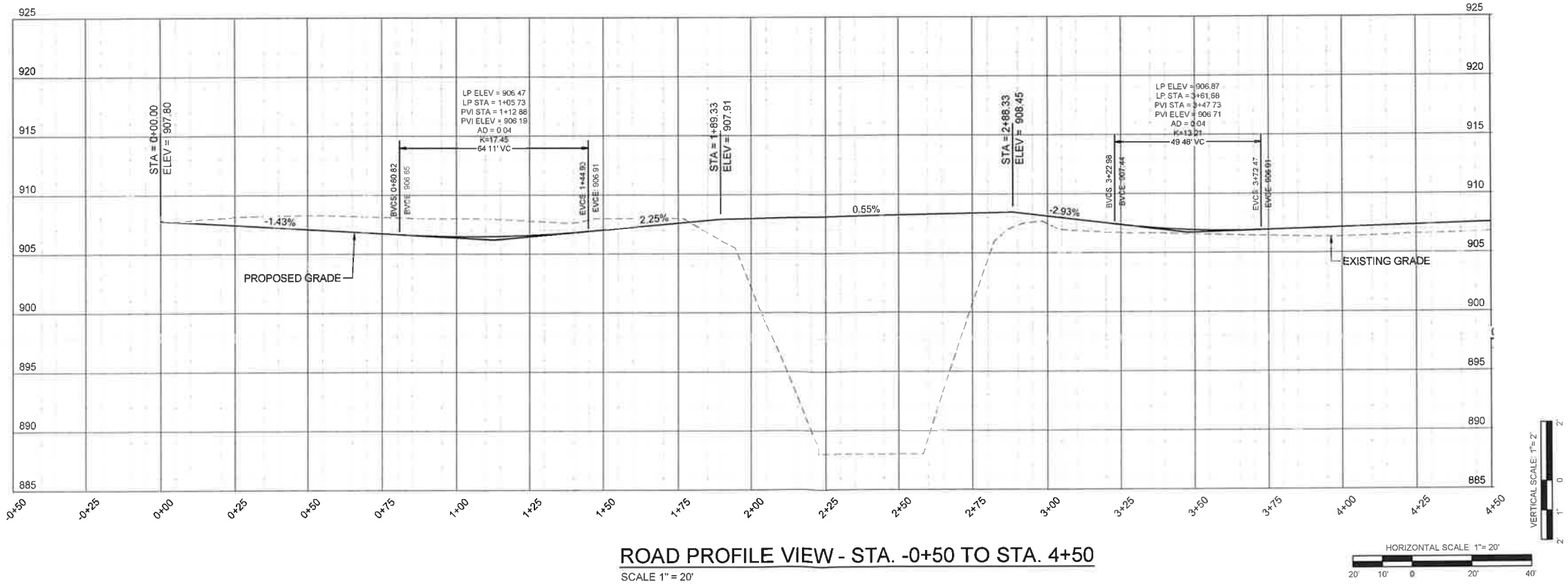
SHEET NO.
CG-103



ROAD PLAN VIEW

SCALE 1" = 20'





ROAD PROFILE VIEW - STA. -0+50 TO STA. 4+50

SCALE 1" = 20'

PLOTTED BY: JRose

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RODERICK S. BAYLOR
28004
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1-23-26

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ROADWAY PLAN AND PROFILE

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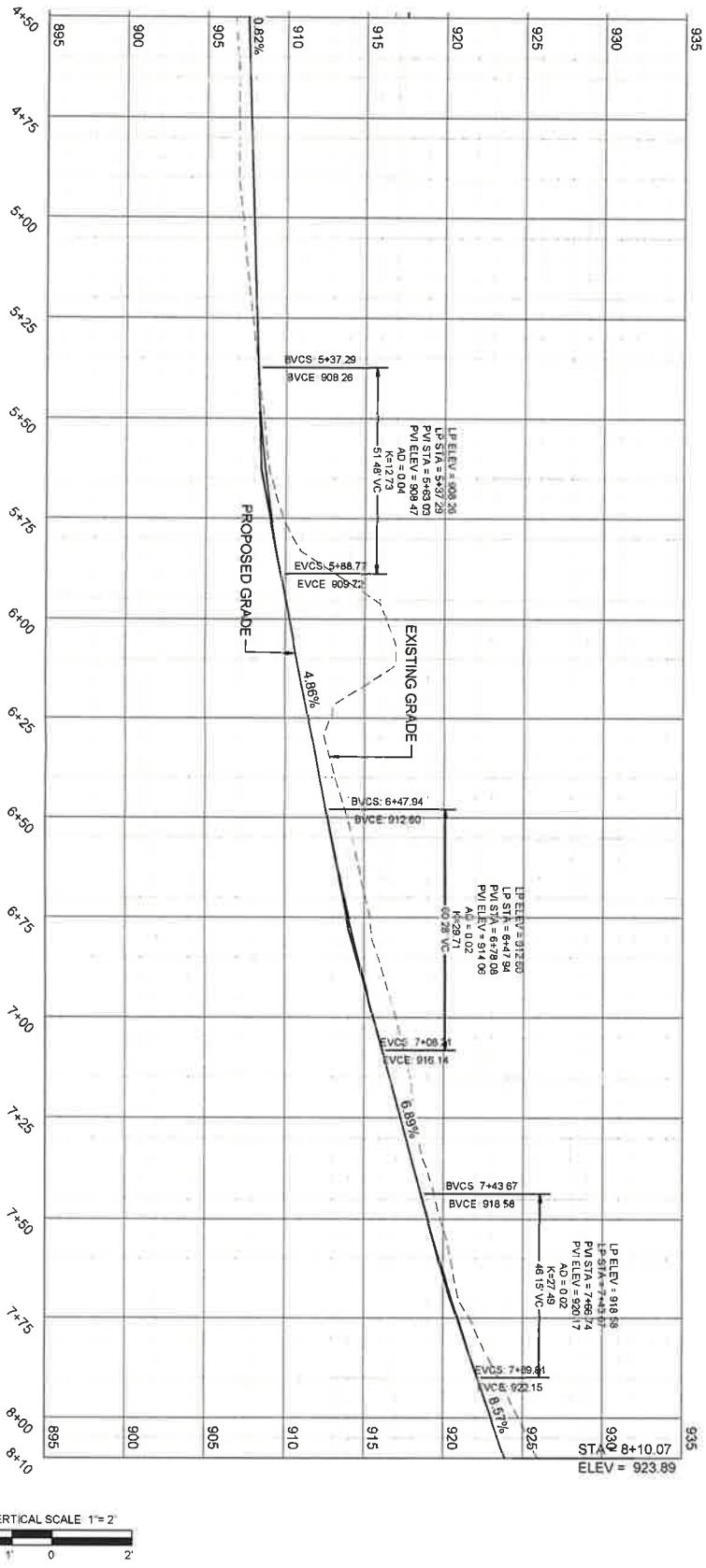
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JANUARY 23, 2026

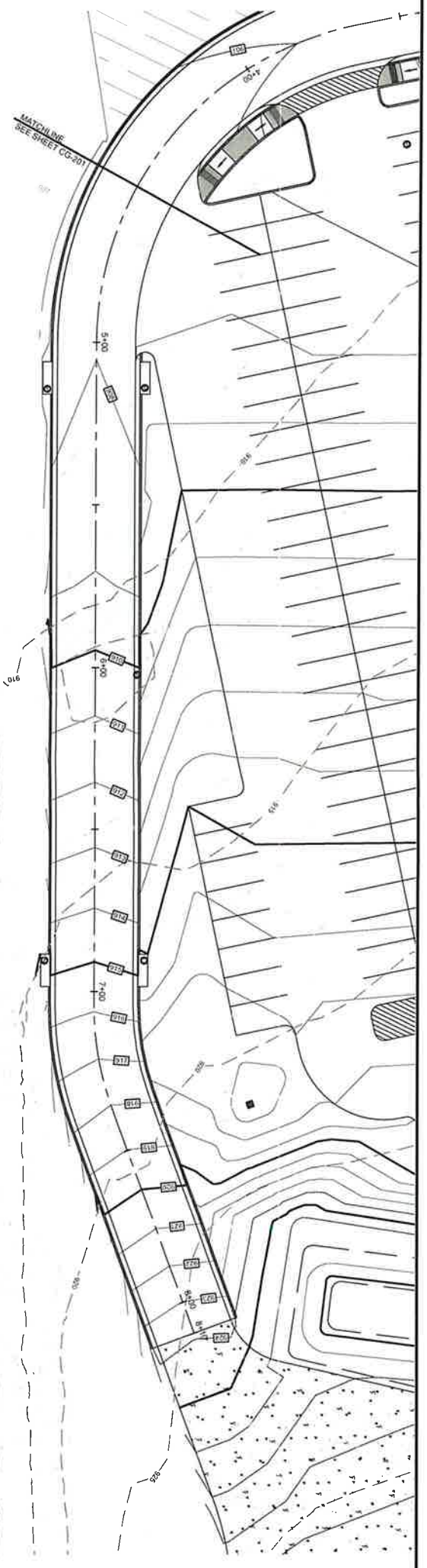
SCALE
AS NOTED

SHEET NO
CG-201



ROAD PROFILE VIEW - STA. 4+50 TO STA. 8+10.07

SCALE 1" = 20'



ROAD PLAN VIEW

SCALE 1" = 20'

SHEET NO. CG-202	DATE JANUARY 23, 2026	REVISIONS (NO / DESCRIPTION / DATE / BY)	DESIGNED JCR JCR
SCALE AS NOTED			DRAWN JCR JCR
			REVIEWED RSS RSS
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ROADWAY PLAN AND PROFILE

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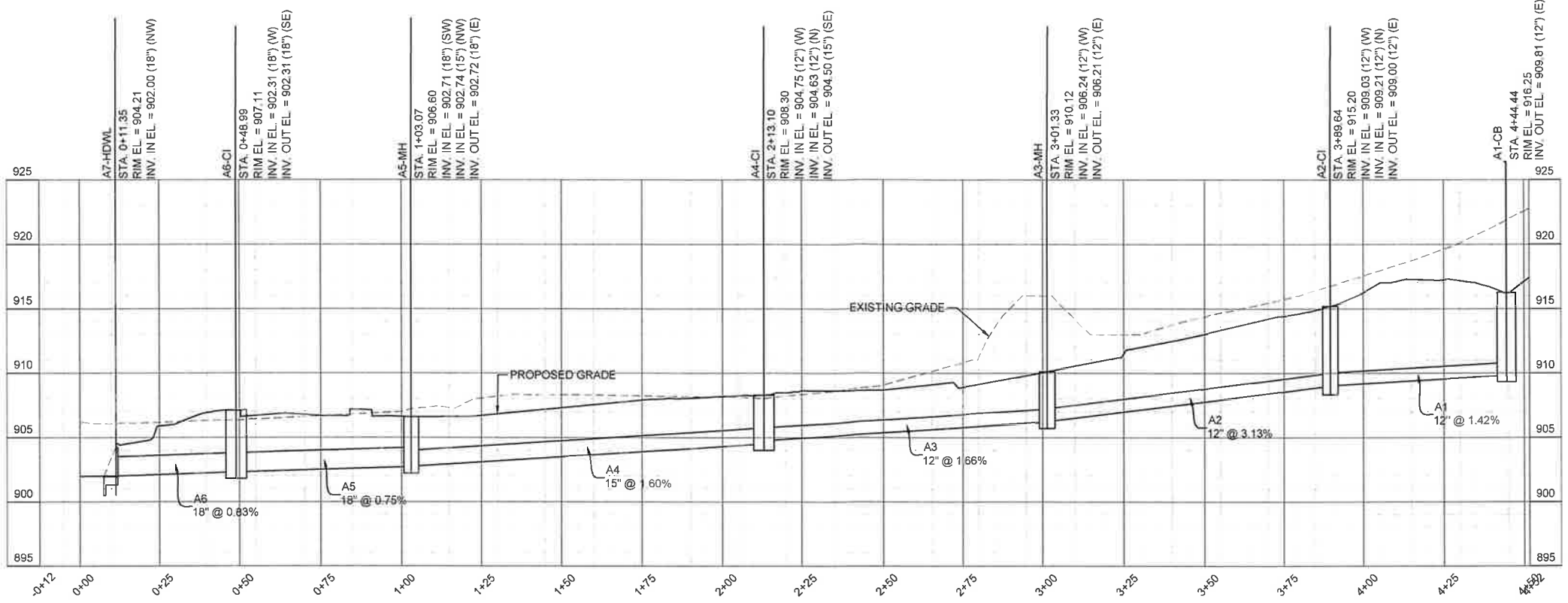
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CLIENT PROJECT NO. 1-2026

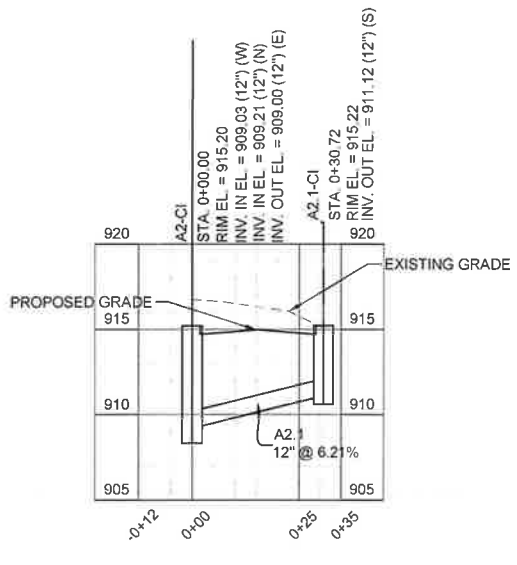
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1-23-26

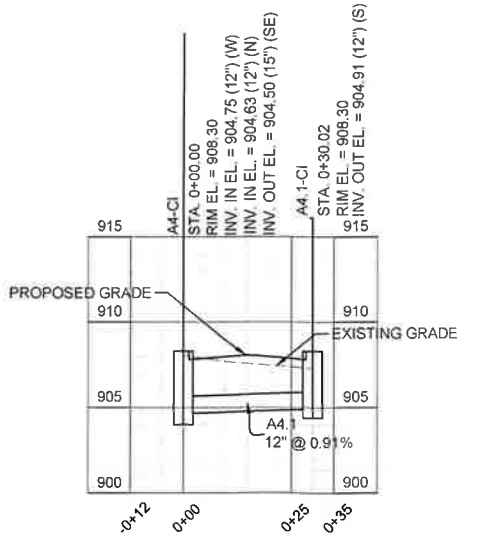
CONSTRUCTION DOCUMENTS



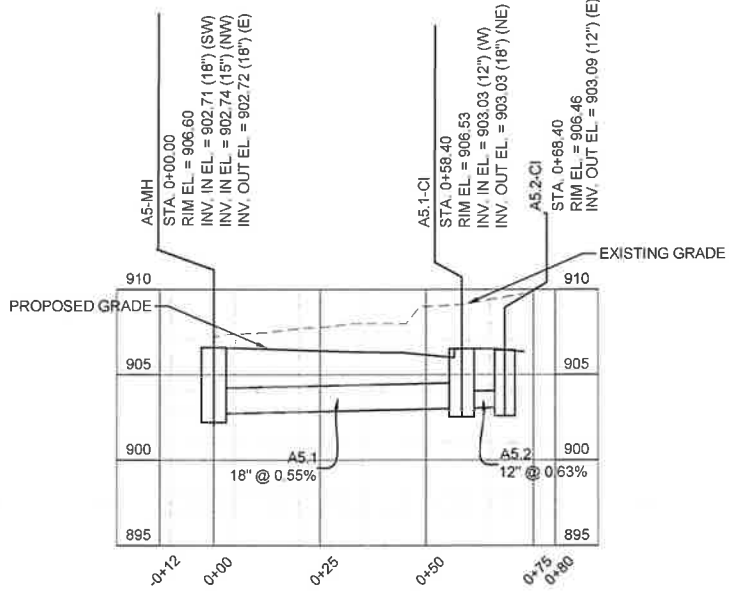
PROFILE - STA. -0+12 TO STA. 4+52 LINE "A1"



PROFILE - STA. -0+12 TO STA. 0+35 LINE "A2.1"



PROFILE - STA. -0+12 TO STA. 0+35 LINE "A4.1"



PROFILE - STA. -0+12 TO STA. 0+80 LINE "A5.1"

VERTICAL SCALE: 1"= 5'

HORIZONTAL SCALE: 1"= 20'

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STATE OF KENTUCKY
RODERICK S. BAYLOR
28004
LICENSED PROFESSIONAL ENGINEER
1-22-26

CONSTRUCTION DOCUMENTS

GRW PROJECT NO. 5300-01

CLIENT PROJECT NO. 1-2226

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STORM PROFILES

LFUCG FIRE TRAINING
CITY OF LEXINGTON, KENTUCKY

AS BUILTS	BY	DATE
DRAWN	JCR	
REVISIONS		
DESCRIPTION		
NO		
REVISED	RSS	
APPROVED	RSS	

THIS MARK SHOULD MEASURE EXACTLY 1" WHEN PLOTTED
SCALE CHECK

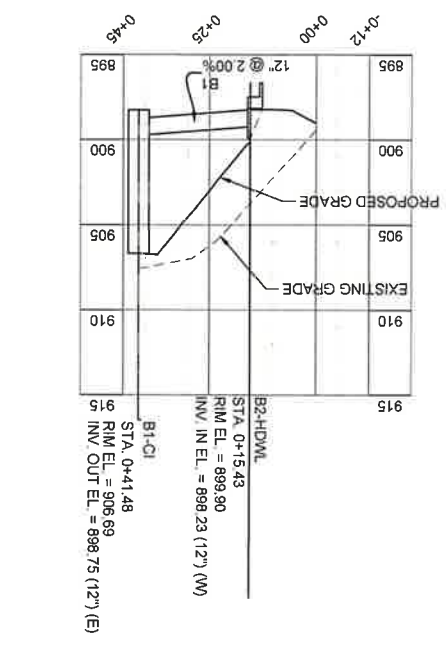
DATE
JANUARY 23, 2026

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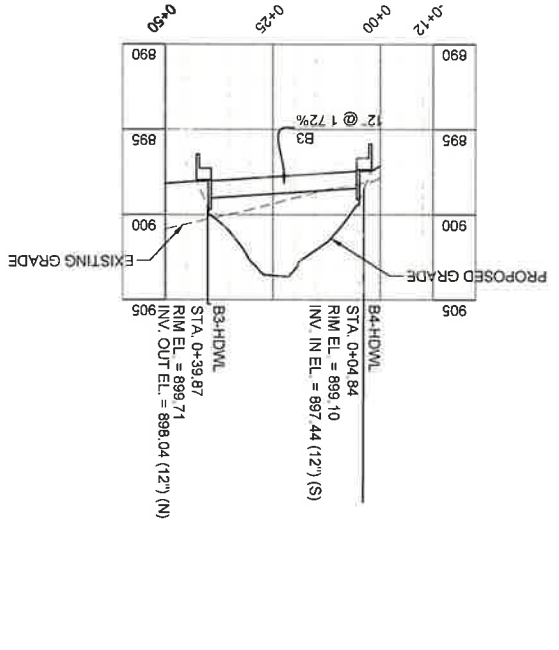
SHEET NO
CG-210

FILE NAME: G:\5300-LFUCG FT PW\Working Drawings\Auto\CAD\5300-CG-211.dwg
PRINTED: 1/22/2026 @ 3:58PM
PLOTTED BY: JRose

PROFILE - STA. -0+12 TO STA. 0+45 LINE "B1"



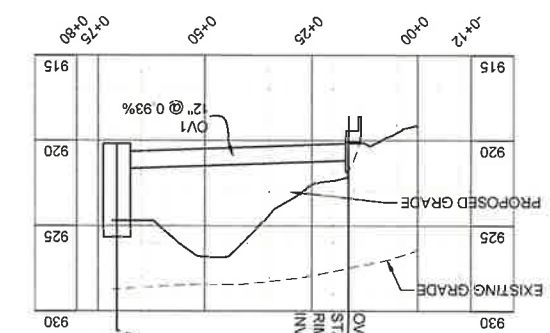
PROFILE - STA. -0+12 TO STA. 0+50 LINE "B2"



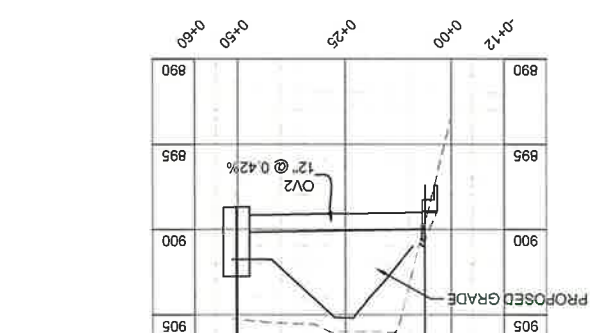
HORIZONTAL SCALE 1"= 20'

VERTICAL SCALE 1"= 5'

PROFILE - STA. -0+12 TO STA. 0+80 LINE "A1-Overflow"



PROFILE - STA. -0+12 TO STA. 0+60 LINE "A2-Overflow"



STORM PROFILES

LFUCG FIRE TRAINING

CITY OF LEXINGTON, KENTUCKY

CONSTRUCTION DOCUMENTS

NO	REVISIONS DESCRIPTION	DATE	BY

SCALE CHECK: THIS BAR SHOULD MEASURE EXACTLY 1" WHEN PLOTTED

DESIGNED JCR
DRAWN JCR
REVIEWED RSS
APPROVED RSS

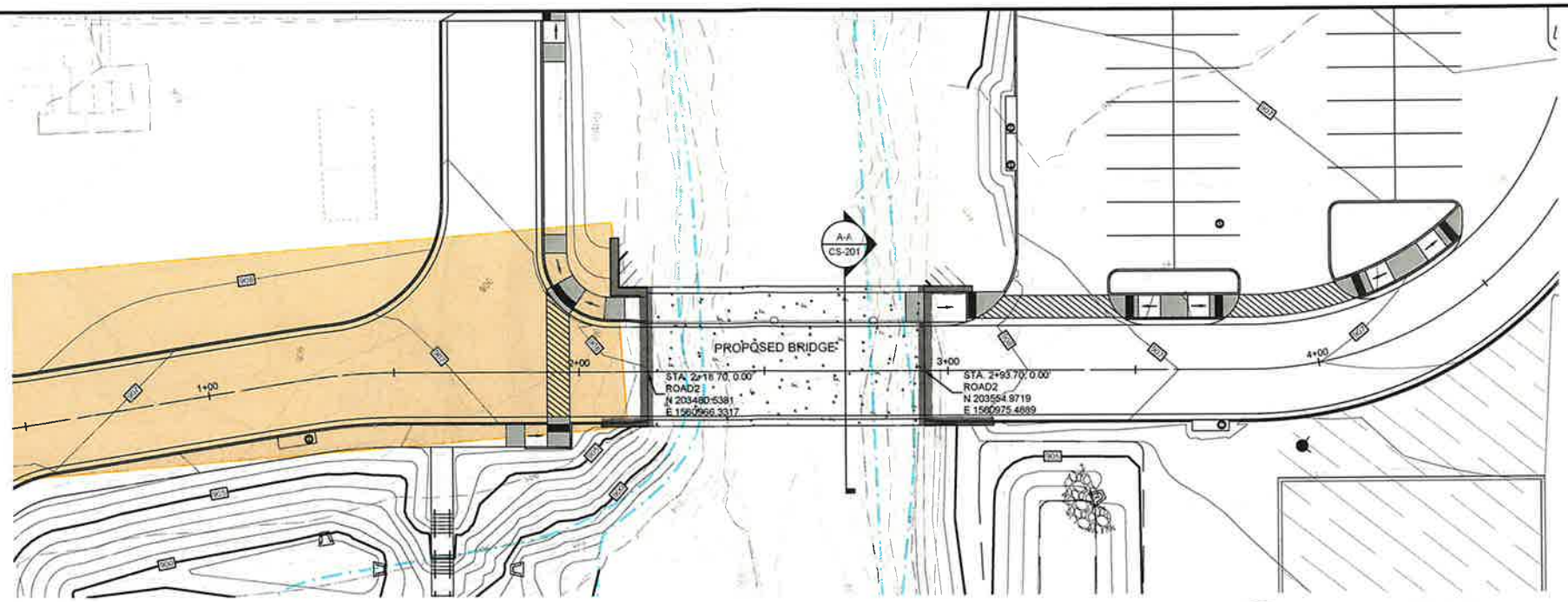
DATE JANUARY 23, 2026
SCALE AS NOTED
SHEET NO CG-211

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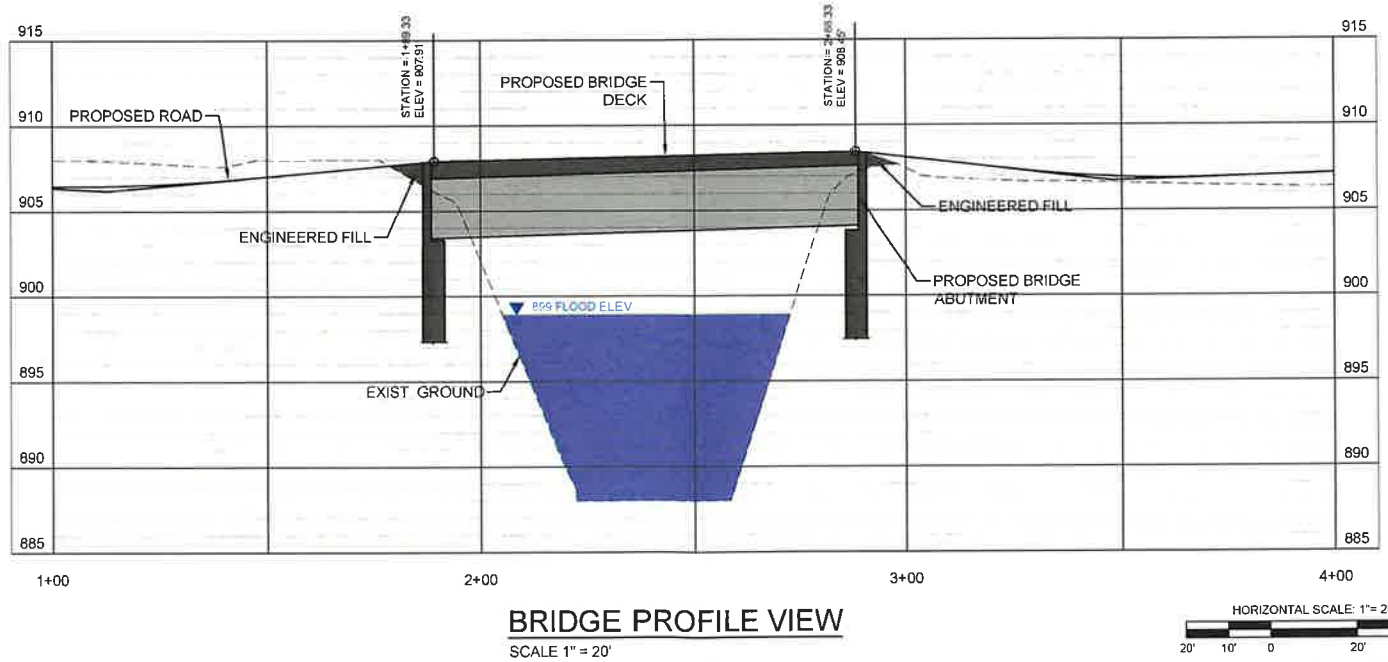
STATE OF KENTUCKY
RODERICK S. SAYLOR
28004
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1-28-26

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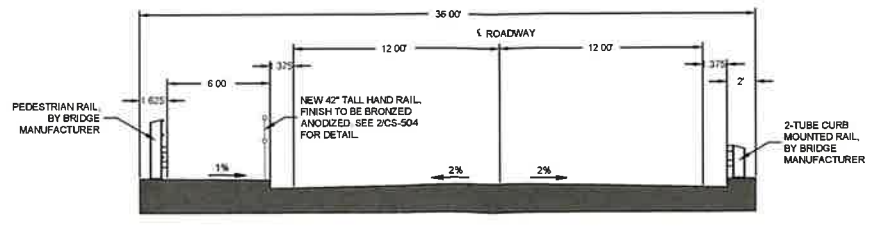
BRIDGE PLAN VIEW

SCALE 1" = 20'



BRIDGE PROFILE VIEW

SCALE 1" = 20'



BRIDGE SECTION A-A

SCALE 1" = 5'

RODERICK S. SAYLOR 28004 LICENSED PROFESSIONAL ENGINEER
STATE OF KENTUCKY
1-23-26

GRW PROJECT NO. 5300-01

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BRIDGE PLAN AND PROFILE

LFUCG FIRE TRAINING
CITY OF LEXINGTON, KENTUCKY

REVISIONS			
NO	DESCRIPTION	DATE	BY

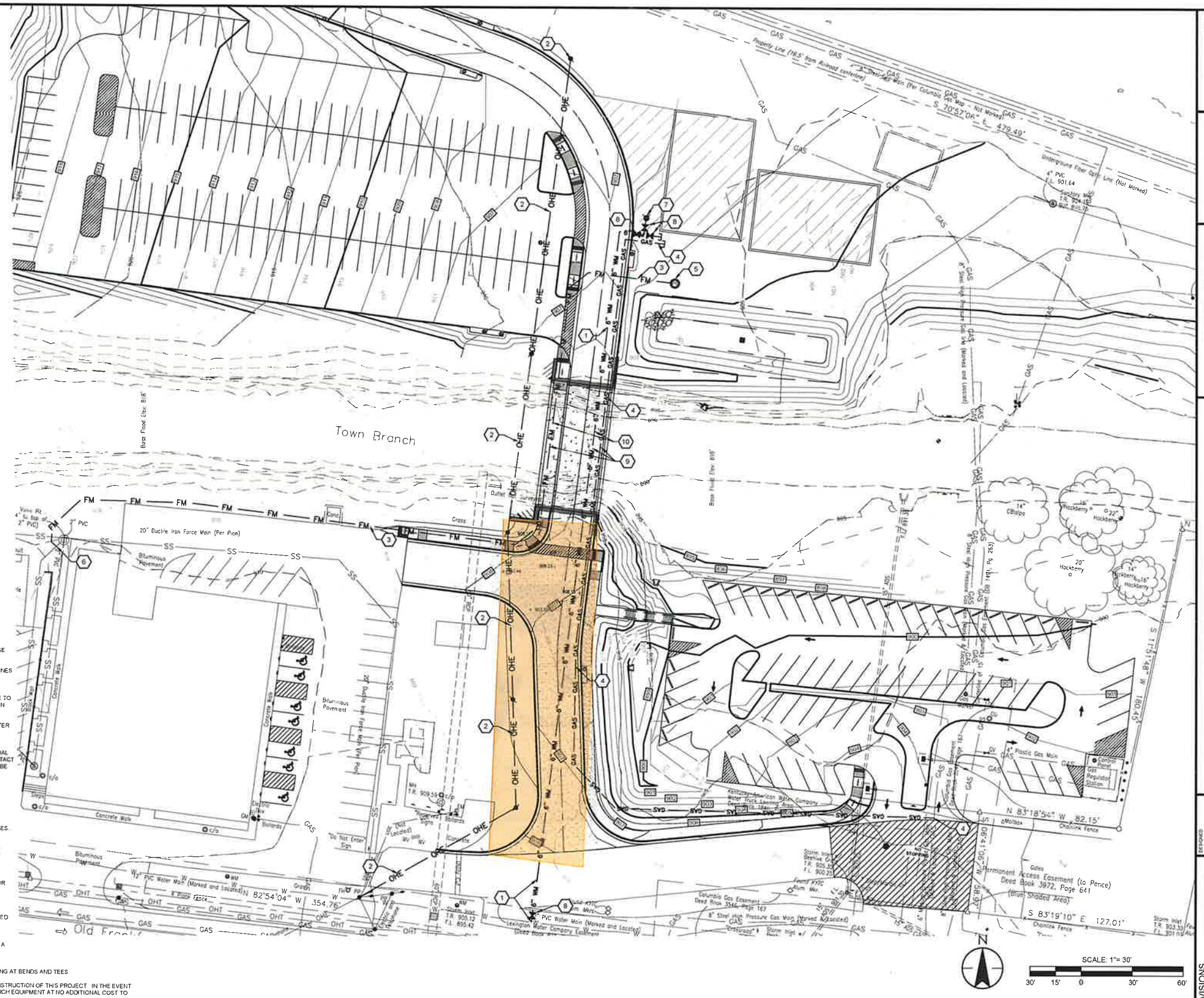
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DRAWN JCR JCR
REVIEWED RSS RSS
APPROVED AN RSS

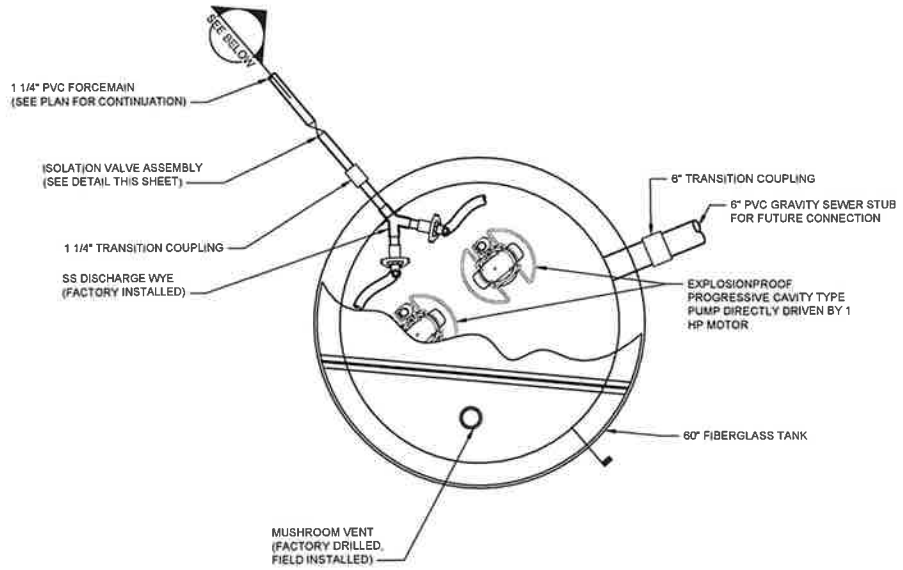
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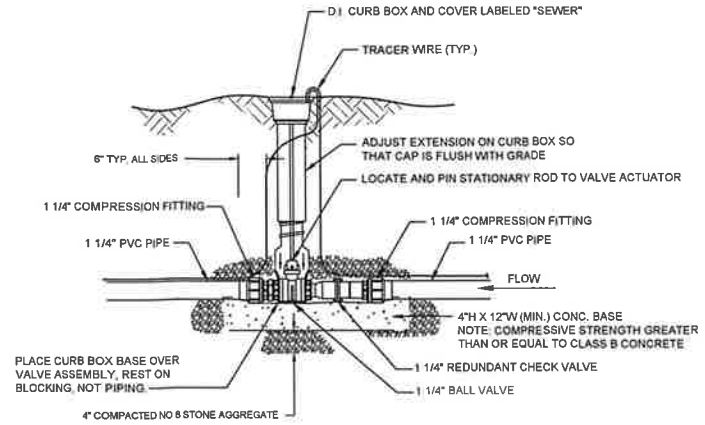
SHEET NO
CG-401

PLOTTED By: JRose
PRINTED: 1/22/2026 @ 4:08PM
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Town Branch
Base Flood Elev 898'
Base Flood Elev 899'
Property Line (16.5' from Railroad centerline)
Underground Fiber Optic Line (Not Marked)
20" Ductile Iron Force Main (Per Plan)
Bituminous Pavement
Concrete Walk
Old Frankfort
Gravel Road
Gabion Wall
Gabion Retaining Wall
Stone Retaining Wall
Stone Wall
Chainlink Fence
Wire Fence
Gates
Permanent Access Easement (to Fence) Deed Book 3972, Page 641 (Irregular Shaded Area)
Columbia Gas Easement Deed Book 3566, Page 163
Kentucky-American Water Company Water Main Location Area Deed Book 3566, Page 163
8" Steel High Pressure Gas Main (Marked and Located)
6" PVC Water Main (Marked and Located)
Lexington Water Company Easement
Storm Inlet Rim Elev 905.32 I.E. 900.21
Storm Inlet T.R. 905.12 I.E. 899.43
Storm Inlet T.R. 903.39 I.E. 901.19
Storm Inlet T.R. 909.53 I.E. 905.43
Manhole T.R. 909.12 I.E. 899.42
Manhole T.R. 909.53 I.E. 899.43
Manhole T.R. 909.53 I.E. 899.43
Manhole T.R. 909.53 I.E. 899.43

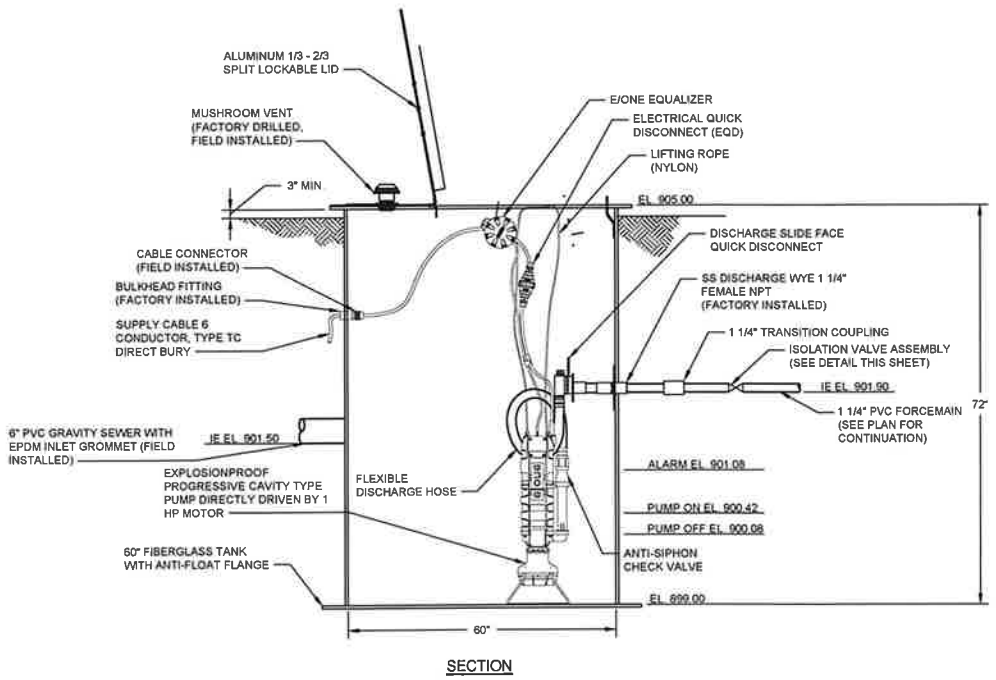


PLAN



GRINDER PUMP
ISOLATION VALVE ASSEMBLY

NOT TO SCALE

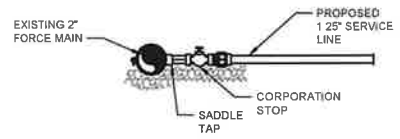


SECTION

ADMINSTRATION BUILDING DUPLEX
GRINDER PUMP STATION

NOT TO SCALE





GRINDER PUMP
FORCE MAIN CONNECTION

NOT TO SCALE

RODERICK S. SAYLOR 28004 LICENSED PROFESSIONAL ENGINEER
STATE OF KENTUCKY
1-23-26

CONSTRUCTION DOCUMENTS

GRW PROJECT NO. 5300-01

CLIENT PROJECT NO. 1-2026

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DUPLEX GRINDER PUMP STATION

LFUCG FIRE TRAINING
CITY OF LEXINGTON, KENTUCKY

DESIGNED	DRAWN	REVIEWED	APPROVED
JFE	JFE	RSS	RSS

REVISIONS

NO	DESCRIPTION	DATE	BY

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DATE
JANUARY 23, 2026

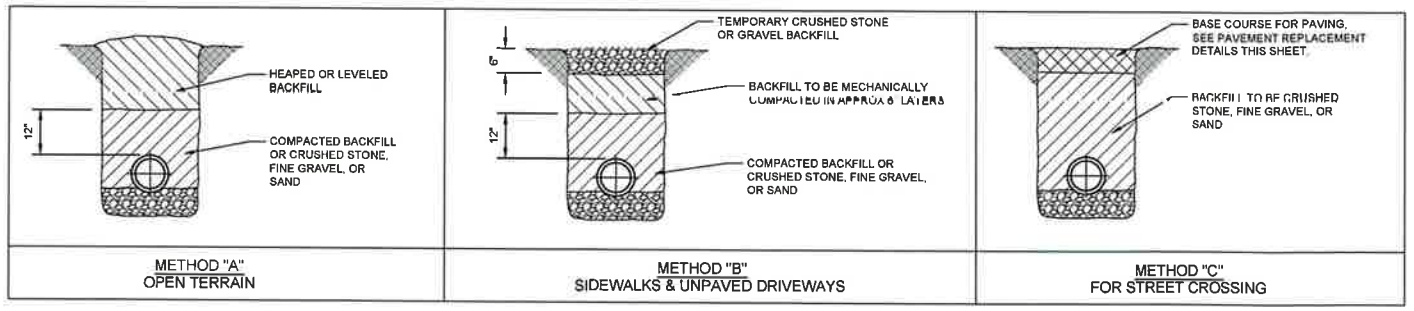
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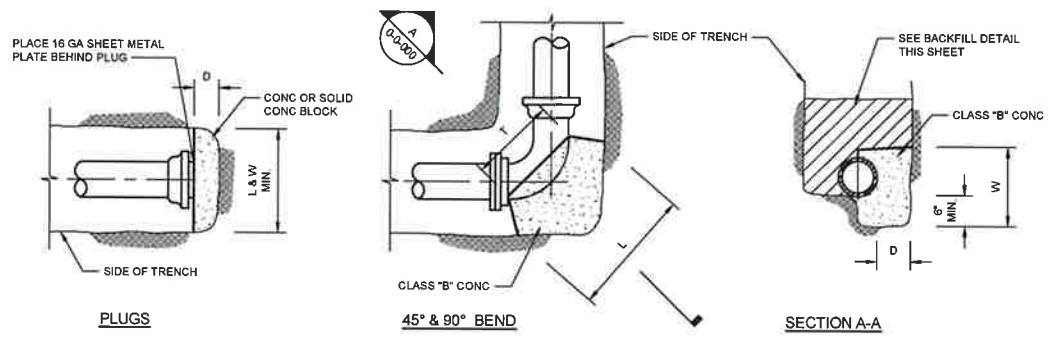
SHEET NO
CU-501

PLOTTED BY: JRose

PRINTED: 1/22/2026 @ 4:03PM

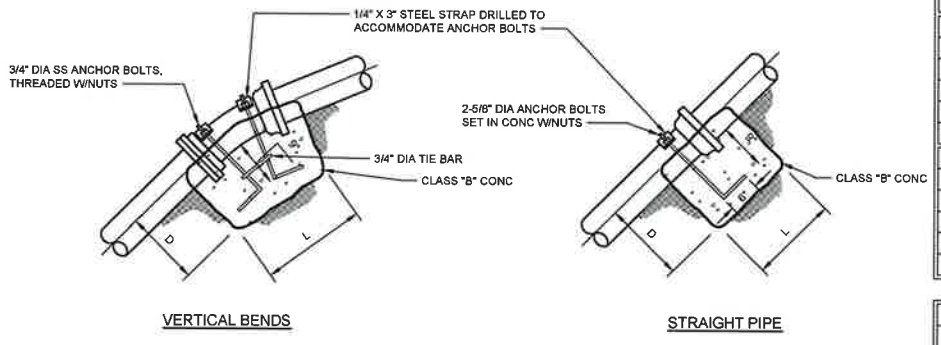
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CONCRETE THRUST BLOCKS

NOT TO SCALE



CONCRETE ANCHOR BLOCKS

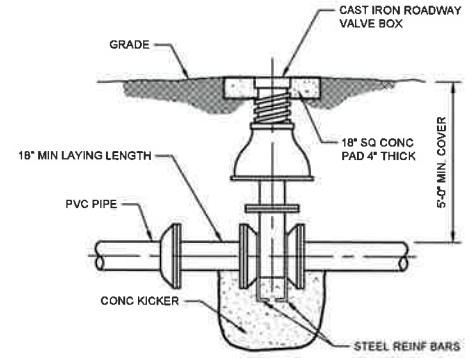
NOT TO SCALE

PLUGS								
SIZE	6"	8"	10"	12"	16"	18"	20"	24"
D	6"	6"	6"	6"	10"	12"	14"	18"
L & W	20"	22"	24"	24"	32"	36"	40"	48"
45° EIGHTH BENDS								
SIZE	6"	8"	10"	12"	16"	18"	20"	24"
D	6"	6"	6"	6"	6"	6"	8"	10"
L	18"	20"	22"	24"	34"	40"	45"	52"
T	16"	16"	18"	18"	28"	33"	37"	46"
W	12"	14"	16"	18"	22"	25"	28"	32"
90° QUARTER BENDS								
SIZE	6"	8"	10"	12"	16"	18"	20"	24"
D	8"	10"	12"	12"	12"	16"	20"	20"
L	24"	27"	30"	34"	48"	51"	54"	70"
T	16"	18"	20	22"	36"	40"	44"	50"
W	12"	16"	20"	24"	28"	34"	40"	44"

VERTICAL BEND & STRAIGHT PIPE								
SIZE	6"	8"	10"	12"	16"	18"	20"	24"
D	15"	15"	18"	18"	21"	21"	24"	24"
L	24"	24"	30"	30"	36"	36"	36"	42"

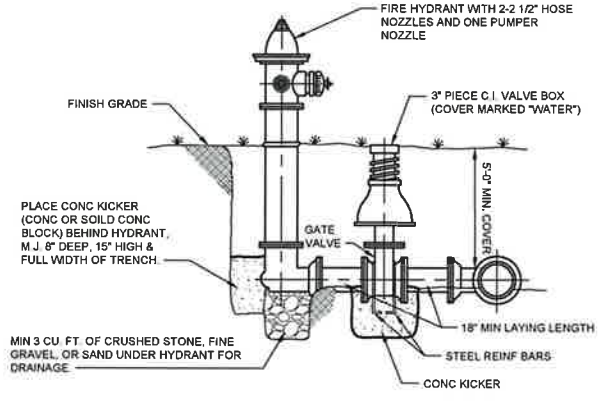
NOTES:

1. ANCHORS TO BE FULL WIDTH OF TRENCH
2. DEPTH "D" MAY BE GREATER THAN SPECIFIED TO ALLOW WORKING SPACE. PIERS MUST BE PLACED AGAINST UNDISTURBED EARTH



TYPICAL VALVE SETTING

NOT TO SCALE



TYPICAL FIRE HYDRANT SETTING

NOT TO SCALE

PLOTTED BY: JRoe

PRINTED: 1/22/2026 @ 4:01PM

FILE NAME: G:\6300-LFUCG FT P1\Working Drawings\AutoCAD\6300-CU-502.dwg

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GRW PROJECT NO. 6300-01

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UTILITY DETAILS

LFUCG FT P1 WATER MAIN TRAINING
CITY OF LEXINGTON, KENTUCKY

DESCRIPTION	BY
DESIGNED	JFE
DRAWN	JFE
REVIEWED	RSS
APPROVED	RSS

REVISIONS

NO	DESCRIPTION	DATE	BY

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SCALE CHECK

DATE
JANUARY 23, 2026

SCALE
AS NOTED

SHEET NO
CU-502

70'-0" X 34'-0"

LFUCG FIRE TRAINING

LEXINGTON, KY

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BIG R BRIDGE

CONTECH
PROPOSAL
DRAWING

70'-0" X 34'-0"
LFUCG FIRE TRAINING
ROLLED GIRDER BRIDGE - SITE-SPECIFIC MODULAR
LEXINGTON, KY

PROJECT No.:	SEQ. No.:	DATE:
869727	010	9/26/2025
DESIGNED: XXX		DRAWN: DJB
CHECKED: XXX		APPROVED: XXX
SHEET NO.: 1 OF 6		

I:\MERLIN\PROJECTACTIVE\869700\869727\869727-10-BIG R ROLLED GIRDER\PRICING INFORMATION\70' X 34' PRELIM.DWG 9-26-2025.DWG 9/26/2025 6:41 AM

GENERAL NOTES:

1. CONTECH ENGINEERED SOLUTIONS HAS AISC QUALITY CERTIFIED BRIDGE FABRICATION - ADVANCED (MAJOR) WITH A FRACTURE CRITICAL AND SOPHISTICATED PAINT ENDORSEMENT .

2. DESIGN IS IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 9th EDITION 2020.

3. MATERIALS (UNLESS NOTED OTHERWISE):
   a. STRUCTURAL STEEL:
      SHAPES: ASTM A588 WEATHERING STEEL
      PLATES: ASTM A588 WEATHERING STEEL
      TUBES: ASTM A847
   b. ELASTOMERIC PADS: GRADE 4, 60 DUROMETER
   c. STRUCTURAL BOLTS: ASTM F3125 GRADE A325 (TYPE 3)

4. DESIGN LOADINGS:
   a. BRIDGE DEAD LOAD PLUS 37.5 PSF FUTURE WEARING SURFACE.
   b. VEHICLE LIVE LOAD: HL-93, MAX ADTT = 266
   c. WIND LOADING PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS SECTION 3.8:
      WIND SPEED = 115 MPH
      WIND EXPOSURE CATEGORY = C
      MAX HEIGHT OF STRUCTURE = 33 FT.
   d. BRIDGE RAIL DESIGNED FOR TL-3 AND CRASH TESTED TO MEET NCHRP REQUIREMENTS.
   e. SEISMIC LOADING PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS SECTION 3.10:
      SITE CLASS: D
      PGA = 0.151
      S_S = 0.274
      S_1 = 0.070
      PERIOD OF BRIDGE = T_m = 0.057 SEC

5. BRIDGE TO BE BUILT TO THE REQUIREMENTS OF AWS D1.5.

6. ALL SHOP WELDING SHALL USE THE GAS METAL ARC WELDING OR FLUX CORED ARC WELDING PROCESS.

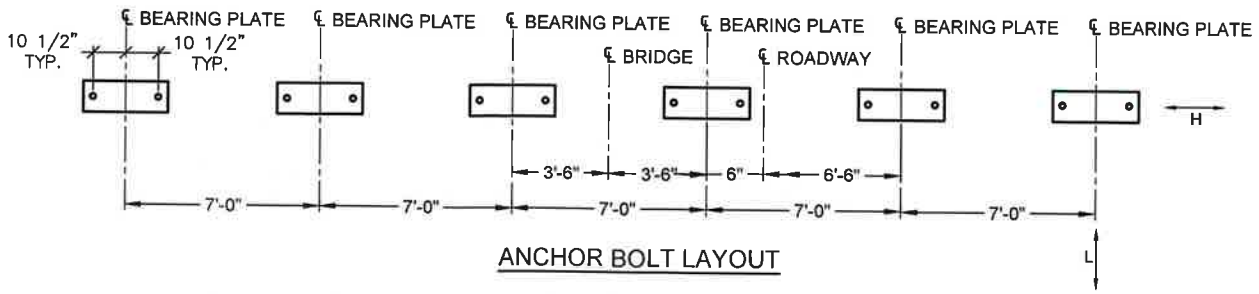
7. FINISH:
   ALL SURFACES OF STEEL TO BE CLEANED IN ACCORDANCE WITH STEEL STRUCTURES PAINTING COUNCIL SURFACE PREPARATION SPECIFICATIONS NO. 7, SSPC-SP7 BRUSH-OFF BLAST CLEANING.

8. ALL BOLTED CONNECTIONS ARE CONSIDERED TO BE PRETENSIONED OR SLIP-CRITICAL CONNECTIONS. ALL BOLTS ARE TO BE PRETENSIONED PER THE REQUIREMENTS OF SECTION 8.2 OF THE SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS BY RCSC.

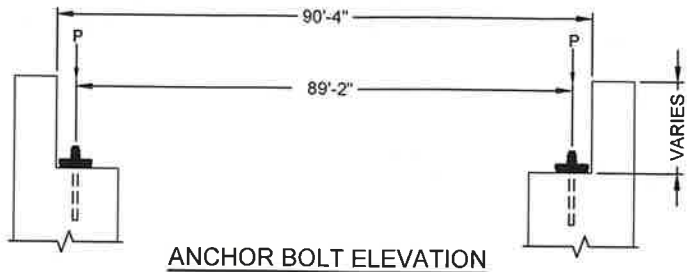
9. ALL BOLTS, NUTS AND WASHERS SHALL BE FURNISHED IN THE AMOUNT OF 5% IN EXCESS OF THE NUMBER REQUIRED FOR EACH SIZE AND LENGTH.

10. IF BOLTS DO NOT SMOOTHLY ENGAGE UP TO SNUG-TIGHT, THERE MAY BE AN OBSTRUCTION WITHIN THE THREADS. THE BOLTS SHOULD BE REMOVED, THE THREADS ON THE BOLT AND NUT CLEANED AND RETAPPED IF NECESSARY TO ALLOW SMOOTH INSTALLATION OF THE BOLT. (IF APPLICABLE)

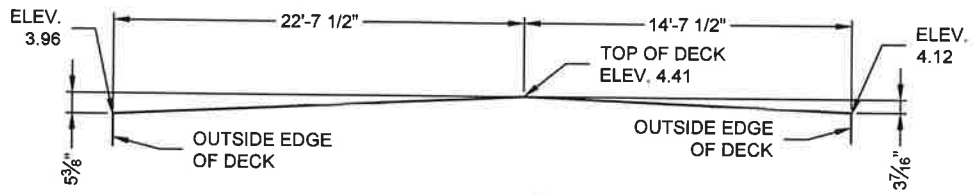
11. MAINTENANCE NOTE: CONTECH ENGINEERED SOLUTIONS RECOMMENDS NOT APPLYING DE-ICING OR DUST PROHIBITIVE CHEMICALS OR SALTS TO ANY PART OF THE BRIDGE STRUCTURE. IF DE-ICING OR DUST PROHIBITIVE CHEMICALS OR SALTS ARE APPLIED TO ANY PART OF THE BRIDGE STRUCTURE, CONTECH ENGINEERED SOLUTIONS WILL NOT BE RESPONSIBLE FOR ANY RESULTANT ACCELERATED CORROSION.

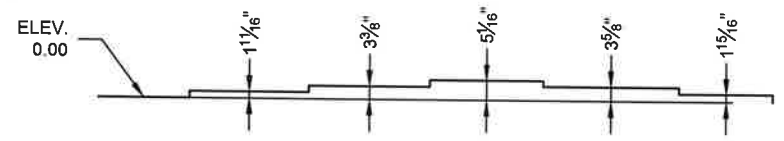


ANCHOR BOLT LAYOUT

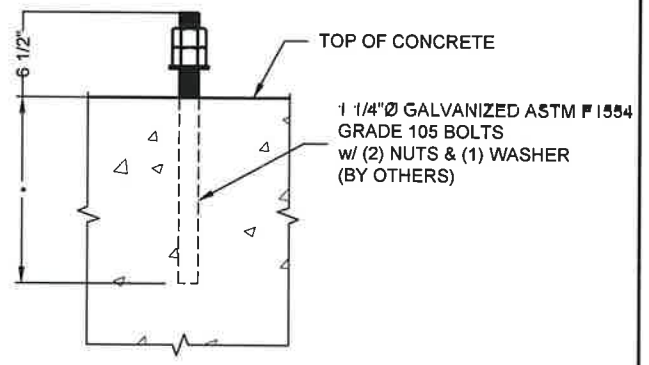


ANCHOR BOLT ELEVATION





DECK ELEVATION



ANCHOR BOLT DETAIL

*NOTE:
ANCHOR BOLTS ARE DESIGNED BY CONTECH FOR STEEL STRENGTH IN SHEAR AND TENSION OF THE ANCHOR BOLT ONLY. ALL DESIGN CONSIDERATIONS REGARDING CONCRETE BREAKOUT STRENGTH IN SHEAR AND TENSION, PULLOUT STRENGTH, CONCRETE SIDE-FACE BLOWOUT STRENGTH, CONCRETE PRYOUT STRENGTH, EMBEDMENT DEPTH, TYPE OF ANCHORAGE OR ANY OTHER CONCRETE FAILURE MODES ARE NOT CONSIDERED AND ARE NOT THE RESPONSIBILITY OF CONTECH. IF LARGER DIAMETER BOLTS ARE REQUIRED TO MEET ANY OF THESE REQUIREMENTS, THAT INFORMATION MUST BE PROVIDED TO CONTECH PRIOR TO BEGINNING ANY FABRICATION ON THE BRIDGE.

CONCRETE NOTES

1) CONTECH ENGINEERED SOLUTIONS IS RESPONSIBLE FOR THE STRUCTURAL DESIGN OF THE CONCRETE DECK. ALL ISSUES RELATED TO MATERIAL SUPPLY, TESTING AND INSTALLATION ARE OUTSIDE OF CONTECH'S RESPONSIBILITY.

2) CONCRETE MIX DESIGN, MATERIALS, MIXING, PLACEMENT, FINISHING AND TESTING SHALL BE IN ACCORDANCE WITH SECTION 604 - CONCRETE STRUCTURES OF TNDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

3) MINIMUM MATERIAL REQUIREMENTS: (TNDOT CLASS D)
   a) CONCRETE: f'c = 4,000 psi AT 28 DAY
      AIR CONTENT OF 7% +/- 0.5%
      UNIT WEIGHT OF 145 PCF MAX
   b) REINFORCING: ASTM A615 OR AASHTO M31 GRADE 60 EPOXY-COATED

4) THE CONTRACTOR MUST EXERCISE CARE TO CONTROL TRAFFIC AND STORAGE OF MATERIALS ON THE FORM DECK BEFORE CONCRETE IS PLACED.

5) LONGITUDINAL BARS MAY BE SPLICED IF REQUIRED. SPLICES SHALL BE STAGGERED EVERY OTHER LONGITUDINAL BAR. SPLICES SHALL BE LOCATED AT OR NEAR THE 1/3 POINT OF THE BAY SPANS FROM FLOOR BEAM TO FLOOR BEAM. REQUIRED SPLICE LENGTHS ARE AS FOLLOWS:

BAR SIZE	NORMAL WEIGHT CONCRETE (145 PCF)
#4	29"
#5	36"
#6	43"
#7	50"
#8	57"
#9	70"

PRELIMINARY
NOT FOR CONSTRUCTION

AISC CERTIFIED FABRICATOR

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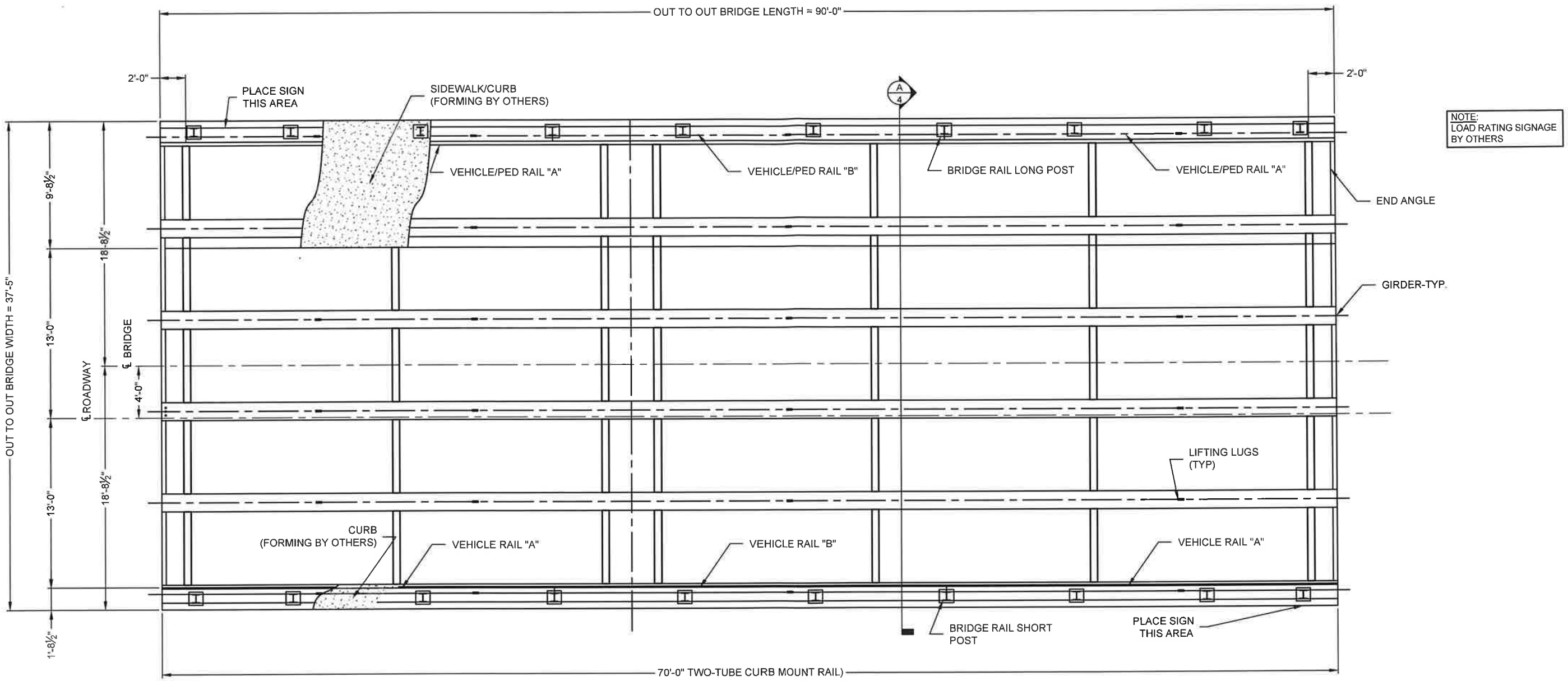
BIG R BRIDGE

CONTECH
PROPOSAL
DRAWING

70'-0" X 34'-0"
LFUCG FIRE TRAINING
ROLLED GIRDER BRIDGE - SITE-SPECIFIC MODULAR
LEXINGTON, KY

PROJECT No:	SEQ No:	DATE:
869727	010	9/26/2025
DESIGNED: XXX	DRAWN: DJB	
CHECKED: XXX	APPROVED: XXX	
SHEET NO: 2 OF 6		

I:\MERLIN\PROJECT\ACTIVE\869700\869727\869727-10-BIG R ROLLED GIRDER\PRICING INFORMATION\70' X 34' PRELIM DWG 9-26-2025.DWG 9/29/2025 6:41 AM



FRAMING PLAN

PRELIMINARY
NOT FOR CONSTRUCTION

AISC CERTIFIED FABRICATOR

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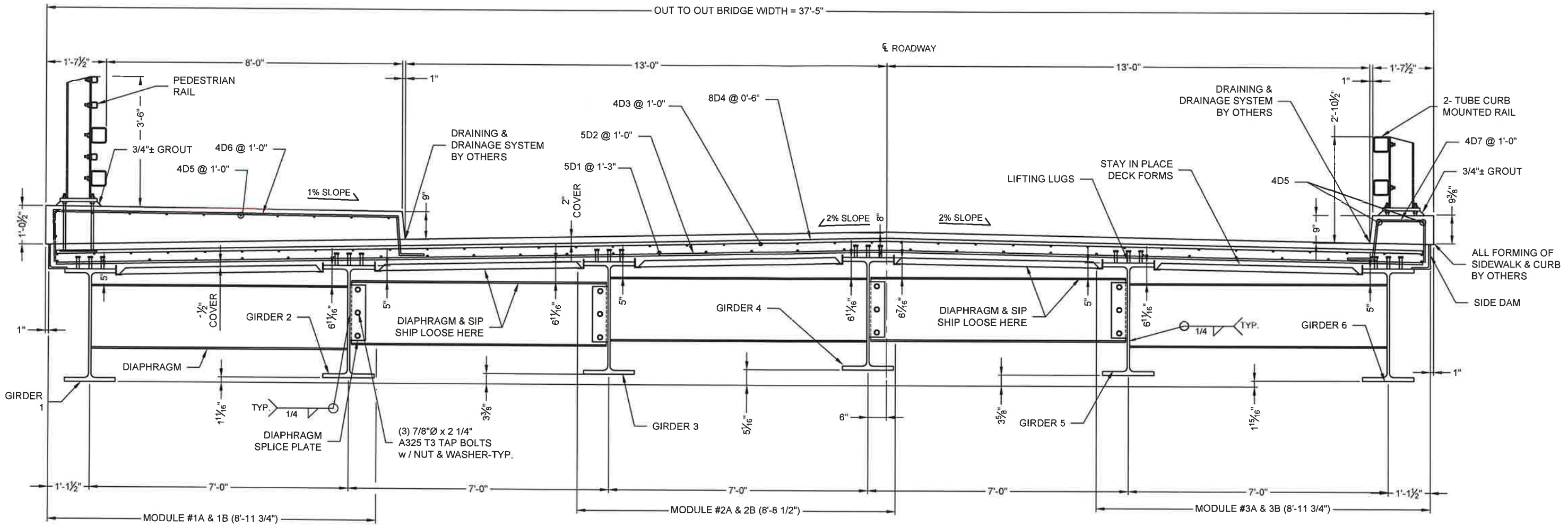
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BIG R BRIDGE

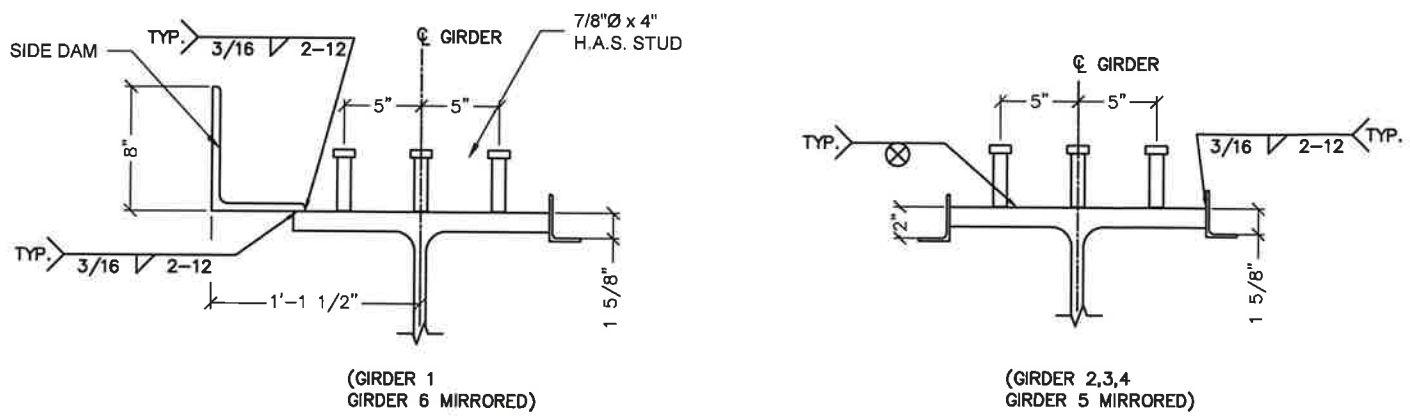
CONTECH **PROPOSAL** DRAWING

70'-0" X 34'-0"
LFUCG FIRE TRAINING
ROLLED GIRDER BRIDGE - SITE-SPECIFIC MODULAR
LEXINGTON, KY

PROJECT No.:	SEQ. No.:	DATE:
869727	010	9/26/2025
DESIGNED: XXX	DRAWN: DJB	
CHECKED: XXX	APPROVED: XXX	
SHEET NO.: 3 OF 6		



SECTION A/3



GIRDER STUD/SUPPORT ANGLE DETAIL

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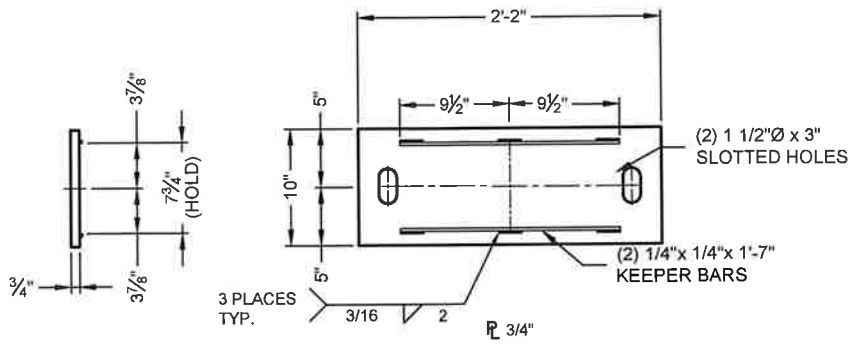
BIG R BRIDGE

CONTECH PROPOSAL DRAWING

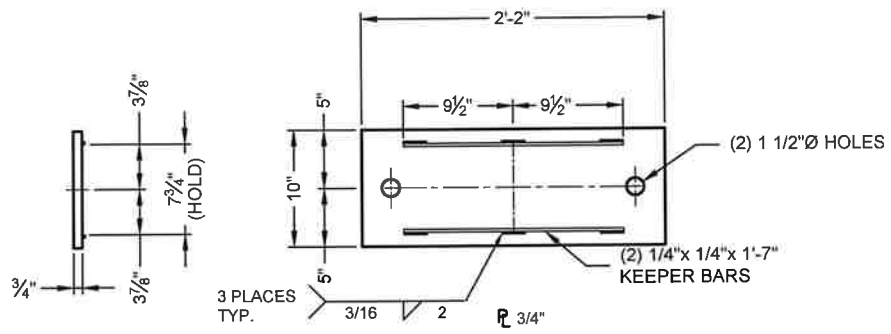
70'-0" X 34'-0"
LFUCG FIRE TRAINING
ROLLED GIRDER BRIDGE - SITE-SPECIFIC MODULAR
LEXINGTON, KY

PROJECT No.:	SEQ. No.:	DATE:
869727	010	9/26/2025
DESIGNED: XXX	DRAWN: DJB	
CHECKED: XXX	APPROVED: XXX	
SHEET NO.: 4 OF 6		

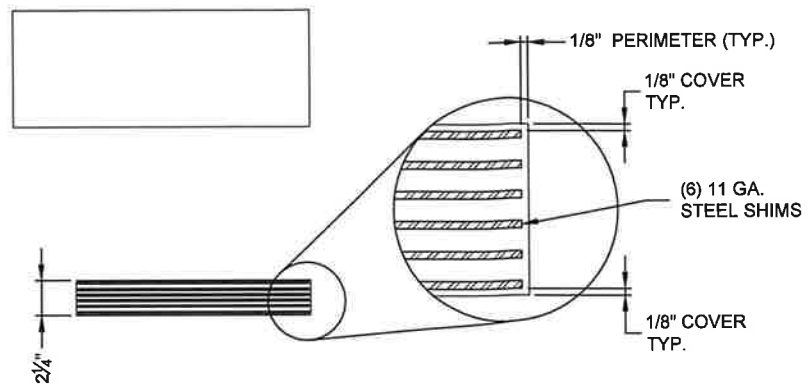
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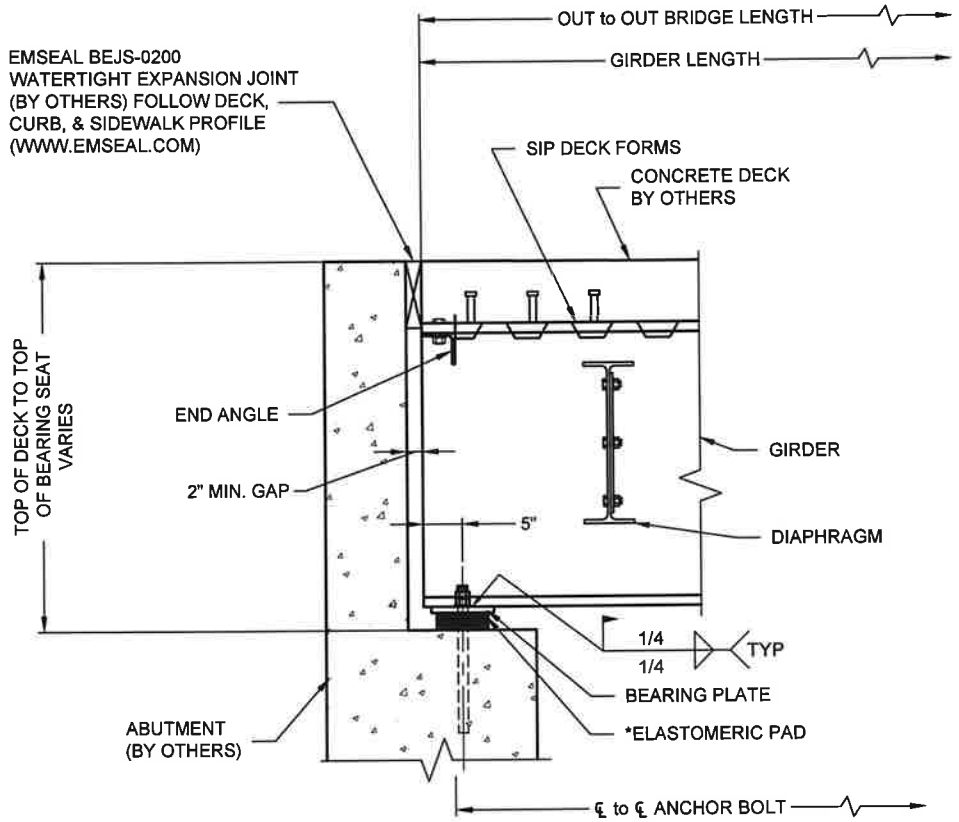
BEARING PLATE DETAIL (EXPANSION)
(SHIPS LOOSE)



BEARING PLATE DETAIL (FIXED)
(SHIPS LOOSE)

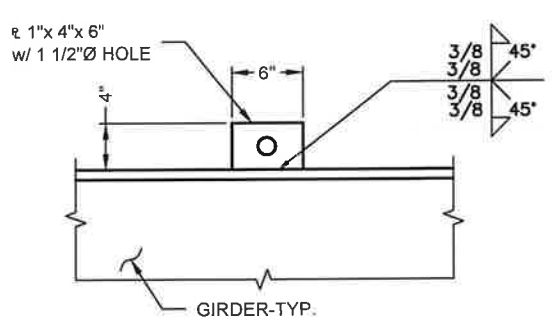


LAYERED ELASTOMERIC PAD
(GRADE 4, 60 DUROMETER)



BEARING DETAIL

* SHEAR FORCE ON PAD = 10.87 k
FRICTION OF PAD TO CONCRETE = 23.59 k
NO EPOXY REQUIRED.



MAX. 24,000 # @ 45° LIFT ANGLE
LIFTING LUG DETAIL

PRELIMINARY
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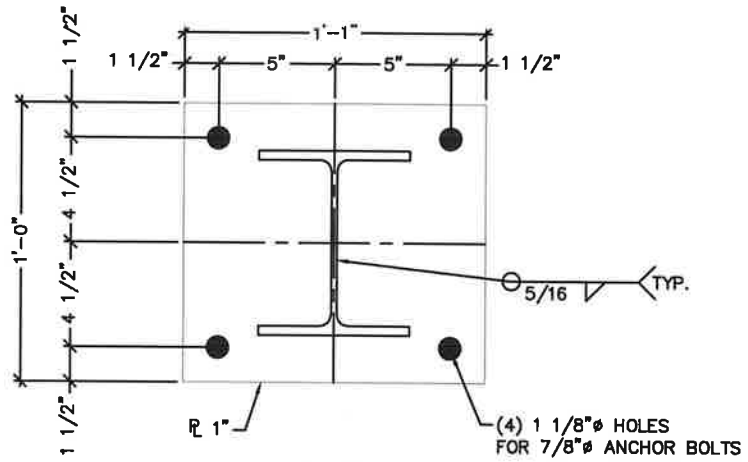
BIG R BRIDGE

CONTECH
PROPOSAL
DRAWING

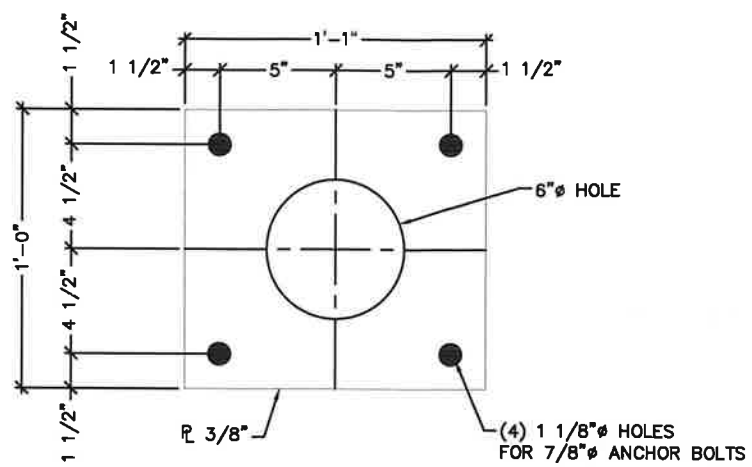
70'-0" X 34'-0"
LFUCG FIRE TRAINING
ROLLED GIRDER BRIDGE - SITE-SPECIFIC MODULAR
LEXINGTON, KY

PROJECT No.:	SEQ. No.:	DATE:
869727	010	9/26/2025
DESIGNED: XXX	DRAWN: DJB	
CHECKED: XXX	APPROVED: XXX	
SHEET NO.: 5 OF 6		

I:\MERLIN\PROJECTACTIVE\869700\869727\869727-10-BIG R ROLLED GIRDER\PRICING INFORMATION\70' X 34' PRELIM DWG 9-26-2025.DWG 9/26/2025 6:41 AM



BASE PLATE



ANCHOR PLATE

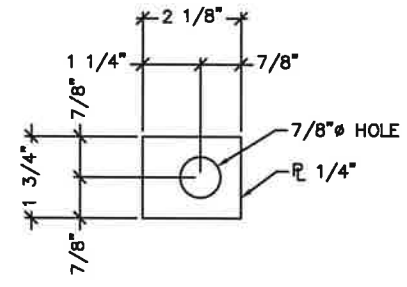
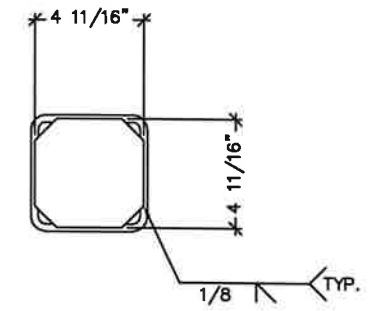


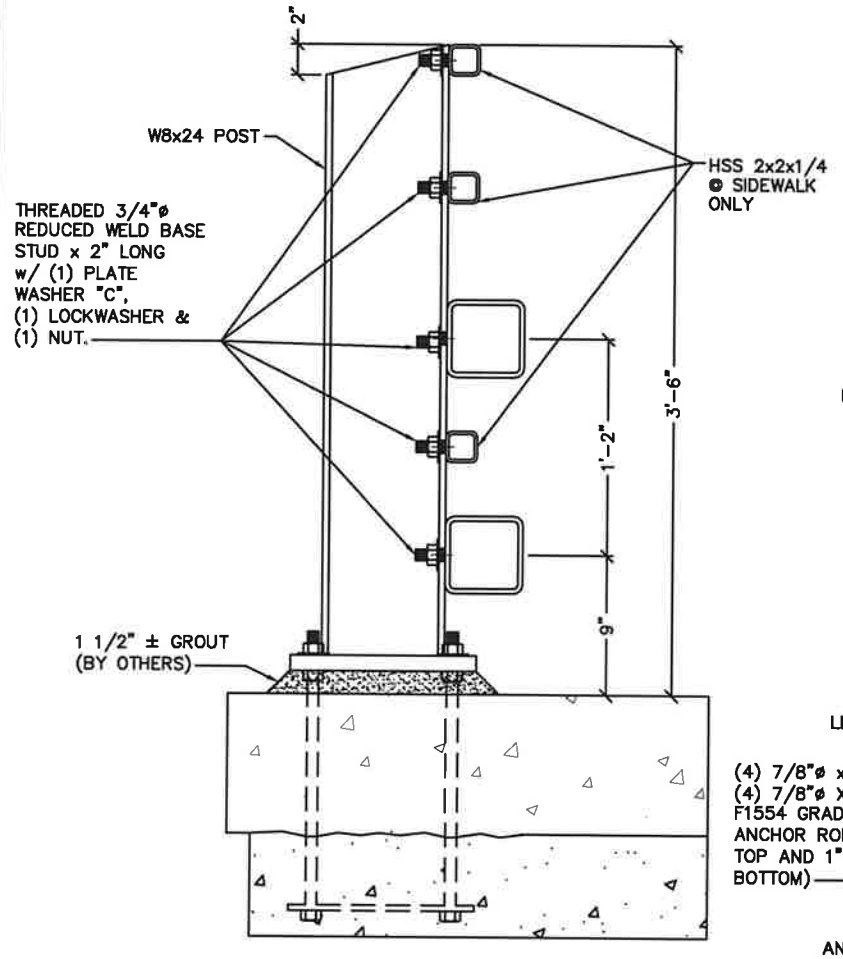
PLATE WASHER "C"

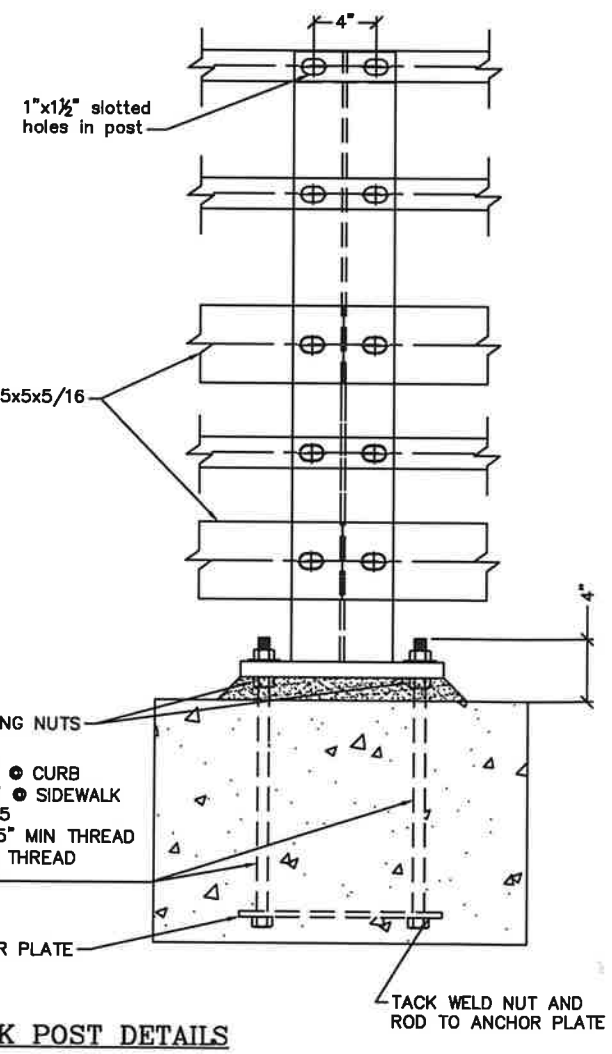
(140) REQUIRED



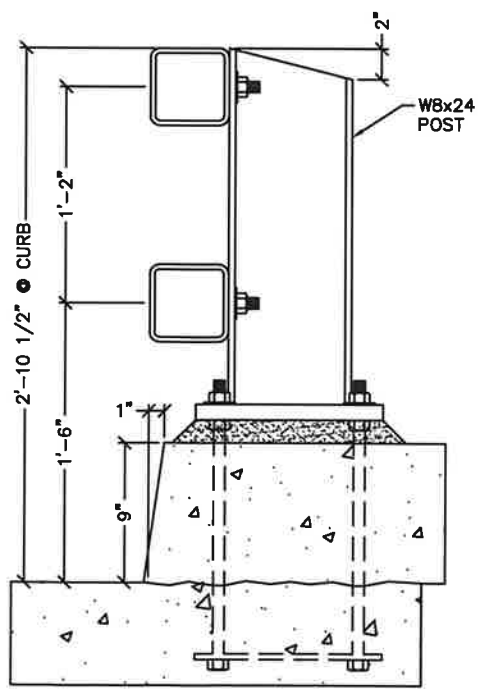
VEHICLE RAIL CAP

(8) REQUIRED

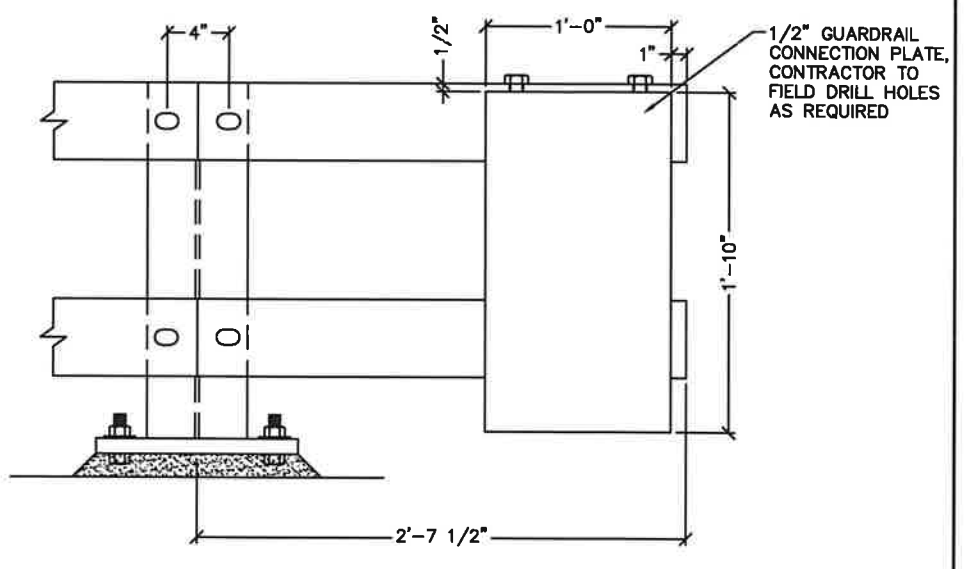


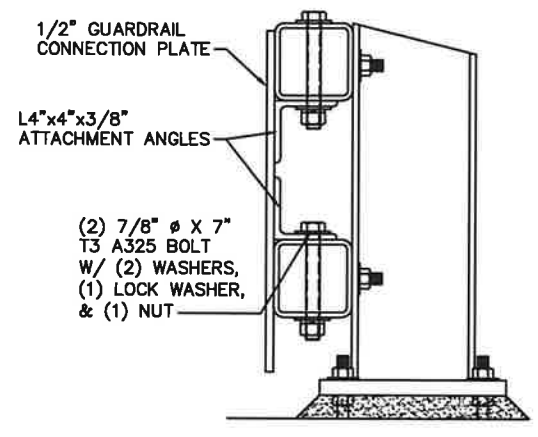


SIDE WALK POST DETAILS



CURB DETAILS





RAIL END DETAILS

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BIG R BRIDGE

CONTECH
PROPOSAL
DRAWING

70'-0" X 34'-0"
LFUCG FIRE TRAINING
ROLLED GIRDER BRIDGE - SITE-SPECIFIC MODULAR
LEXINGTON, KY

PROJECT No.:	SEQ. No.:	DATE:
869727	010	9/26/2025
DESIGNED: XXX		DRAWN: DJB
CHECKED: XXX		APPROVED: XXX
SHEET NO.: 6 OF 6		

I:\MERLIN\PROJECTS\ACTIVE\869700\869727\869727-10-BIG R ROLLED GIRDER\PRICING INFORMATION\70' X 34' PRELIM DWG 9-26-2025.DWG 9/26/2025 6:41 AM

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B. TREE PROTECTION FENCING SHALL BE CONSTRUCTED OF RIGID FRAMING.

C. NO FILL OR EXCESS SOIL SHALL BE LEFT AROUND OR PUSHED ONTO THE BASE OF THE TREES IN THE FORESTED AREAS OR NEAR THE SITE DURING OR AFTER CONSTRUCTION.

D. NO TREE ROOTS SHALL BE CUT OR REMOVED ON TREES THAT ARE TO REMAIN. WHERE CONSTRUCTION HAPPENS AROUND EXISTING TREES TO REMAIN, THE AREA OUTSIDE THE DRIPLINE WOULD BE CAREFULLY EXCAVATED (WITH AN AIR KNIFE OR AN AIR SPADE) TO EXPOSE POTENTIAL ROOTS. IF ROOTS ARE ENCOUNTERED, A CLEAN CUT OF THE ROOT MAY BE MADE. THERE IS TO BE NO RIPPING OF ROOTS.

E. A PRECONSTRUCTION MEETING SHALL BE HELD PRIOR TO PLACEMENT OF ANY TREE PROTECTION FENCING. CONTACT URBAN FORESTRY AT 859-425-2300. ONCE TREE PROTECTION IS INSTALLED, CONTACT URBAN FORESTRY FOR APPROVAL PRIOR TO EQUIPMENT MANEUVERING AND EARTH MOVING ACTIVITIES.

F. URBAN FORESTRY WILL MAKE PERIODIC INSPECTIONS OF TREE PROTECTION MEASURES. IF TREE PROTECTION MEASURES ARE NOT IN COMPLIANCE CONTRACTOR WILL BE REQUIRED TO CORRECT DEFICIENCIES NOTED BY THE URBAN FORESTER OR THEIR REPRESENTATIVE WITHIN 24 HOURS OF HAVING RECEIVED NOTICE OF SAID DEFICIENCIES.

TREE PROTECTION LEGEND

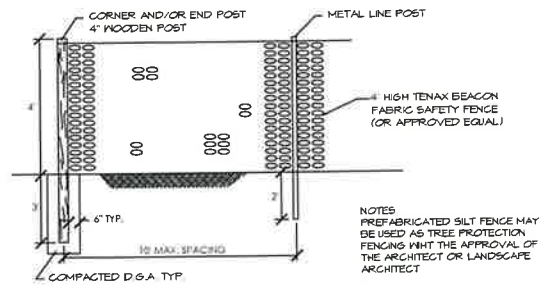
EXISTING TREE TO BE PROTECTED WITH TREE PROTECTION FENCING, SEE GENERAL NOTES. EXTEND TREE FENCING TO DRIP LINE OF TREE- SEE DETAIL B/L000; NO PARKING, MATERIAL STORAGE OR GRADING TO TAKE PLACE WITHIN DRIPLINE OF EXISTING TREES

EXISTING TREE TO BE REMOVED

EXISTING TREE(S) TO BE REMOVED - REMOVE TREE, STUMP AND ROOTS AND DISPOSE OF LEGALLY OFFSITE

TREE PROTECTION KEY NOTES:

1. TREES OUTSIDE OF CONSTRUCTION AREA SHALL BE PROTECTED. NO PARKING, EQUIPMENT OR MATERIAL STORAGE SHALL TAKE PLACE WITHIN THE DRIP-LINE OF ANY TREE. TREE PROTECTION FENCING SHALL REMAIN UPRIGHT AND VERTICAL THROUGHOUT THE DURATION OF THE PROJECT. IF FENCE IS LEANING OR KNOCKED OVER, THE CONTRACTOR SHALL RE-ERECT IN ITS ORIGINAL POSITION.
2. SILT FENCING OR ORANGE SNOW/CONSTRUCTION FENCING CAN BE USED AS TREE PROTECTION FENCING.



TREE PROTECTION FENCE (A)
N.T.S.

TREE PROTECTION PLAN-EXISTING TREES

SCALE 1" = 20'-0"

N. 0 10 20

STATE OF KENTUCKY
RAMONA
[illegible]
REGISTERED
LANDSCAPE ARCHITECT

GRW PROJECT NO. 5300-01

CLIENT PROJECT NO. 1-22026

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CONSTRUCTION DOCUMENTS

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TREE PROTECTION PLAN -EXISTING

LFUCG FIRE TRAINING
CITY OF LEXINGTON, KENTUCKY

REVISIONS

NO	DESCRIPTION	DATE	BY

REVIEWED BY | DRAWN BY | REVIEWED BY | APPROVED BY

THIS MARK SHOULD MEASURE EXACTLY 1" WHEN PLOTTED — SCALE CHECK

DATE
JANUARY 23, 2026

SCALE 1" = 20'-0"

SHEET NO
L000

elementdesign
landscape architecture + civil engineering

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B. TREE PROTECTION FENCING SHALL BE CONSTRUCTED OF RIGID FRAMING.

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F. URBAN FORESTRY WILL MAKE PERIODIC INSPECTIONS OF TREE PROTECTION MEASURES. IF TREE PROTECTION MEASURES ARE NOT IN COMPLIANCE CONTRACTOR WILL BE REQUIRED TO CORRECT DEFICIENCIES NOTED BY THE URBAN FORESTER OR THEIR REPRESENTATIVE WITHIN 24 HOURS OF HAVING RECEIVED NOTICE OF SAID DEFICIENCIES.

TREE PROTECTION LEGEND

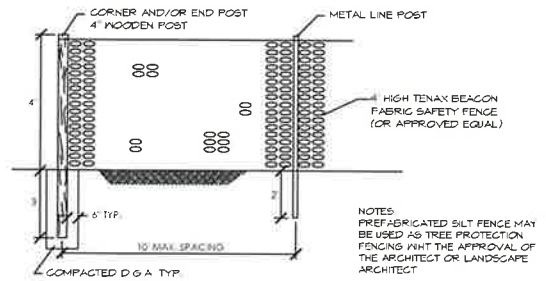
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EXISTING TREE TO BE REMOVED

EXISTING TREE(S) TO BE REMOVED - REMOVE TREE, STUMP AND ROOTS AND DISPOSE OF LEGALLY OFFSITE

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2. SILT FENCING OR ORANGE SNOW/CONSTRUCTION FENCING CAN BE USED AS TREE PROTECTION FENCING.



TREE PROTECTION FENCE (A)
N.T.S.

TREE PROTECTION PLAN - PROPOSED TREES
SCALE 1" = 20'-0"

element design
landscape architecture + civil engineering

STATE OF KENTUCKY — RAMONA — REGISTERED LANDSCAPE ARCHITECT

GRW PROJECT NO. 5300-01

CLIENT PROJECT NO. 1-2026

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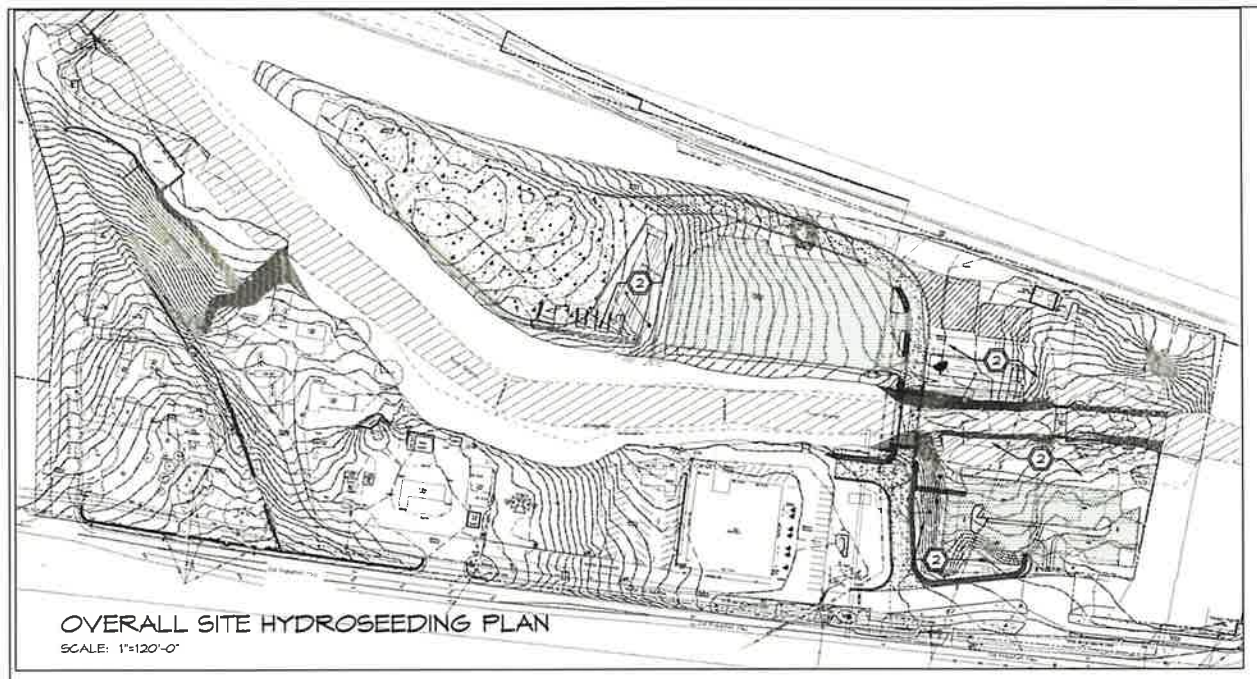
TREE PROTECTION PLAN
LFUCG FIRE TRAINING
CITY OF LEXINGTON, KENTUCKY

REVISIONS					
NO.	DESCRIPTION	DATE	BY		

DESIGNED BY
DRAWN BY
RELEASED BY
APPROVED BY

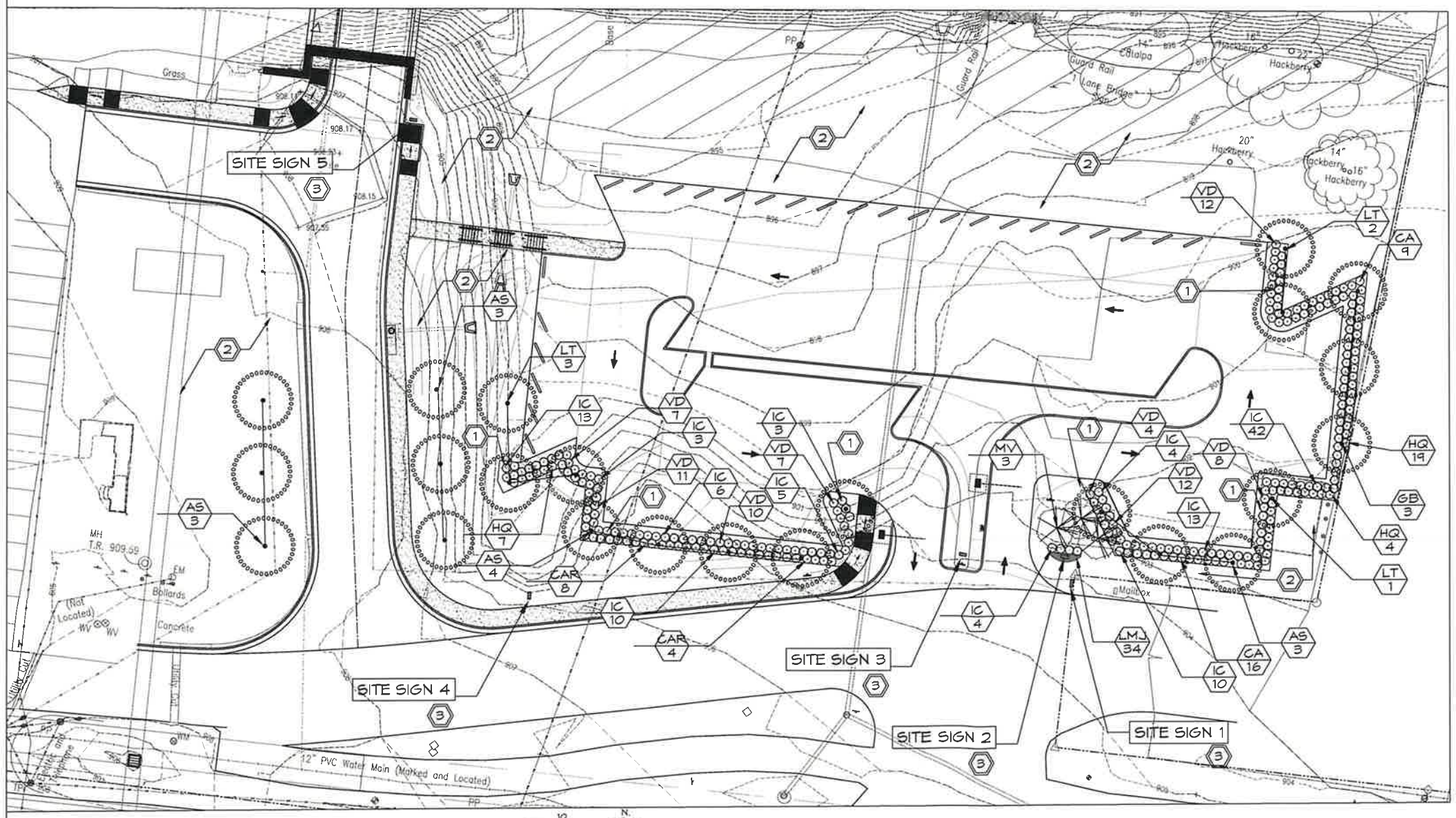
SCALE CHECK — THIS MARK SHOULD MEASURE EXACTLY 1" WHEN PLOTTED

DATE: JANUARY 23, 2026
SCALE: 1" = 20'-0"
SHEET NO: L001



OVERALL SITE HYDROSEEDING PLAN

SCALE: 1"=120'-0"



SITE LANDSCAPE PLAN

SCALE 1" = 20'-0"

LANDSCAPE GENERAL NOTES

A. THE EXISTING TOPOGRAPHIC AND SITE INFORMATION SHOWN IS FROM A SURVEY PERFORMED BY ENDRIS ENGINEERING AND PROPOSED WORK PROVIDED BY GRW, INC. THIS INFORMATION IS PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR. THE ARCHITECT SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OF THE INFORMATION SHOWN THEREON. CONTRACTOR TO VERIFY ALL INFORMATION SHOWN.

B. THE CONTRACTOR SHALL BE RESPONSIBLE FOR STAKING AND LAYOUT OF THE PLANTINGS ON THIS PROJECT. SECURE APPROVAL OF THE PLANTING LAYOUT IN THE FIELD WITH THE LANDSCAPE ARCHITECT PRIOR TO OPENING ANY PLANTING PITS OR BEDS.

C. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

D. THE CONTRACTOR SHALL PREPARE A CULTIVATED BED AROUND EACH GROUP OF SHRUBS &/OR GROUND COVER BEDS, THE SAME SHAPE AND SIZE AS SHOWN ON THE PLAN. THE ENTIRE BED SHALL BE MULCHED. A CRISP, WELL DEFINED EDGE SHALL BE DEVELOPED BETWEEN ANY SHRUB &/OR GROUND COVER BED AND THE ADJOINING LAWN AREA.

E. ONLY NURSERY GROWN PLANT MATERIAL SHALL BE USED. COLLECTED PLANT MATERIAL IS NOT ACCEPTABLE AND WILL BE REJECTED BY THE LANDSCAPE ARCHITECT. MATERIAL SHALL BE OF HIGH QUALITY, EXCELLENT FORM AND TO THE SIZES AND SPECIFICATIONS INDICATED HEREIN. MATERIAL THAT DOES NOT MEET THE SPECIFICATIONS SHALL BE REJECTED.

F. UNLESS OTHERWISE INDICATED, NATURAL DYE-FREE SHREDDED BARK MULCH SHALL BE USED IN ALL SHRUB AND/OR GROUND COVER BEDS AND AROUND ALL TREES PLANTED WITHIN OR BEYOND THE CONFINES OF THE PLANTING BEDS. CONTRACTOR SHALL PROVIDE MULCH SAMPLE FOR LANDSCAPE ARCHITECTS APPROVAL PRIOR TO CONSTRUCTION.

G. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETE REMOVAL OF ALL BINDING CORDS AND ROPES FROM THE TRUNKS OF ALL SHADE AND ORNAMENTAL TREES IMMEDIATELY AFTER PLANTING. IDENTIFICATION TAGS AND RIBBONS SHALL BE REMOVED FROM ALL PLANT MATERIAL AT THE TIME OF PLANTING. TREE BASKETS SHALL BE CUT FROM THE TOP 1/3 OF THE ROOT BALL PRIOR TO PLANTING.

H. ALL PLANT MATERIAL SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT PRIOR TO DELIVERY TO THE SITE OR IF AGREED UPON BY LANDSCAPE ARCHITECT, MAY BE REVIEWED AT THE CONTRACTOR'S HOLDING YARD OR THE SITE PRIOR TO PLANTING.

I. THE LANDSCAPE ARCHITECT RESERVES THE RIGHT TO RELOCATE AND ADJUST ALL PLANT MATERIAL IN THE FIELD PRIOR TO PLANTING. THE CONTRACTOR SHALL COORDINATE ALL PLANTING EFFORTS WITH THE LANDSCAPE ARCHITECT PRIOR TO PLANTING. CONTRACTOR SHALL CONTACT AND NOTIFY LANDSCAPE ARCHITECT 2 WEEKS PRIOR TO PLANT INSTALLATION.

J. ALL PLANT QUANTITIES ARE GIVEN AS A REFERENCE ONLY. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL QUANTITIES PRIOR TO PLANTING.

K. HYDROSEED ALL OTHER DISTURBED LAWN AREAS. SEED AND STRAW ARE NOT ACCEPTABLE.

SPECIAL LANDSCAPE NOTES

SCREENING AND LANDSCAPING SHALL BE PROVIDED AS REQUIRED BY ARTICLE 18 OF THE ZONING ORDINANCE SEPTEMBER, 2024.

ALL PLANT MATERIAL MUST BE INSTALLED ACCORDING TO THE SPECIFICATIONS OF THE LFUCG PLANTING MANUAL.

LANDSCAPE LEGEND

- NEW SHADE TREE. SEE DETAIL A/L501
- NEW ORNAMENTAL TREE. SEE DETAIL B/L501
- NEW DECIDUOUS SHRUB. SEE DETAIL C/L501
- NEW EVERGREEN SHRUB. SEE DETAIL C/L501
- GROUNDCOVER. SEE DETAIL D/L501

LANDSCAPE KEYNOTES (1)

1. NEW LANDSCAPE BED. AT NEW LANDSCAPE AREAS, OVEREXCAVATE BELOW FINISH GRADES MINIMUM, 12", SCARIFY SUBGRADE MIN. 6" AND REFILL TO 3" BELOW FINISH GRADES WITH NEW PLANTING SOIL MIX. SOIL MIX SHALL BE 4 PARTS TOPSOIL TO 1 PART PEAT MOSS.
2. AREA OF HYDROSEEDING, REFER TO SPECIFICATIONS FOR REQUIREMENTS. HYDROSEED ALL SITE AREAS DISTURBED BY CONSTRUCTION. EXTEND LIMITS OF HYDROSEEDING TO INCLUDE ALL LAWN AREAS DISTURBED ON SITE. SEED / STRAW IS NOT ACCEPTABLE.
3. NEW SITE SIGN, SEE DETAILS E & F ON L501. FIELD VERIFY FINAL LOCATION WITH LFUCG & ARCHITECT PRIOR TO INSTALLATION.

Address of Site	1345 1501 OLD FRANKFORT PIKE
Parcel Number	60019960
Cabinet/Slide	K-912
Gross Site Area	1 230 479 SF
Current Use	LFUCG / Lexington Fire Training Center
Proposed Use	Lexington Fire Training Center Improvements

STATE OF KENTUCKY — RAMONA — REGISTERED — LANDSCAPE ARCHITECT

CONSTRUCTION DOCUMENTS

GRW PROJECT NO. 5300-01

CLIENT PROJECT NO. 1-2026

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LANDSCAPE PLAN

LFUCG FIRE TRAINING
CITY OF LEXINGTON, KENTUCKY

REVISIONS				
NO	DESCRIPTION	DATE	BY	

DESIGNED RP | DRAWN RP | REVIEWED RP | APPROVED RP

THIS MARK SHOULD MEASURE EXACTLY 1" WHEN PLOTTED

SCALE CHECK

DATE: JANUARY 23, 2026

SCALE: 1" = 20'-0"

SHEET NO: L500

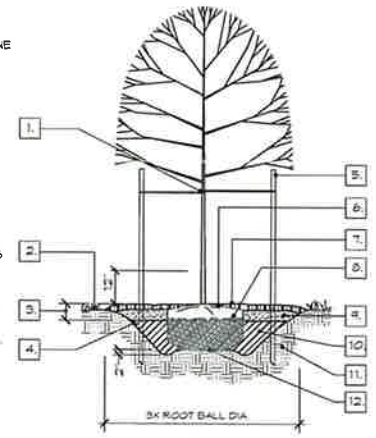
elementdesign
landscape architecture + civil engineering

NOTES:

1. COMMERCIAL GRADE POLYPROPYLENE TREE STRAP, (NO WIRES PERMITTED)
2. FINISHED GRADE.
3. ONE THIRD DEPTH OF ROOTBALL.
4. TAPER SIDE OF TREE PIT.
5. 2"X2"X8' UNTREATED WOOD STAKE.
6. SET TOP OF ROOT BALL 2" HIGHER THAN FINISHED GRADE.
7. 2" SHREDDED HARDWOOD BARK MULCH.
8. REMOVE BURLAP FROM TOP ONE THIRD OF ROOT BALL.
9. SOIL MIX - 4 PARTS TOPSOIL TO 1 PART ORGANIC MATTER, (SEE SPECIFICATIONS).
10. BACKFILL W. EX. TOPSOIL (NO STONES >1" DIA.)
11. EXISTING SUB-GRADE.
12. 2" RAISED SUB-GRADE PLATFORM
13. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
14. PRUNE ONLY AS DIRECTED BY OWNER.

STAKING SCHEDULE

CALIPER	# OF STAKES
< 3"	2 STAKES
> 3"	3 STAKES



SHADE TREE STAKING & PLANTING (A)

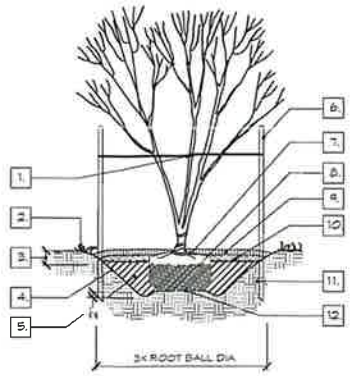
NOT TO SCALE

NOTES:

1. COMMERCIAL GRADE POLYPROPYLENE TREE STRAP, (NO WIRES PERMITTED)
2. ORIGINAL GRADE.
3. ONE THIRD DEPTH OF ROOTBALL.
4. TAPER SIDE OF TREE PIT.
5. BACKFILL W. EX. TOPSOIL (NO STONES >1" DIA.)
6. 2"X2"X8' UNTREATED WOOD STAKE
7. SET TOP OF ROOT BALL 2" HIGHER THAN FINISHED GRADE.
8. REMOVE BURLAP FROM TOP ONE THIRD OF ROOT BALL.
9. 2" SHREDDED HARDWOOD BARK MULCH.
10. SOIL MIX - 4 PARTS TOPSOIL TO 1 PART ORGANIC MATTER, (SEE SPECIFICATIONS).
11. EXISTING SUB-GRADE.
12. 2" RAISED SUB-GRADE PLATFORM
13. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
14. PRUNE ONLY AS DIRECTED BY OWNER.

STAKING SCHEDULE

CALIPER	# OF STAKES
< 3"	2 STAKES
> 3"	3 STAKES

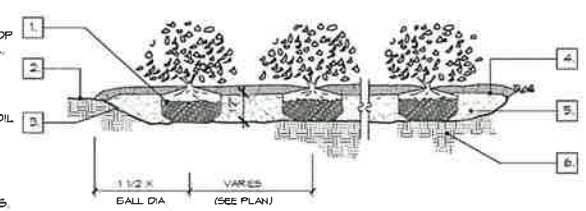


ORNAMENTAL TREE PLANTING DETAIL (B)

NOT TO SCALE

NOTES:

1. REMOVE BURLAP FROM TOP ONE THIRD OF ROOT BALL.
2. FINISHED GRADE.
3. TAPER SIDE OF PIT.
4. 2" SHREDDED HARDWOOD BARK MULCH.
5. SOIL MIX - 4 PARTS TOPSOIL TO 1 PART ORGANIC MATTER, (SEE SPECIFICATIONS).
6. EXISTING SUB-GRADE.
7. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
8. PRUNE ONLY AS DIRECTED BY OWNER.

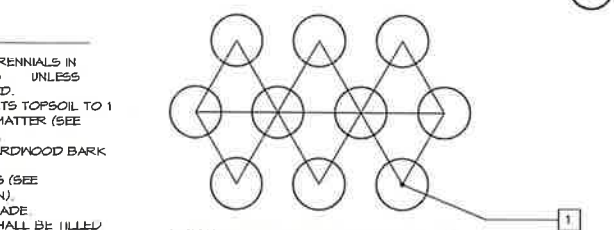


TYPICAL SHRUB MASS PLANTING (C)

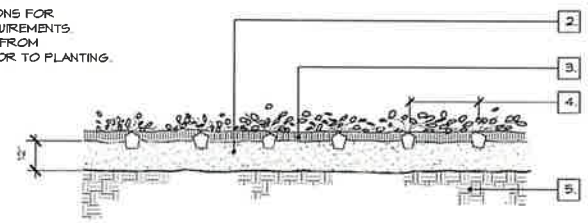
NOT TO SCALE

NOTES:

1. TRIANGULATE PERENNIALS IN MASS PLANTINGS UNLESS OTHERWISE NOTED.
2. SOIL MIX - 4 PARTS TOPSOIL TO 1 PART ORGANIC MATTER (SEE SPECIFICATIONS).
3. 2" SHREDDED HARDWOOD BARK MULCH.
4. DISTANCE VARIES (SEE LANDSCAPE PLAN).
5. EXISTING SUB-GRADE.
6. PLANTING BED SHALL BE TILLED AND AMENDED TO A DEPTH OF 12" PRIOR TO PLANT INSTALLATION.
7. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
8. REMOVE PLANTS FROM CONTAINERS PRIOR TO PLANTING.

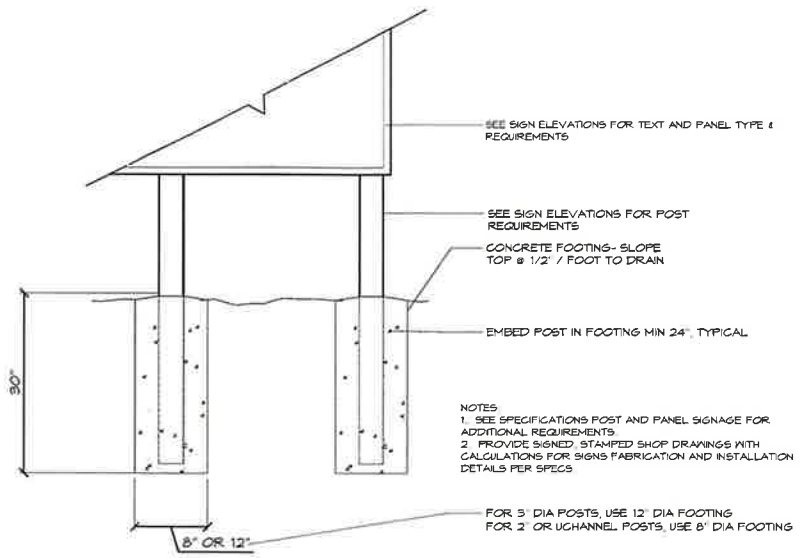


TYPICAL GROUND COVER/PERENNIAL PLAN.
N.T.S.



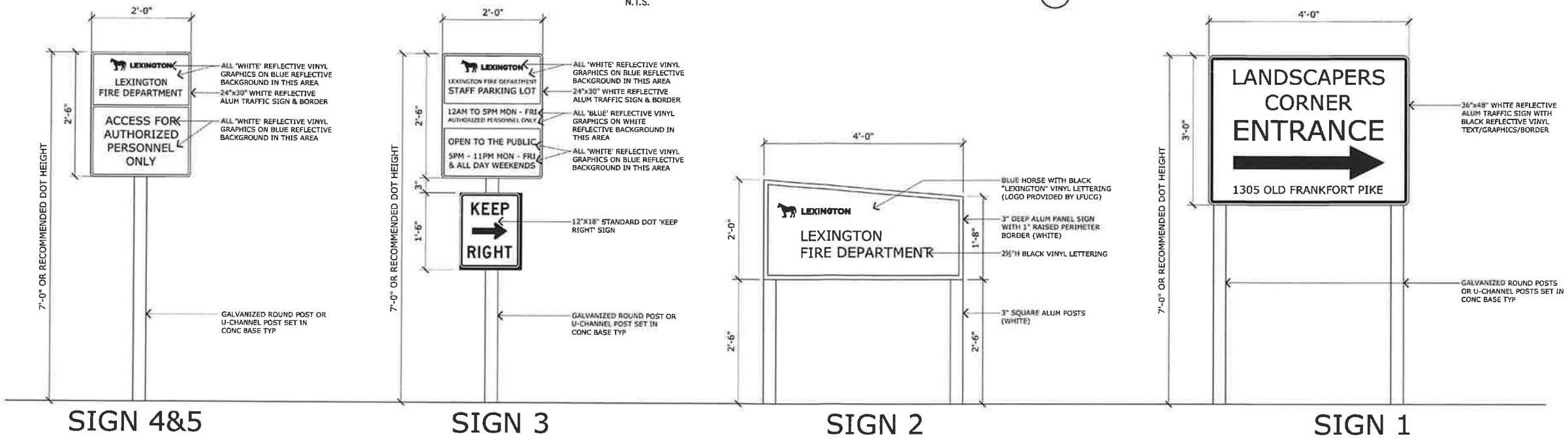
TYPICAL GROUND COVER/PERENNIAL PLANTING (D)

NOT TO SCALE



TYPICAL SITE WAYFINDING SIGN REQUIREMENTS (E)

N.T.S.



SIGN ELEVATIONS AND REQUIREMENTS (F)

N.T.S.

RAMONA
LICENSED
REGISTERED
LANDSCAPE ARCHITECT
STATE OF KENTUCKY

GRW PROJECT NO. 5300-01

CLIENT PROJECT NO. 1-2026

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CONSTRUCTION DOCUMENTS

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LANDSCAPE DETAILS

LFUCG FIRE TRAINING
CITY OF LEXINGTON, KENTUCKY

DESIGNED: RP	DRAWN: RP	REVIEWED: RP	APPROVED: RP

REVISIONS

NO	DESCRIPTION	DATE	BY

THIS MARK SHOULD MEASURE EXACTLY 1" WHEN PLOTTED
SCALE CHECK

DATE
JANUARY 23, 2026

SCALE: 1" = 20'-0"

SHEET NO
L501

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GENERAL

1. THE REQUIREMENTS OF THESE GENERAL NOTES APPLY UNLESS OTHERWISE NOTED ON PLANS OR IN SPECIFICATIONS.
2. ALL DIMENSIONS OF EXISTING CONDITIONS SHALL BE VERIFIED PRIOR TO COMMENCING WORK. DISCREPANCIES BETWEEN EXISTING CONDITIONS OR BETWEEN THE DRAWINGS AND SPECIFICATIONS SHALL BE COMMUNICATED TO THE STRUCTURAL ENGINEER AND ARCHITECT.
3. THIS STRUCTURE IS DESIGNED TO BE STABLE AND SELF-SUPPORTING ONLY WHEN FULLY COMPLETED. STABILITY OF THE STRUCTURE DURING CONSTRUCTION IS THE RESPONSIBILITY OF THE CONTRACTOR. ALL NECESSARY TEMPORARY BRACING REQUIRED TO STABILIZE AND SUPPORT THE STRUCTURE DURING ALL CONSTRUCTION PHASES SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. IF REQUIRED, TEMPORARY BRACING SHALL BE DESIGNED BY A LICENSED ENGINEER EMPLOYED BY THE CONTRACTOR.
4. CONSTRUCTION LOADS IMPOSED ON THE STRUCTURAL FRAMING SHALL NOT EXCEED THE DESIGN CAPACITY OF THE FRAMING AT THE TIME SUCH LOADS ARE IMPOSED.
5. NON-STRUCTURAL ELEMENTS OF THE BUILDING (ARCHITECTURAL FINISHES, MASONRY VENEER AND ASSOCIATED TIES, INSULATION, SHEATHING, DUCTWORK, PIPING, ETC.) ARE GENERALLY NOT SHOWN ON THESE STRUCTURAL DRAWINGS. CERTAIN NON-STRUCTURAL ELEMENTS THAT ARE SHOWN ON THE STRUCTURAL DRAWINGS ARE SHOWN FOR REFERENCE ONLY. NON-STRUCTURAL ELEMENTS SHALL BE CONSTRUCTED AS SHOWN ON THE ARCHITECTURAL AND TRADE DRAWINGS.
6. ANY MATERIAL ORDERED OR WORK PERFORMED PRIOR TO THE ENGINEER'S REVIEW AND APPROVAL OF THE SHOP DRAWINGS IS AT THE CONTRACTOR'S SOLE RISK.

CAST-IN-PLACE CONCRETE

1. ALL CONCRETE CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH ACI 301-10, ACI 318-11, ACI 117-10, ACI 308.1-11, AND ACI SP-66, THE ACI DETAILING MANUAL-2004. HOT AND COLD WEATHER CONCRETE CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH ACI 305 AND ACI 306 AS REQUIRED. SHORING AND RESHORING OF CONCRETE STRUCTURES SHALL BE PERFORMED IN ACCORDANCE WITH ACI 347. STRUCTURAL DESIGN AND REMOVAL OF CONCRETE FORMWORK, SHORES AND RESHORES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. SHOP DRAWINGS SHOWING THE SIZE, LENGTH, QUANTITY, LOCATION AND MARK OF ALL REINFORCING BARS, SUPPORTS AND ACCESSORIES SHALL BE SUBMITTED FOR APPROVAL PRIOR TO FABRICATION.
3. MIX DESIGNS AND ADMIXTURE PRODUCT DATA SHALL BE SUBMITTED FOR APPROVAL PRIOR TO ORDERING CONCRETE.
4. CONCRETE PROPERTIES SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS.
5. REINFORCING AND ACCESSORY PROPERTIES SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS.
6. REINFORCING COMPRESSION SPLICES SHALL BE LAPPED 30 BAR DIAMETERS OF THE LARGER BAR.
7. REINFORCING TENSION SPLICES SHALL BE LAPPED IN ACCORDANCE WITH THE FOLLOWING TABLE:

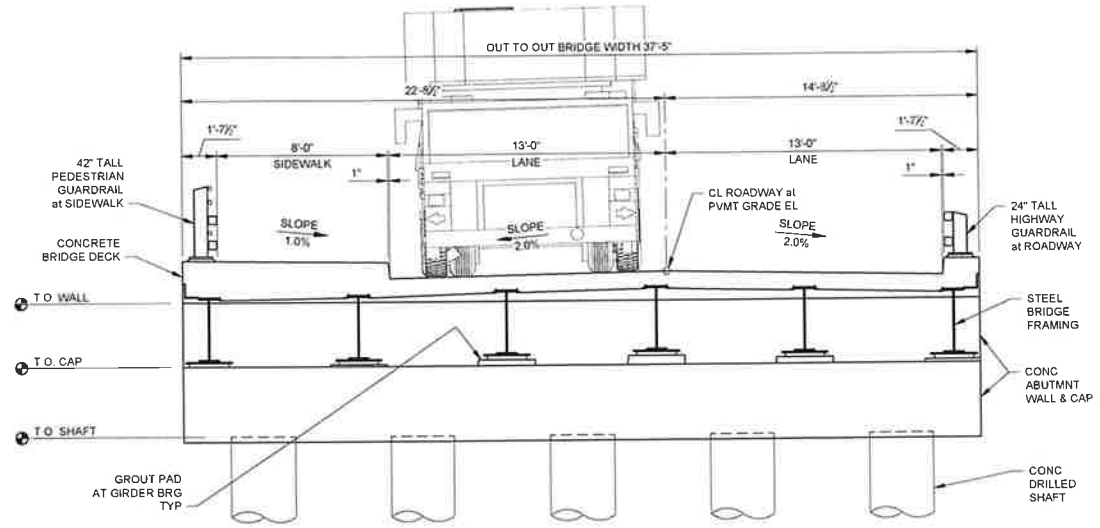
BAR SIZE	3,000 PSI CONC. LAP LENGTH	>=4,000 PSI CONC. LAP LENGTH
#3	13"	12"
#4	18"	15"
#5	22"	19"
#6	25"	23"
#7	38"	33"
#8	43"	37"
#9	53"	45"

ADD 30% FOR HORIZONTAL TOP BARS WITH MORE THAN 12" OF CONCRETE BELOW.
ADD 50% FOR BAR SPACING LESS THAN TWO BAR DIAMETERS.
LAP LENGTH ADDS ARE CUMULATIVE.

8. CONCRETE PROTECTION FOR REINFORCEMENT SHALL BE IN ACCORDANCE WITH THE FOLLOWING TABLE:

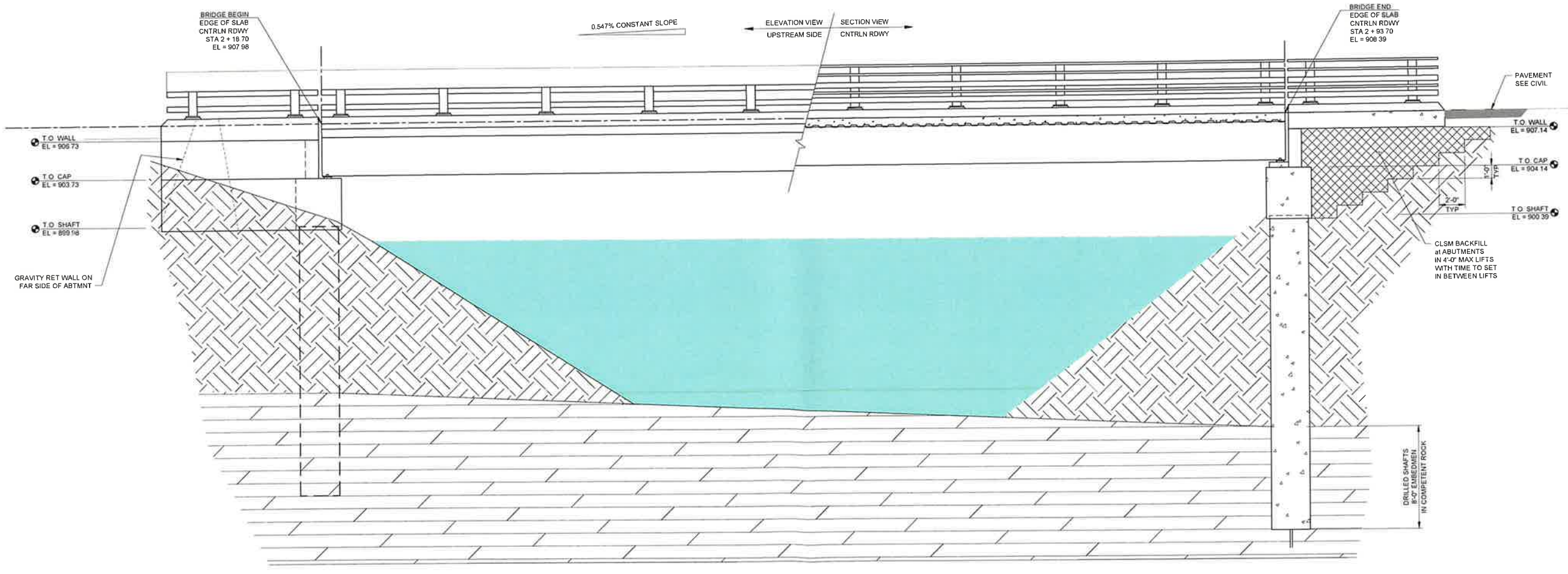
CONDITION	CLEAR COVER OVER BARS
CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	3"
CONCRETE EXPOSED TO EARTH OR WEATHER	
#6 THROUGH #18 BARS	2"
#5 BAR, W31 OR D31 WIRE AND SMALLER	1 1/2"
CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND	
SLABS, WALLS, AND JOISTS	
#14 AND #18 BARS	1 1/2"
#11 BAR AND SMALLER	3/4"

9. CONSTRUCTION JOINTS SHALL BE POSITIONED SO AS NOT TO ADVERSELY AFFECT THE STRUCTURAL PERFORMANCE. CONSTRUCTION JOINT LOCATIONS NOT INDICATED ON THE STRUCTURAL DRAWINGS SHALL BE APPROVED BY THE STRUCTURAL ENGINEER.
10. PIPE SLEEVES AND INSERTS SHALL BE INSTALLED IN CONCRETE WORK AT ALL PENETRATIONS. PENETRATIONS OF BEAMS, JOISTS, COLUMNS OR STRUCTURAL SLABS NOT INDICATED ON THE STRUCTURAL DRAWINGS SHALL BE APPROVED BY THE STRUCTURAL ENGINEER
11. ONLY WELDABLE REINFORCING BARS MAY BE WELDED.
12. ADMIXTURES CONTAINING CHLORIDE OR OTHER CORROSIVE CHEMICALS SHALL NOT BE USED IN CONCRETE.
13. AGGREGATES SHALL BE FREE OF DELETERIOUS OR NON-DURABLE MATERIALS SUCH AS CHERTS.
14. REINFORCING SHALL BE ADEQUATELY TIED AND SUPPORTED TO HOLD IT IN THE CORRECT POSITION DURING CONSTRUCTION.
15. CONCRETE SHALL BE CONSOLIDATED ADEQUATELY DURING PLACEMENT BY MECHANICAL VIBRATION IN ACCORDANCE WITH PUBLISHED PRACTICES.
16. UNSHORED SLAB CONSTRUCTION SHALL BE FINISHED LEVEL AND HAVE THE MINIMUM REQUIRED THICKNESS OF CONCRETE AT THE THINNEST SECTION. BEAM CAMBER SHALL BE VERIFIED PRIOR TO PLACING UNSHORED CONCRETE SLABS.
17. PLASTIC CHAIRS SHALL BE USED IN ALL CONCRETE THAT WILL BE EXPOSED TO VIEW IN THE COMPLETED STRUCTURE.
18. EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED MINIMUM ¾".
19. FILL POCKETS AROUND CONNECTIONS WITH CONCRETE FLUSH AND SMOOTH UNLESS INDICATED OTHERWISE.
20. CONCRETE FINISHES SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS. VERIFY FINISHES WITH ARCHITECT / ENGINEER BEFORE PLACEMENT.
21. FOLLOW PLAN SUBMITTED FOR INSTALLATION OF DRILLED SHAFTS, PARTICULARLY WITH REGARDS TO CONTROL OF WATER, INSPECTION OF SHAFT HOLE BOTTOM, AND REPORTS OF SHAFT DATA AS INSTALLED.



BRIDGE CROSS SECTION LOOKING NORTH

SCALE: 1/4"=1'-0"



BRIDGE LONGITUDINAL ELEVATION / SECTION LOOKING DOWNSTREAM (WEST)

SCALE: 1/4"=1'-0"

MATTHEW W. CRAIG 24113 LICENSED PROFESSIONAL ENGINEER
1-23-26

GRW PROJECT NO. 5300-01

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CONSTRUCTION DOCUMENTS

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BRIDGE FOUNDATION NOTES ELEVATION SECTIONS

LFUCG FIRE TRAINING
CITY OF LEXINGTON, KENTUCKY

DESIGNED	DRAWN	REVIEWED	APPROVED
MWC	STAFF	MWC	MWC

REVISIONS			
NO.	DESCRIPTION	DATE	BY

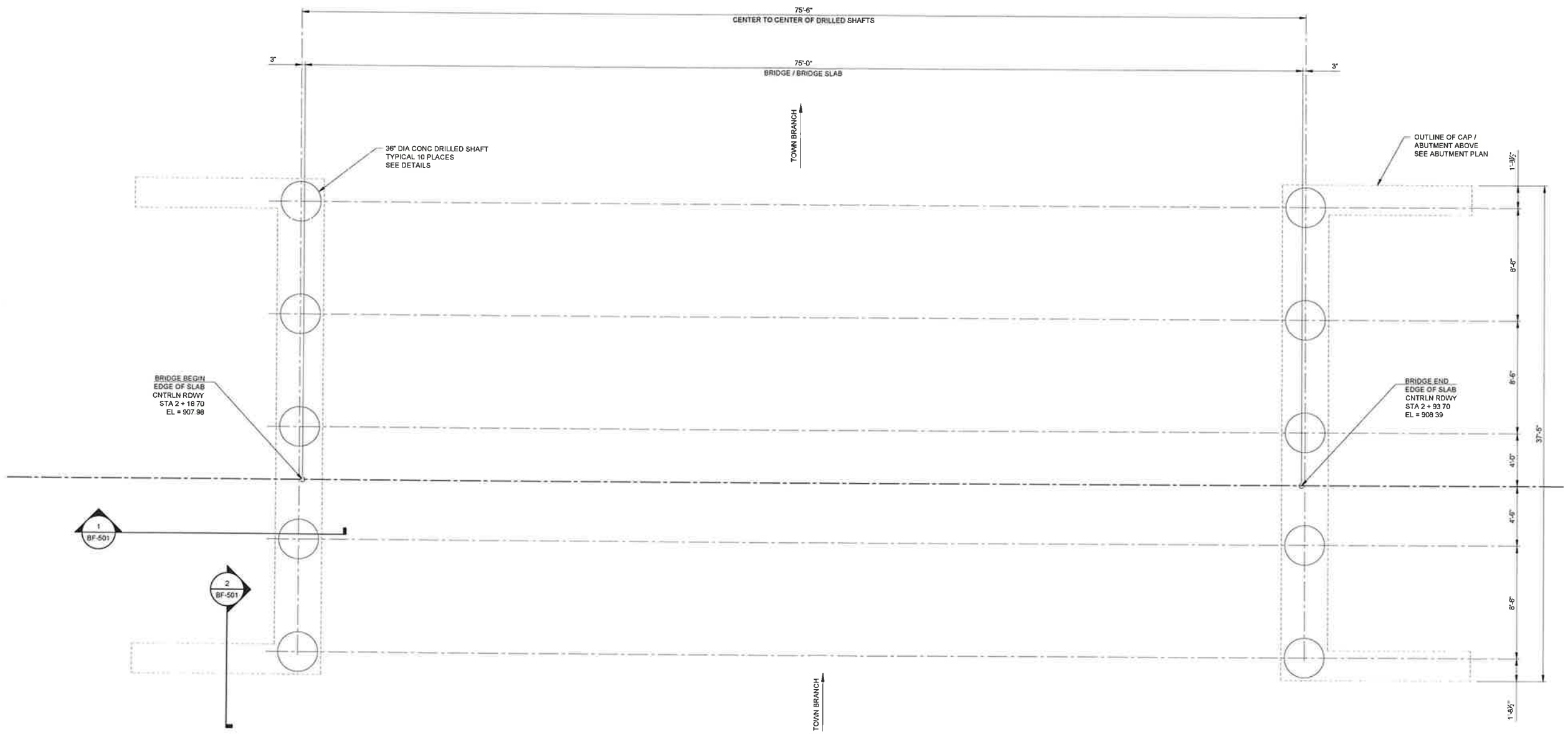
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DATE: JANUARY 23, 2026

SCALE: AS NOTED

SHEET NO.: BF-001

PLOTTED BY: MCraig
PRINTED: 1/22/2026 @ 12:15PM
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BRIDGE DRILLED SHAFT PLAN

SCALE 1/4"=1'-0"

INSPECTION & TESTING

1 FABRICATORS
- 1 1 SUBMIT REPORT OF INSPECTOR'S APPROVAL OF FABRICATOR'S QC PLAN OR FABRICATOR'S NATIONALLY RECOGNIZED QC CERTIFICATION
  - 1 1 1 SUBMIT FABRICATOR'S CERTIFICATE OF COMPLIANCE STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS SUBMITTED AT THE COMPLETION OF SUCH WORK

2 STEEL CONSTRUCTION
- 2 1 SUBMIT MILL TEST REPORTS AND MATERIAL CERTIFICATIONS FOR ALL STEEL MEMBERS, FASTENERS, BOLTS, NUTS, WASHERS, DECK, AND REINFORCEMENT STEEL FOR CONCRETE AND OTHER CONSTRUCTION NOT PART OF A FABRICATED ASSEMBLY COVERED UNDER FABRICATORS
  - 2 1 1 SUBMIT REPORT OF INSPECTION OF MARKING AND CONNECTION DETAILS FOR ALL MEMBERS AND CONNECTIONS. VERIFY ALL STEEL MEMBERS AND STEEL ROOF AND WALL PANELS ARE INSTALLED IN THE CORRECT LOCATIONS AND ARE CONNECTED IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AND APPROVED ERECTION DRAWINGS
  - 2 1 2 SUBMIT REPORT OF INSPECTION OF BOLT TENSIONING FOR EACH APPLICABLE CONNECTION
  - 2 1 3 SUBMIT REPORT OF VISUAL INSPECTION OF ALL FIELD WELDS

3 CONCRETE CONSTRUCTION
- 3 1 SUBMIT MATERIAL CERTIFICATIONS OF CEMENT, AGGREGATE, ADMIXTURES AND
  - 3 1 1 SUBMIT REPORT OF COMPRESSIVE STRENGTH, SLUMP AND AIR CONTENT TEST RESULTS. SAMPLE AND TEST CONCRETE AT LEAST ONCE PER DAY AND ONCE FOR EVERY ADDITIONAL 50 CUBIC YARDS OF CONCRETE PER DAY THEREAFTER
  - 3 1 2 SUBMIT REPORT OF INSPECTION OF FORMS, REINFORCEMENT, EMBEDDED ITEMS, ANCHOR BOLTS, AND CONCRETE DELIVERY TICKETS FOR INSPECTIONS PRIOR TO EACH PLACEMENT OF CONCRETE
  - 3 5 3 SUBMIT REPORT OF INSPECTION OF INSTALLATION OF ALL WEDGE AND CHEMICAL ADHESIVE ANCHORS IN CONCRETE

4 SOILS CONSTRUCTION
- 4 1 SUBMIT REPORT THAT SOIL BEARING CAPACITY IS ADEQUATE ACCORDING TO THE GEOTECHNICAL REPORT PRIOR TO EACH PLACEMENT OF FOUNDATION CONCRETE
  - 4 1 1 SUBMIT REPORT OF DENSITY AND MOISTURE CONTENT OF CONTROLLED FILL FOR EACH LIFT UNDER A STRUCTURE FOUNDATION

5 CAST-IN-PLACE DEEP FOUNDATIONS
- 5 1 SUBMIT REPORT OF CONTINUOUS OBSERVATION OF ALL DRILLING OPERATIONS INCLUDING COMPLETE AND ACCURATE RECORDS FOR EACH DRILLED SHAFT
  - 5 1 1 SUBMIT REPORT INDICATING THE LOCATION, PLUMBNESS, DIAMETER, LENGTH, CONCRETE VOLUME, EMBEDMENT INTO BEDROCK, AND ADEQUATE END-BEARING STRATA CAPACITY OF EACH PIER
  - 5 1 2 FOR CONCRETE, PERFORM TESTS & INSPECTIONS AS REQUIRED BY THE

6 THE TYPE AND EXTENT OF EACH TEST AND INSPECTION REQUIRED FOR EACH TYPE OF WORK SHALL BE AS INDICATED IN THE SPECIFICATIONS AND/OR THE BUILDING CODE AND THE REFERENCES INCORPORATED THEREIN

7 INSPECTION REPORTS SHALL INCLUDE THE FOLLOWING
- 7 1 NAME, ADDRESS, AND TELEPHONE NUMBER OF INSPECTOR PERFORMING THE INSPECTION AND MAKING THE REPORT.
- 7 2 DATES AND LOCATIONS OF SAMPLES AND TESTS OR INSPECTIONS. DATE OF REPORT.
- 7 3 RECORD OF TEMPERATURE AND WEATHER CONDITIONS AT TIME OF SAMPLE TAKING AND TESTING AND INSPECTING
- 7 4 DESCRIPTION OF THE WORK, IDENTIFICATION OF PRODUCTS, SPECIFICATION SECTION, TESTS, AND INSPECTION METHODS.
- 7 5 PHOTOGRAPHS OF THE WORK INSPECTED FOR THAT REPORT
- 7 6 COMPLETE TEST OR INSPECTION DATA.

8 SPECIAL INSPECTION SHALL BE PERFORMED BY A QUALIFIED INSPECTION AND TESTING AGENCY APPROVED BY THE BUILDING OFFICIAL AND THE STRUCTURAL ENGINEER

9 WORK REQUIRING SPECIAL INSPECTION SHALL BE INSPECTED BY THE INSPECTOR FOR CONFORMANCE WITH THE APPROVED DRAWINGS AND SPECIFICATIONS. INSPECTION REPORTS INDICATING THE RESULTS OF SPECIAL INSPECTIONS SHALL BE PROMPTLY SUBMITTED TO THE CONTRACTOR, THE ARCHITECT, THE STRUCTURAL ENGINEER

10 THE INSPECTOR SHALL OBSERVE ACTIVITIES, ACTIONS, AND PROCEDURES PERFORMED BEFORE AND DURING EXECUTION OF THE WORK TO GUARD AGAINST DEFECTS AND

11 ALL INSPECTIONS INDICATING NON-CONFORMING WORK SHALL BE REPORTED IMMEDIATELY TO THE CONTRACTOR, THE ARCHITECT AND THE STRUCTURAL ENGINEER. IMPENDING CONSTRUCTION WORK THAT WOULD IMPEDE ECONOMICAL CORRECTION OF NON-CONFORMING WORK SHALL NOT PROCEED WITHOUT WRITTEN APPROVAL. THE CONTRACTOR SHALL MAINTAIN A DISCREPANCY LOG ON THE SITE. LOG SHALL LIST EACH DISCREPANCY DOCUMENTED BY THE SPECIAL INSPECTOR, STATE THE DATE OF DISCOVERY AND SPECIAL INSPECTOR'S REPORT NUMBER, AND ROOM FOR THE SPECIAL INSPECTOR TO SIGN AND DATE WHEN SAID DISCREPANCY IS CORRECTED. COST OF ADDITIONAL RETESTING THAT ARE REQUIRED DUE TO NON-CONFORMING WORK MAY BE CHARGED TO THE CONTRACTOR

12 A FINAL REPORT CERTIFYING COMPLETION OF ALL REQUIRED SPECIAL INSPECTIONS AND CORRECTION OF ANY NON-CONFORMING WORK NOTED IN THE INSPECTIONS SHALL BE SUBMITTED BY THE ARCHITECT/ENGINEER AT THE COMPLETION OF THE PROJECT, OR IF NOT, DETAILING NON-INSPECTED AND/OR UNRESOLVED NON-CONFORMANCES

13 THE CONTRACTOR SHALL NOTIFY THE INSPECTOR WHEN CONSTRUCTION IS READY TO BE INSPECTED. CONTRACTOR SHALL GIVE TIMELY AND ADEQUATE NOTICE TO THE SPECIAL INSPECTOR

14 THE CONTRACTOR SHALL PROVIDE THE INSPECTOR ACCESS TO PLANS, SHOP DRAWINGS, AND CHANGE ORDERS AT THE JOBSITE

15 THE CONTRACTOR SHALL RETAIN AT THE JOBSITE ALL INSPECTION RECORDS SUBMITTED BY THE SPECIAL INSPECTOR AND PROVIDE THESE RECORDS FOR REVIEW BY THE ENGINEER/ARCHITECT AND BUILDING INSPECTOR UPON REQUEST

MATTHEW W. CRAIG 24113 LICENSED PROFESSIONAL ENGINEER
1-23-26

GRW PROJECT NO. 5300-01

CLIENT PROJECT NO. 1-2026

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CONSTRUCTION DOCUMENTS

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BRIDGE FOUNDATION DRILLED SHAFT PLAN

LFUCG FIRE TRAINING
CITY OF LEXINGTON, KENTUCKY

DESIGNED	MWC
DRAWN	STAFF
REVIEWED	MWC
APPROVED	MWC

REVISIONS

NO.	DESCRIPTION	DATE	BY

THIS MARK SHOULD MEASURE EXACTLY 1" ON ORIGINAL DRAWING

SCALE CHECK

DATE: JANUARY 23, 2026

SCALE: AS NOTED

SHEET NO.: BF-101

PLOTTED BY: MCraig
PRINTED: 1/22/2026 @ 12:15PM
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FILE NAME: C:\Users\mcraig\AppData\Local\Temp\AcPublish_45836\5300-BF-102.dwg PRINTED: 1/22/2026 @ 12:15PM PLOTTED BY: MCraig

STEEL BRIDGE SYSTEM

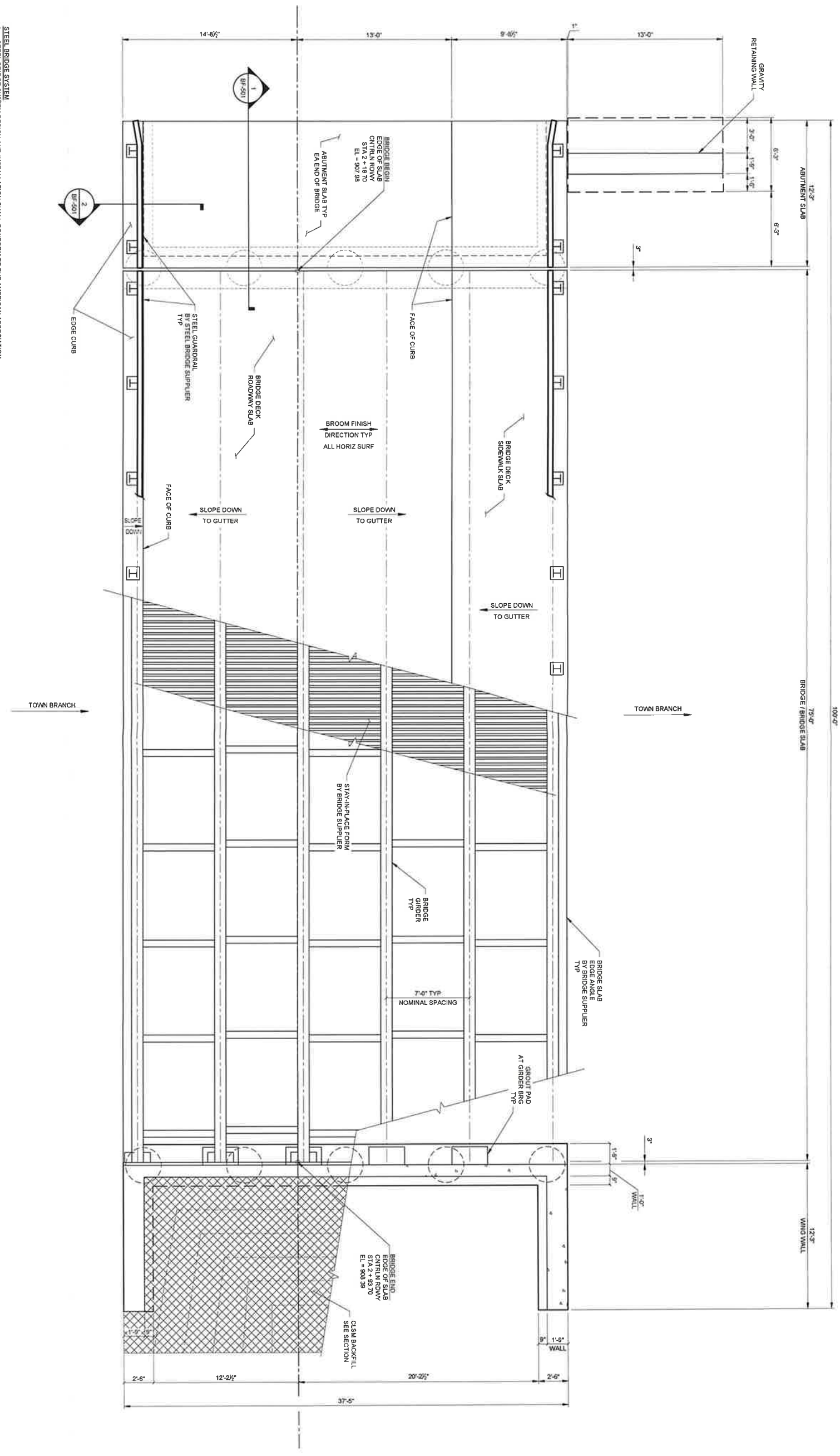
1 STEEL BRIDGE SYSTEM DESIGN AND INSTALLATION SHALL CONFORM TO THE AMERICAN ASSOCIATION OF STATE HIGHWAY TRANSPORTATION OFFICIALS (AASHTO) "SPECIFICATION FOR BRIDGES" IN EFFECT IN THE PROJECT LOCATION

2 THE DESIGN OF THE BRIDGE SYSTEM IS DELEGATED. THE BRIDGE SYSTEM SHALL BE DESIGNED BY A QUALIFIED EXPERIENCED ENGINEER LICENSED IN THE STATE IN WHICH THE PROJECT IS LOCATED

3 DRAWINGS AND CALCULATIONS OF THE BRIDGE SYSTEM SHALL BE SUBMITTED FOR APPROVAL PRIOR TO FABRIATION / MANUFACTURE. THE DRAWINGS AND CALCULATIONS SHALL BEAR THE SEAL OF THE DESIGN ENGINEER UNDER WHOSE DIRECT SUPERVISION THEY WERE PREPARED. THE DRAWINGS SUBMITTED SHALL CONTAIN DETAILS OF ALL MEMBERS AND CONNECTIONS. THE CALCULATIONS SHALL BE COMPLETE ENOUGH TO TRACE BACK TO THE CODE WITHOUT HAVING TO RECREATE MISSING CALCULATIONS.

4 THE VEHICLE LOADING FOR THE BRIDGE SHALL BE AASHTO HL-93 WITH AN ALLOWABLE DEFLECTION OF NO MORE THAN THE BRIDGE SPAN DIVIDED BY 1100. THE PEDESTRIAN LIVE LOAD SHALL BE NOT LESS THAN 100 PSF ON THE WALKING SURFACE CONCURRENT WITH THE VEHICLE LOADING ON THE RUNWAY. ALL STEEL FOR THE BRIDGE SYSTEM AND RAILING SHALL BE HOT-DIPPED GALVANIZED

5 THE BRIDGE SYSTEM FABRICATOR SHALL BE AISC CERTIFIED FOR THE TYPE OF BRIDGE BEING FABRICATED. ALL QUALITY CONTROL CERTIFICATIONS, MATERIAL TEST REPORTS, AND FABRICATION QA/QC REPORTS SHALL BE SUBMITTED WITH DELIVERY OF THE BRIDGE, ALONG WITH A STATEMENT SIGNED BY THE FABRICATOR'S QA/QC MANAGER THAT THE BRIDGE WAS FABRICATED IN ACCORDANCE WITH THE APPROVED DRAWINGS AND SPECIFICATIONS



BRIDGE ABUTMENT & SLAB PLAN

SCALE 1/4"=1'-0"

DATE	JANUARY 23, 2026
SCALE	AS NOTED
SHEET NO	BF-102

REVISIONS			
NO	DESCRIPTION	DATE	BY
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DESIGNED	MWC
DRAWN	STAFF
REVIEWED	MWC
APPROVED	MWC

BRIDGE FOUNDATION
ABUTMENT SLAB BRIDGE PLAN

LFUCG FIRE TRAINING
CITY OF LEXINGTON, KENTUCKY

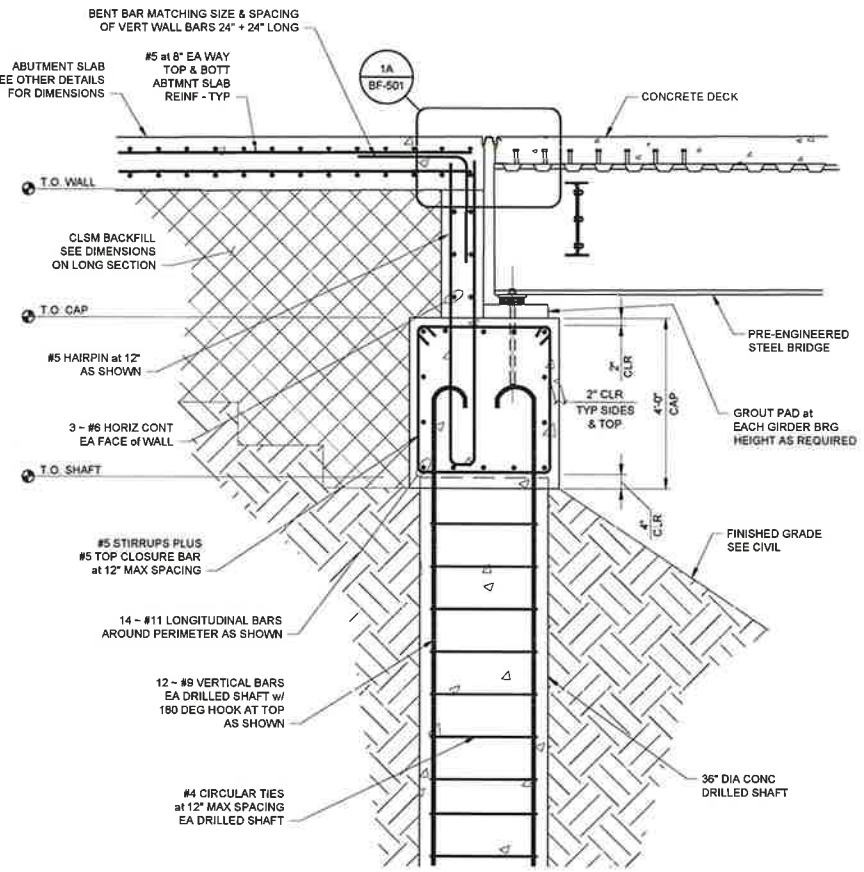
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CLIENT PROJECT NO. 1-2026

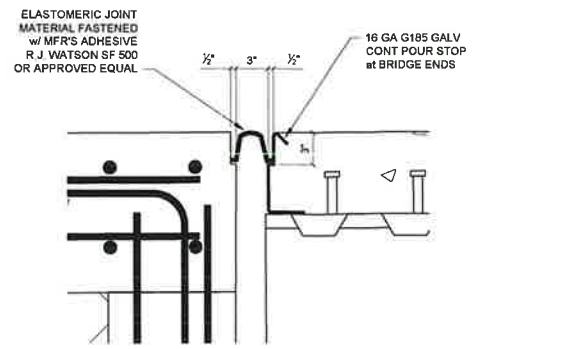
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STATE OF KENTUCKY MATTHEW W. CRAIG 24113 LICENSED PROFESSIONAL ENGINEER

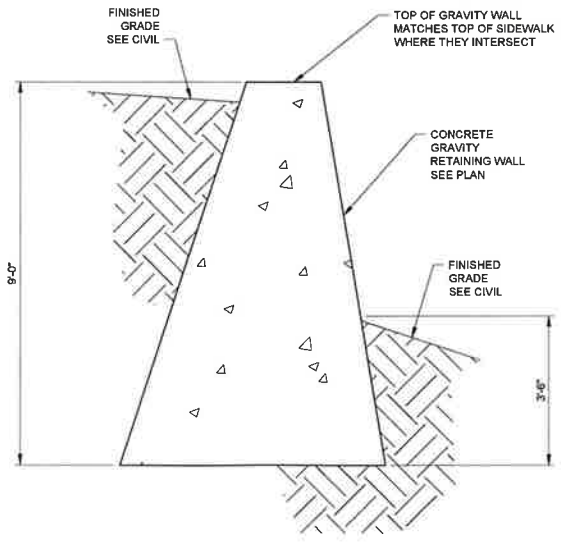
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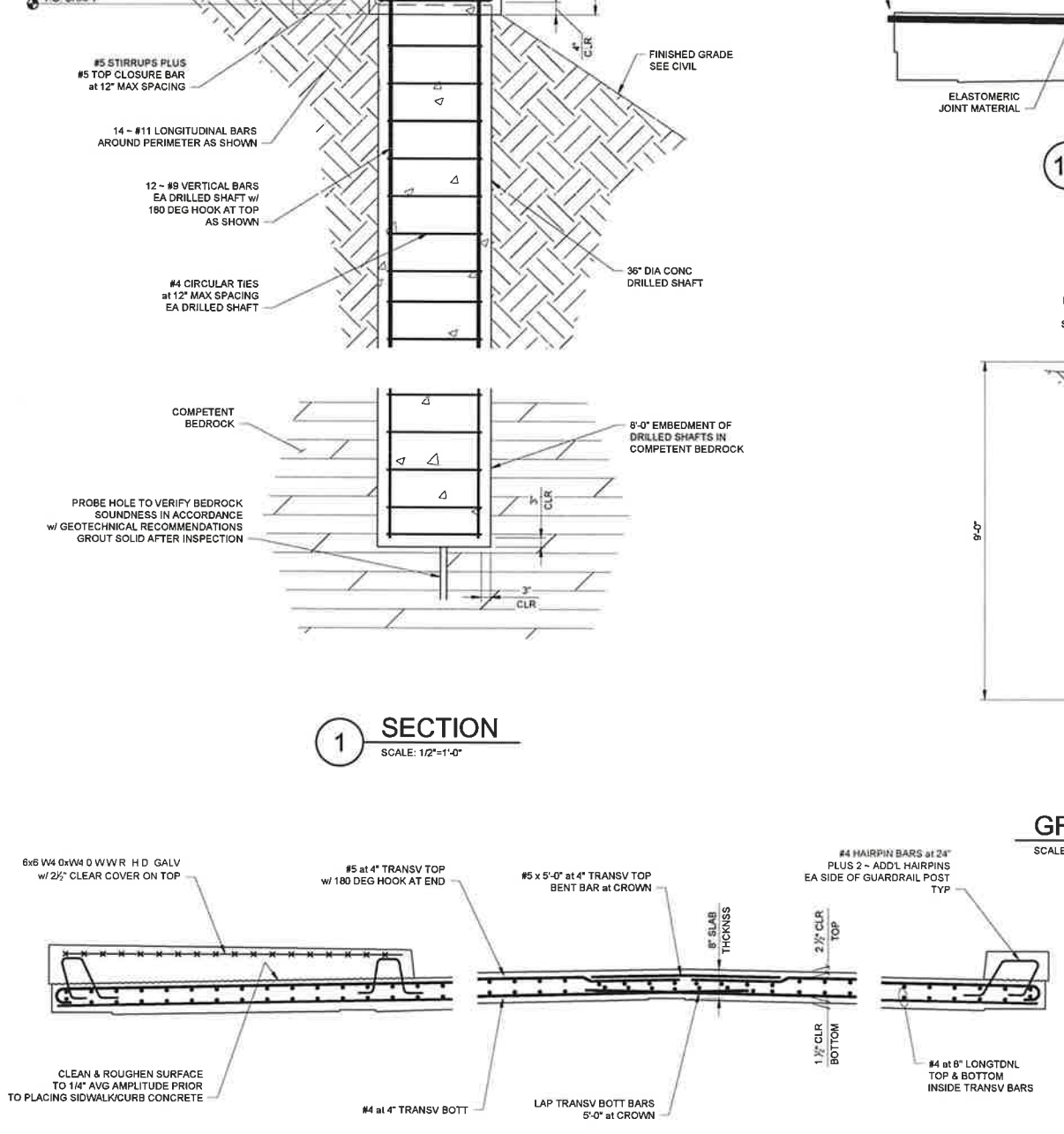
1 SECTION
SCALE: 1/2"=1'-0"



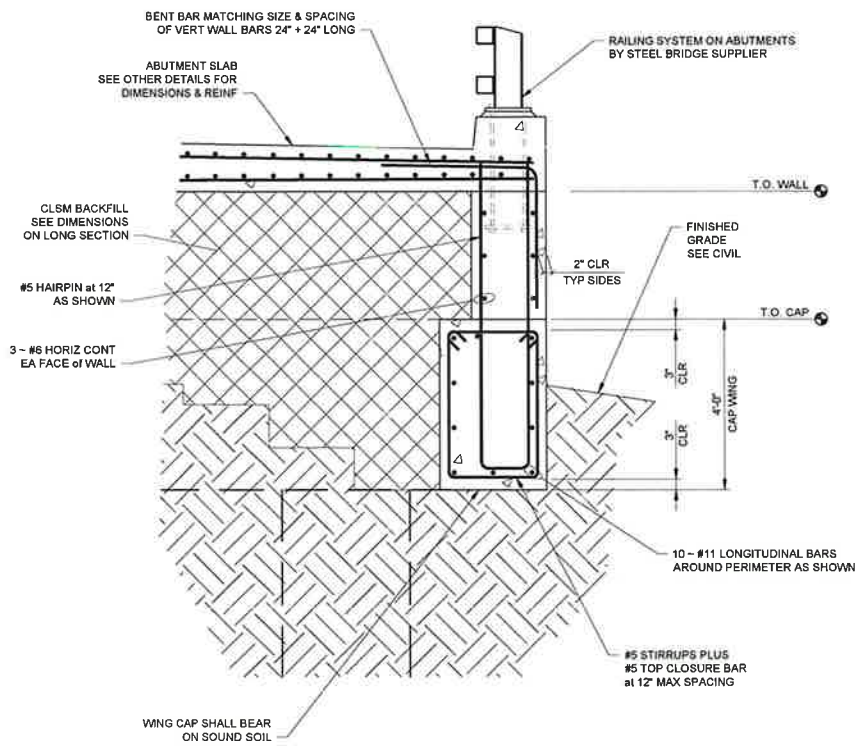
1A DETAIL
SCALE: 1/2"=1'-0"



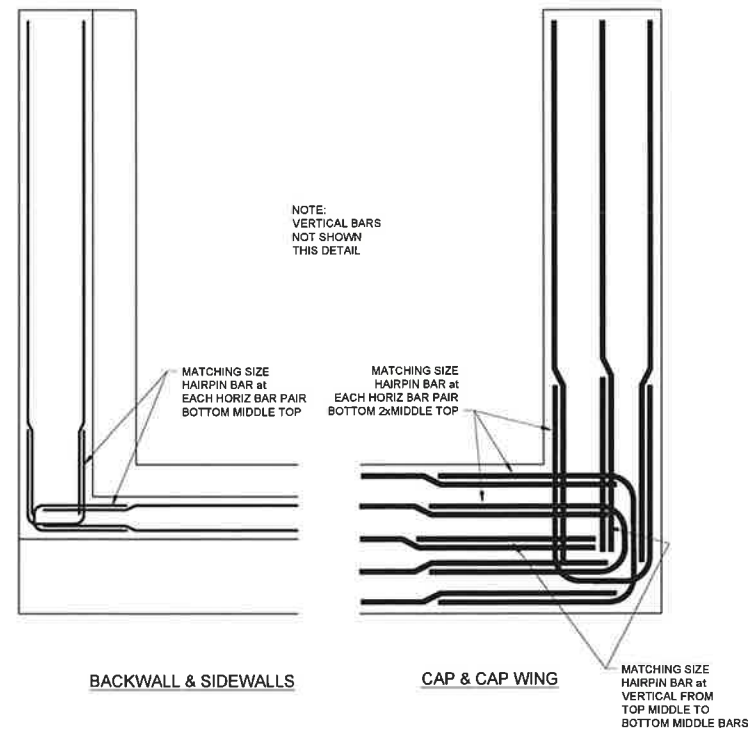
GRAVITY WALL SECTION
SCALE: 1/2"=1'-0"



DECK SLAB THICKNESS & REINFORCEMENT
SCALE: 1/2"=1'-0"



2 SECTION
SCALE: 1/2"=1'-0"



CORNER DETAILS
SCALE: 1/2"=1'-0"

MATTHEW W. CRAIG 24113 LICENSED PROFESSIONAL ENGINEER
1-23-26

GRW PROJECT NO. 5300-01

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BRIDGE FOUNDATION SECTIONS DETAILS

LFUCG FIRE TRAINING
CITY OF LEXINGTON, KENTUCKY

DESIGNED	DRAWN	REVIEWED	APPROVED
MWC	STAFF	MWC	MWC

REVISIONS

NO	DESCRIPTION	DATE	BY

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INTERIOR LIGHTING

SUBSCRIPTS INDICATE THE FOLLOWING:

LF-X	=	INDICATES FIXTURE TYPE
E	=	INDICATES EMERGENCY BATTERY BACKUP
a	=	DENOTES SINGLE SWITCH DESIGNATION
a/b	=	DENOTES DUAL SWITCH DESIGNATION

CEILING MTD

LF-X b — 2' x 4' RECESSED LUMINAIRE

LF-X b — 2' x 4' RECESSED LUMINAIRE WITH EMERGENCY BATTERY BACKUP

LF-X b — 2' x 2' RECESSED LUMINAIRE

LF-X b — 2' x 2' RECESSED LUMINAIRE WITH EMERGENCY BATTERY BACKUP

LF-X b — 1' x 4' SURFACE MOUNTED OR SUSPENDED LUMINAIRE

LF-X b — 1' x 4' SURFACE MOUNTED OR SUSPENDED LUMINAIRE WITH EMERGENCY BATTERY BACKUP

LF-X — 4' STRIP LUMINAIRE

LF-X — 8' STRIP LUMINAIRE

OR LF-X / OR LF-X — EXIT LIGHT WITH ARROW

LF-X b — RECESSED OR SURFACE MOUNTED LUMINAIRE

LF-X b — RECESSED LUMINAIRE WITH EMERGENCY BATTERY BACKUP

LF-X — EMERGENCY LUMINAIRE BATTERY OPERATED

LF-X — EMERGENCY REMOTE HEAD

WALL MTD

LF-X b — 1' x 4' SURFACE MOUNTED OR SUSPENDED LUMINAIRE

LF-X b — 1' x 4' SURFACE MOUNTED OR SUSPENDED LUMINAIRE WITH EMERGENCY BATTERY BACKUP

LF-X — 4' STRIP LUMINAIRE

LF-X — 8' STRIP LUMINAIRE

OR LF-X / OR LF-X — EXIT LIGHT WITH ARROW

LF-X — RECESSED OR SURFACE MOUNTED LUMINAIRE

LF-X — RECESSED LUMINAIRE WITH EMERGENCY BATTERY BACKUP

LF-X — EMERGENCY LUMINAIRE BATTERY OPERATED

LF-X — EMERGENCY REMOTE HEAD

INTERIOR CONDUIT & WIRE

CONDUIT CONCEALED IN WALL OR CEILING. TIC MARKS INDICATE NUMBER OF WIRES. #12 IF NOT OTHERWISE SHOWN. CONDUIT SHALL BE 3/4 " UNLESS OTHERWISE NOTED.
GROUND
PHASE(S)
NEUTRAL

CONDUIT EXPOSED OR CONCEALED

CONDUIT RUN UNDERGROUND OR IN CONCRETE

LP1-2 — HOMERUN TO PANEL (PANEL LP1 CIRCUIT 2 INDICATED)

SIGNIFIES MULTIPLE CIRCUITS IN ONE CONDUIT

EXPLOSION PROOF CONDUIT SEAL

CONDUIT WITH END CAPPED

CONDUIT TURNED UP

CONDUIT TURNED DOWN

POWER DEVICES

M OR 5 — MOTOR CONNECTION (5 HP INDICATED)

DISCONNECT SWITCH (ENCLOSURE TYPE, SIZE, AND FUSING, IF REQUIRED, DESIGNATED ON DRAWINGS)

PANELBOARD, SURFACE MOUNTED

PANELBOARD, RECESSED

ENCLOSED CIRCUIT BREAKER (ENCLOSURE TYPE, SIZE DESIGNATED ON DRAWINGS)

MOTOR CONTROLLER (ENCLOSURE TYPE, SIZE DESIGNATED ON DRAWINGS)

COMBINATION STARTER/CIRCUIT BREAKER (ENCLOSURE TYPE, SIZE DESIGNATED ON DRAWINGS)

VFD — VARIABLE FREQUENCY DRIVE (ENCLOSURE TYPE, SIZE DESIGNATED ON DRAWINGS)

DRY TYPE TRANSFORMER - FLOOR MOUNTED ON 4" HIGH HOUSEKEEPING PAD

MCM — MAGNETIC CONTACT, DOOR MOUNTED

MCW — MAGNETIC CONTACT, WINDOW MOUNTED

M — PASSIVE INFRARED MOTION DETECTOR, ARROW DENOTES CURTAIN DIRECTION

POWER WIRING DEVICES

SUBSCRIPTS INDICATE THE FOLLOWING:

WP	=	WEATHER PROOF, IN-USE COVER
WR	=	WEATHER RESISTANT WIRING DEVICE
GFCI	=	GROUND FAULT CIRCUIT INTERRUPTER
GF-BF	=	BLANK FACE GROUND FAULT INTERRUPT
IG	=	ISOLATED GROUND
EXP	=	EXPLOSION PROOF
ACT	=	ABOVE COUNTER TOP
TR	=	TAMPER RESISTANT
AFCI	=	ARC FAULT INTERRUPTER
TVSS	=	TRANSIENT VOLTAGE SURGE SUPPRESSOR

SINGLE RECEPTACLE, 125 VOLT, 2-POLE, 3-WIRE, NEMA 5-20R GROUNDING TYPE

XXX — DUPLEX RECEPTACLE, 125 VOLT, 2-POLE, 3 WIRE, NEMA 5-20R GROUNDING TYPE

XXX (5-50) — SPECIAL PURPOSE RECEPTACLE, NUMBER DENOTES NEMA CONFIGURATION

XXX — QUADRUPLEX RECEPTACLE, 125 VOLT, 2-POLE, 3 WIRE, NEMA 5-20R GROUNDING TYPE

SINGLE SPECIAL PURPOSE RECEPTACLE, NEMA CONFIGURATION NOTED

FLOOR MOUNTED DUPLEX RECEPTACLE, 125-VOLT, 2-POLE, 3-WIRE, NEMA 5-20R GROUNDING TYPE

FLOOR MOUNTED QUADRAPLEX RECEPTACLE, 125-VOLT, 2-POLE, 3-WIRE, NEMA 5-20R GROUNDING TYPE

RANGE RECEPTACLE, 125/250 VOLT, 3-POLE, 4-WIRE, NEMA 14-50R GROUNDING TYPE

J OR JB — JUNCTION BOX WALL OR CLNG MOUNTED FLUSH OR SURFACE AS NOTED, 4"X4" SQUARE UNLESS OTHERWISE NOTED

(1) (3) (5) (3) — MULTI-OUTLET SURFACE RACEWAY, SIZE AND NUMBER OF RECEPTACLE AS SCHEDULED. # INDICATES CIRCUIT NUMBER

WIREWAY

CABLE TRAY

PLUGIN OR FEEDER BUS

COMMUNICATION

SUBSCRIPTS INDICATE THE FOLLOWING:

X = REFER TO FACEPLATE CONFIGURATION ON SHEET E302.3

FACEPLATE CONFIGURATION X

RJ-45 OUTLET - WALL-MOUNTED, MOUNT 18" AFF, UNLESS OTHERWISE NOTED

FIBER OUTLET, DUPLEX LC CONNECTORS - WALL-MOUNTED, MOUNT 18" AFF, UNLESS OTHERWISE NOTED

RJ-45 OUTLET - FLOOR MOUNTED

FIBER OUTLET, DUPLEX LC CONNECTORS - FLOOR MOUNTED

WAP — RJ-45 OUTLET - CEILING-MOUNTED FOR FUTURE WIRELESS ACCESS POINT

WAP — RJ-45 OUTLET - WALL-MOUNTED FOR FUTURE WIRELESS ACCESS POINT

SECURITY SYSTEMS

ACP — ACCESS CONTROL PANEL

CR — CARD READER

AD — ELECTRIFIED DOOR HARDWARE (BY GATE PROVIDER)

PS — POWER SUPPLY

REQUEST-TO-EXIT (REX) PUSHBUTTON (BY GATE PROVIDER)

POLE-MOUNTED SECURITY CAMERA

FIRE ALARM/SUPPRESSION SYSTEM DEVICES

EOL — END OF LINE RESISTOR

FCP — FIRE ALARM CONTROL PANEL

FSA — FIRE ALARM ANNUNICATOR PANEL

FAC — FIRE ALARM COMMUNICATOR

MIC — REMOTE MIC

FIRE ALARM MANUAL STATION
X=H- HALON F- FOAM
C- CARBON DIOXIDE W- WET CHEMICAL
D- DRY CHEMICAL P- MANUAL PULL STATION

FIRE ALARM SPEAKER-HORN/STROBE LIGHT

FIRE ALARM HORN OR SPEAKER

FIRE ALARM BELL/LIGHT

WATER MOTOR GONG

FIRE ALARM STROBE LIGHT

WALL MOUNTED FIRE ALARM STROBE LIGHT

X — SMOKE DETECTOR
X=P- PHOTOELECTRIC BT- BEAM TRANSMITTER
I- IONIZATION BR- BEAM RECEIVER

OR — DUCT MOUNTED SMOKE DETECTOR

X — HEAT DETECTOR, SUBSCRIPT DENOTES THE FOLLOWING
X=F-FIXED TEMPERATURE
R-RATE OF RISE
R/F-COMBINATION RATE OF RISE AND FIXED

TAMPER SWITCH CONNECTION

FLOW SWITCH CONNECTION

DOOR HOLDER

PRESSURE SWITCH

LEVEL SWITCH

VALVE WITH TAMPER SWITCH

MUSHROOM HEAD EMERGENCY PUSHBUTTON SWITCH

FIREMANS TELEPHONE STATION

CO_2 FIRE EXTINGUISHER

ADDRESSABLE MONITOR MODULE

CO — CARBON MONOXIDE DETECTOR

EXTERIOR

EXISTING		NEW
35/3	POLE, LENGTH AND CLASS AS INDICATED	35/3
3-25	TRANSFORMER BANK POLE MOUNTED, SHOWN AS THREE PHASE 25 KVA TRANSFORMERS	3-25
25	SINGLE PHASE TRANSFORMER, POLE MOUNTED 25 KVA NOTED	25
T 100	PAD MOUNTED TRANSFORMER, 100 KVA NOTED	T 100
	FUSE CUTOUT WITH FUSE SIZE AND TYPE NOTED	
	DISCONNECT SWITCH OR SECTIONALIZING SWITCH	
EG	BURIED GROUND WIRE	G
EG	GROUND WIRE IN OR UNDER FLOOR SLAB	G
EG	GROUND WIRE EXPOSED	G
	GROUND CONNECTION OR EQUIPMENT BOND	
EG	ROOF CONDUCTOR	RC
	POLE MOUNTED LUMINAIRE	
XXX	MANHOLE, HANDHOLE, OR PULLBOX, SUBSCRIPT DENOTES THE FOLLOWING: EMH ELECTRICAL MANHOLE CMH COMMUNICATIONS MANHOLE EHH ELECTRICAL HANDHOLE CHH COMMUNICATIONS HANDHOLE EPB ELECTRICAL PULLBOX CPB COMMUNICATIONS PULLBOX	XXX
XXX OR XXX / XXX OR XXX	WALLPACK EXTERIOR LUMINAIRE	XXX OR XXX / XXX OR XXX
	WALLPACK EXTERIOR LUMINAIRE WITH EMERGENCY BATTERY	
10-3/4 W	GROUND ROD, SIZE AS NOTED 3/4" X 10' (W DENOTES INSTALLATION IN WELL)	10-3/4 W
24	LIGHTNING ROD, (24 INCHES HIGH NOTED)	24

SINGLE LINE DIAGRAMS/CONTROLS

ETM — ELAPSED TIME METER

TM — TIMER MOTOR

R OR CR# — CONTROL RELAY

SV — SOLENOID VALVE CONNECTION

LS — LIMIT SWITCH CONNECTION

T — THERMOSTAT CONNECTION

PC OR PV — PHOTOCELL

PS — PRESSURE SWITCH CONNECTION

A — AMMETER

DM — DAMPER MOTOR ACTUATOR, SPRING RETURN

EF — EXHAUST FAN MOTOR

V — VOLTMETER

W — WATTMETER

WH — WATTHOUR METER

M — MOTOR STARTER COIL

M OL — MOTOR CONTACTOR / MOTOR OVERLOAD

G — INDICATOR LIGHT (CONTROL CIRCUIT)

PUSH TO TEST G — INDICATOR LIGHT W/PUSH TO TEST (CONTROL CIRCUIT)

ON OFF — 2 POSITION SELECTOR SWITCH: ON-OFF

L O R — 3 POSITION SELECTOR SWITCH: LOCAL-OFF-REMOTE HAND-OFF-AUTOMATIC

L O R A — 4 POSITION SELECTOR SWITCH: LOCAL-OFF-REMOTE-AUTOMATIC

START STOP M — START-STOP PUSHBUTTON (NON-MAINTAINED CONTACT)

OFF ON — ON-OFF PUSHBUTTON (MAINTAINED CONTACT)

CONTROL PANEL HEATER/COOLING FAN

E-STOP M — EMERGENCY STOP PUSHBUTTON STATION

SWITCH, NONFUSED

FUSED SWITCH

OR — FUSE

MAGNETIC ONLY CIRCUIT BREAKER (SINGLE POLE SHOWN)

THERMAL-MAGNETIC CIRCUIT BREAKER (SINGLE POLE SHOWN)

CIRCUIT BREAKER GENERIC

GF — GROUND FAULT PROTECTED BREAKER

LINE REACTOR

CURRENT TRANSFORMER

POTENTIAL TRANSFORMER

SPD — SURGE PROTECTION DEVICE, TYPE 1 OF TYPE 2

TS OR — LIGHTNING ARRESTOR (CROWBAR STYLE)

CAPACITOR

GROUND

TRANSFORMER

RELAY CONTROLS (NORMALLY OPEN)

RELAY CONTROLS (NORMALLY CLOSED)

N.O.T.C. — TIMER CONTACT - NORMAL OPEN, TIME CLOSE

N.C.T.O. — TIMER CONTACT - NORMAL CLOSE, TIME OPEN

N.O.T.O. — TIMER CONTACT - NORMAL OPEN, TIME OPEN

N.C.T.C. — TIMER CONTACT - NORMAL CLOSE, TIME CLOSE

K — KEY INTERLOCK

THERMAL OVERLOAD PROTECTION

BATTERY

AUTOTRANSFORMER

DOUBLE THROW SWITCH OR TRANSFER SWITCH

FLOAT SWITCH (NORMALLY CLOSED)

THERMOSTATIC SWITCH

PRESSURE SWITCH

LIMIT SWITCH OR TORQUE SWITCH

DOT INDICATES CONNECTION OF WIRES

1 2 — TERMINALS FOR WIRE CONNECTIONS FROM REMOTE DEVICE

GENERAL NOTES:

1. THE MINIMUM STANDARD FOR ALL WORK SHALL BE THE LATEST EDITION OF THE INTERNATIONAL BUILDING CODE WITH IN STATE AMENDMENTS AND THE NATIONAL ELECTRICAL CODE (NEC).
2. ALL ELECTRICAL WORK SHALL BE PERFORMED BY AN IN-STATE LICENSED ELECTRICIAN.
3. ALL PERMITS NEEDED TO LEGALLY PERFORM THE ELECTRICAL WORK SHALL BE OBTAINED BY THE CONTRACTOR PRIOR TO START OF WORK. COST OF PERMITTING IS BY THE CONTRACTOR.
4. AT COMPLETION OF THE WORK, A CERTIFICATE OF COMPLIANCE FROM THE LOCAL AHJ OVER THE ELECTRICAL WORK SHALL BE PROVIDED TO THE ENGINEER AND OWNER. COST OF ELECTRICAL INSPECTION IS BY THE CONTRACTOR.
5. ALL MATERIALS USED IN THE PROJECT GENERALLY SHALL BE NEW AND UNUSED, UNLESS OTHERWISE NOTED ON THE DRAWINGS. ALL NEW MATERIALS SHALL BE LISTED BY UL OR OTHER ACCEPTABLE LISTING AGENCY, WHERE A LISTING EXISTS.
6. THE CONTRACTOR SHALL VISIT THE SITE(S) PRIOR TO BIDDING TO FAMILIARIZE THEMSELVES WITH PROJECT REQUIREMENTS AND EXISTING CONDITIONS.
7. FIRESTOP ALL NEW CONDUIT INSTALLED THROUGH EXISTING OR NEW FIRE RATED ASSEMBLIES.
8. SHOP DRAWINGS SHALL BE SUBMITTED ON ALL ELECTRICAL MATERIALS AND EQUIPMENT FOR ACCEPTANCE PRIOR TO PURCHASE BY THE CONTRACTOR.
9. WHEN AN ITEM DEMOLISHED IS REMOVED, REMOVE ALL CONCRETE PADS, FASTENERS, CONDUIT AND WIRING. SCARIFY SURFACE AND RESTORE TO MATCH EXISTING SURROUNDING SURFACE, INCLUDING PAINTING TO MATCH.
10. ALL NEW WIRING SHALL BE ENCLOSED IN AN APPROVED RACEWAY SYSTEM. OPEN WIRING IS PROHIBITED.
11. CIRCUIT BREAKERS USED FOR HVAC EQUIPMENT LOADS SHALL BE HACR TYPE.
12. ENSURE DEDICATED ELECTRICAL SPACE IS PROVIDED ABOVE AND BELOW ELECTRICAL PANELS IN ACCORDANCE WITH NEC ARTICLE 110.26.
13. UP TO 3 CIRCUITS MAY BE COMBINED IN ONE CONDUIT, AS LONG AS NEC DERATING RULES ARE FOLLOWED.
14. ALL CIRCUITS TO HAVE A DEDICATED NEUTRAL. COMBINED NEUTRALS AND MULTI-WIRE CIRCUITS ARE NOT TO BE USED EXCEPT POSSIBLY TO COORDINATE WITH SYSTEMS FURNITURE. SEE POWER PLAN.
15. 120 VOLT CIRCUITS THAT EXCEED 75 LINEAR CIRCUIT FEET SHALL BE INCREASED TO #10 AWG AS A GENERAL RULE. OTHER CIRCUITS WILL BE DESIGNED SPECIFICALLY WITH VOLTAGE DROP CONSIDERED IN THE LAYOUT.
16. COORDINATE ALL MOTOR STARTERS, FEEDERS AND DISCONNECT SWITCHES FOR HVACE AND OTHER UTILIZATION EQUIPMENT ACTUALLY PROVIDED IN ACCEPTED SHOP DRAWINGS.
17. IN ORDER TO COMPLY WITH OSHA REQUIREMENTS, NO OPERATOR DEVICE OF ANY PANEL OR DISCONNECT OR MOTOR CONTROL SHALL BE HIGHER THAN 6'-6" AFF.
18. PROVIDE AN EXTERIOR RATED SERVICE RECEPTACLE WITHIN 25 FEET HORIZONTALLY OF ANY EXTERIOR OR ROOFTOP HVAC OUTDOOR UNITS (HEATING OR AIR CONDITIONING ONLY).
19. SUPPORT ALL LUMINAIRES FROM THE STRUCTURE, NOT FROM THE SUSPENDED CEILING GRID. ALSO INTERLOCK THE LUMINAIRES TO THE GRID SYSTEM USING AFTERMARKET EARTHQUAKE CLIPS (SIMILAR TO ERICO/CADDY FASTENERS OR T&B/STEEL CITY).
20. DEVICE PLATES SHALL BE INSTALLED PLUMB AND JUMBO OVERSIZED PLATES SHALL NOT BE USED.
21. NEW RECEPTACLES SHALL BE INSTALLED WITH GROUND PIN ORIENTATION TO MATCH EXISTING. IN NEW CONSTRUCTION, GROUND PIN DOWN ABOVE COUNTERS OR WORK BENCHES, AND UP FOR LOW WALL MOUNTED DEVICES.
22. AT COMPLETION OF PROJECT, ALL ELECTRICAL, TELECOMMUNICATIONS, AND ELECTRONIC SAFETY SYSTEMS SHALL BE FULLY OPERATIONAL.
23. INSTALL A NYLON PULLSTRING IN ALL SPARE CONDUITS, ACCESSIBLE AT BOTH ENDS. CAP OFF SPARE CONDUITS ON BOTH ENDS.
24. EGRESS LUMINAIRES AND EXIT SIGNS REQUIRE AN UNSWITCHED HOT.
25. WHERE DUPLEX RECEPTACLES ARE INDICATED GENERALLY BACK TO BACK ON OPPOSITE SIDES OF A PARTY WALL, THE RECEPTACLES SHALL NOT BE INSTALLED IN THE SAME STUD SPACE, BUT SHALL BE SEPARATED BY AT LEAST ONE STUD SPACE.
26. PROVIDE SIGN WITH ESTIMATED FAULT CURRENT AND DATE CALCULATED ON THE MAIN SERVICE DISCONNECT ENCLOSURE. PROVIDE COORDINATION STUDY AND ARC FLASH STUDY, AND APPLY JOB SPECIFIC ARC FLASH HAZARD WARNING LABELS ON ALL SWITCHBOARDS, SWITCHGEAR, MCC'S AND PANELBOARDS.
27. FOR ANY CIRCUIT BREAKER 1200 AMPERE OR LARGER, PROVIDE A MAINTENANCE SWITCH OR ZONE INTERLOCKING OR OTHER MEANS TO COMPLY WITH NEC ARTICLE 240.87.

PLOTTED BY: PBalden
PRINTED: 1/21/2026 @ 7:54PM
FILE NAME: G:\5300-LFUCG FT P1\Working Drawings\AutoCAD\5300-E-001.dwg

PATRICK J. BALDEN — 28822 — LICENSED PROFESSIONAL ENGINEER — ORIGINAL DOCUMENT SIGNED AND SEALED — 1/23/26

GRW PROJECT NO. 5300-01
CLIENT PROJECT NO. 1-2026

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ELECTRIAL STANDARD SYMBOL AND GENERAL NOTES

LFUCG FIRE TRAINING
CITY OF LEXINGTON, KENTUCKY

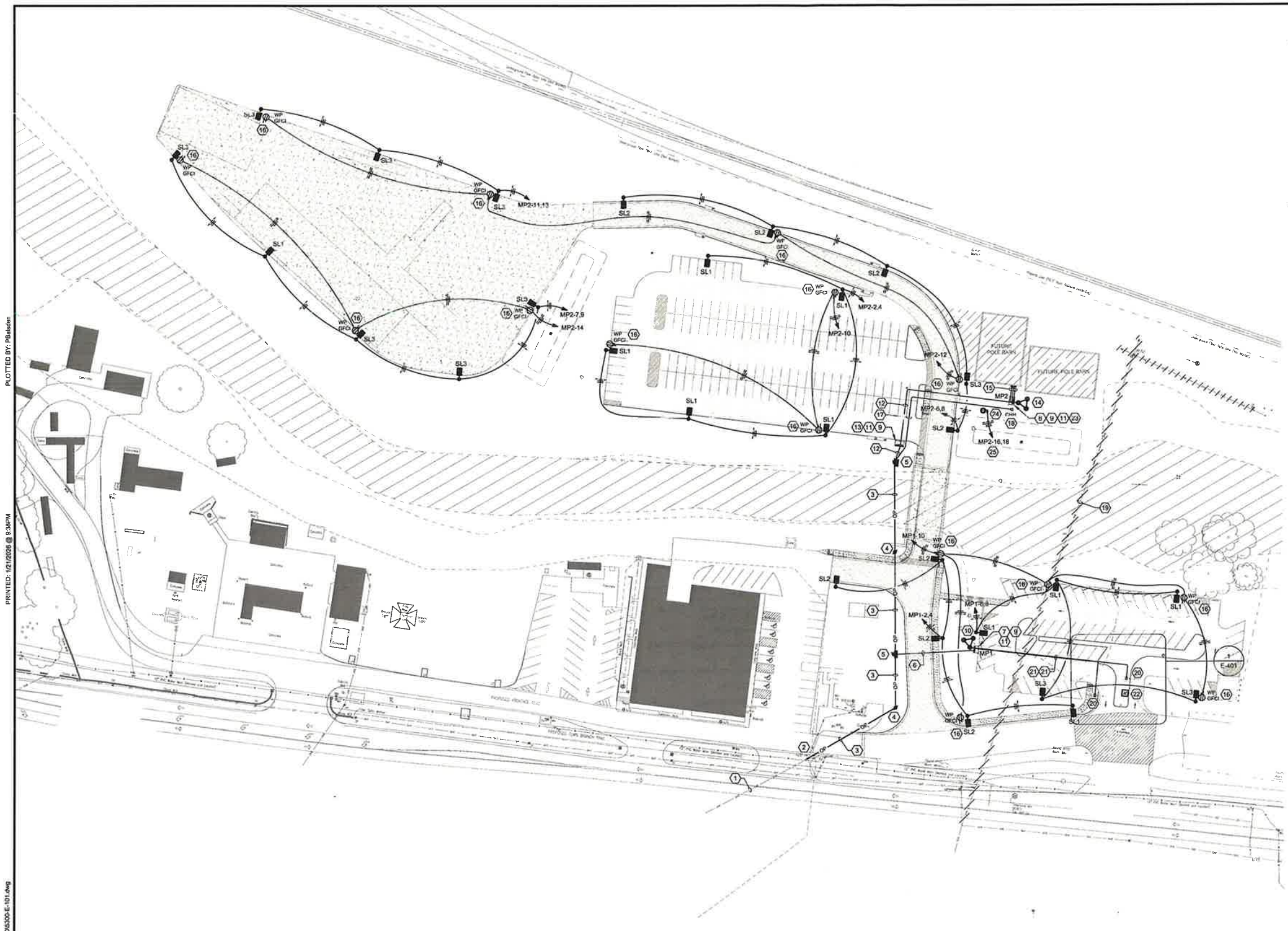
DESIGNED	PJB
DRAWN	PJB
REVIEWED	PJB
APPROVED	PJB

REVISIONS

NO	DESCRIPTION	DATE	BY

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DATE: JANUARY 23, 2026
SCALE: NOT TO SCALE
SHEET NO. E-001



GENERAL NOTES:

1. CONTRACTOR SHALL CONTACT KENTUCKY UTILITIES (KU) AND COORDINATE THE REQUIREMENTS FOR THE NEW ELECTRICAL SERVICE.
2. LOCATE ALL EXISTING UNDERGROUND UTILITIES AND COORDINATE WITH GENERAL CONTRACTOR FOR ALL NEW UNDERGROUND WORK PRIOR TO ANY EXCAVATION OR TRENCHING. MAINTAIN MINIMUM 12" CLEARANCE, UNLESS OTHERWISE NOTED.
3. MINIMUM BURY FOR ALL SITE CONDUIT SHALL BE 30", UNLESS OTHERWISE NOTED.
4. ALL EXPOSED CONDUIT SHALL BE GALVANIZED RIGID STEEL AND UNDERGROUND CONDUIT SHALL BE SCHEDULE 80.
5. PROVIDE CONCRETE BASE AND GROUNDING FOR ALL POLE-MOUNTED LUMINAIRES. REFER TO DETAIL 7, SHEET E-501.

⬡ SHEET KEYNOTES:

1. EXISTING OVERHEAD PRIMARY SERVICE.
2. EXISTING TRANSFORMER POLE.
3. NEW OVERHEAD PRIMARY SERVICE BY KENTUCKY UTILITIES.
4. NEW LIFT POLE BY KENTUCKY UTILITIES.
5. NEW TRANSFORMER POLE BY KENTUCKY UTILITIES.
6. NEW UNDERGROUND SECONDARY FOR PANELBOARD MP1 BY CONTRACTOR.
7. PANELBOARD MP1 AND METER BASE BY CONTRACTOR. MOUNT TO EQUIPMENT RACK SIMILAR TO DETAIL 1, SHEET E-501.
8. PANELBOARD MP2 WITH A 72"W X 20" D X 90"H STAINLESS STEEL ELECTRICAL ENCLOSURE. REFER TO DETAIL 1, SHEET E-502 FOR ADDITIONAL INFORMATION.
9. CONTRACTOR SHALL PROVIDE CONCRETE EQUIPMENT PAD SIMILAR TO DETAIL 5, SHEET E-501.
10. GROUND RODS AND GROUNDING ELECTRODE CONDUCTOR FOR PANELBOARD MP1.
11. CONTRACTOR SHALL PROVIDE BOLLARDS FOR PROTECTION OF ELECTRICAL EQUIPMENT. REFER TO DETAIL 3, SHEET E-501.
12. NEW UNDERGROUND SECONDARY FOR PANELBOARD MP2 BY CONTRACTOR.
13. CT CABINET AND METER BASE BY CONTRACTOR. MOUNT SIMILAR TO DETAIL 2, SHEET E-502 FOR ADDITIONAL INFORMATION.
14. GROUND RODS AND GROUNDING ELECTRODE CONDUCTOR FOR PANELBOARD MP2.
15. CONTRACTOR SHALL PROVIDE THREE (3) 3-1/2" CONDUITS STUBBED FROM PANELBOARD MP2 TO OUTSIDE FOOTPRINT OF CONCRETE PAD FOR ELECTRICAL FEEDS TO FUTURE POLE BARNS.
16. WP GFCI RECEPTACLE PROVIDED WITH LIGHT POLE. CONTRACTOR SHALL FIELD INSTALL RECEPTACLE AND WHILE-IN-USE COVER.
17. FUTURE OPTICAL FIBER SERVICE - CONTRACTOR SHALL PROVIDE ONE (1) 4" CONDUIT WITH PULL STRING FROM LIFT POLE TO COMMUNICATION HANDHOLE.
18. CONTRACTOR SHALL PROVIDE COMMUNICATION HANDHOLE FOR FUTURE OPTICAL FIBER SERVICE TO FUTURE POLE BARNS. REFER TO DETAIL 8, SHEET E-501.
19. CONTRACTOR SHALL COORDINATE WITH KENTUCKY UTILITIES FOR THE REMOVAL OF THE EXISTING OVERHEAD PRIMARY AND ASSOCIATED UTILITY POLES.
20. TRAFFIC CONTROL GATE OPERATOR.
21. CONTRACTOR SHALL PROVIDE GATE OPERATOR ELECTRICAL FEEDER FROM PANELBOARD MP1. REFER TO CONDUIT/CONDUCTOR INFORMATION ON PANELBOARD SCHEDULE.
22. KEY PAD FOR TRAFFIC CONTROL GATE.
23. INSTALL A 0.5KVA BUCK BOOST TRANSFORMER (PROVIDED BY DIVISION 33 WITH GRINDER STATION). LOCATED WITHIN THE ELECTRICAL ENCLOSURE FOR PANELBOARD MP2.
24. GRINDER STATION CONTROL PANEL (PROVIDED BY DIVISION 33). MOUNT TO AN EQUIPMENT RACK SIMILAR TO DETAIL 3, SHEET E-502. CONTRACTOR SHALL PROVIDE 1"C FROM GRINDER STATION CONTROL PANEL TO WET WELL FOR INSTALLATION OF PUMP POWER AND CONTROL CABLING.
25. GRINDER STATION ELECTRICAL FEEDER FROM PANELBOARD MP2 VIA BUCK-BOOST TRANSFORMER (KEYNOTE #23). REFER TO CONDUIT/CONDUCTOR INFORMATION ON ELECTRICAL ONE-LINE DIAGRAM - PANELBOARD MP2, SHEET E-501.

PLAN NORTH

0 50' 100'

1 ELECTRICAL SITE PLAN
SCALE: 1"=50'-0"

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STATE OF KENTUCKY
PATRICK J. BAISDEN
29611
LICENSED PROFESSIONAL ENGINEER
1/23/26

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ELECTRICAL SITE PLAN

LFUCG FIRE TRAINING
CITY OF LEXINGTON, KENTUCKY

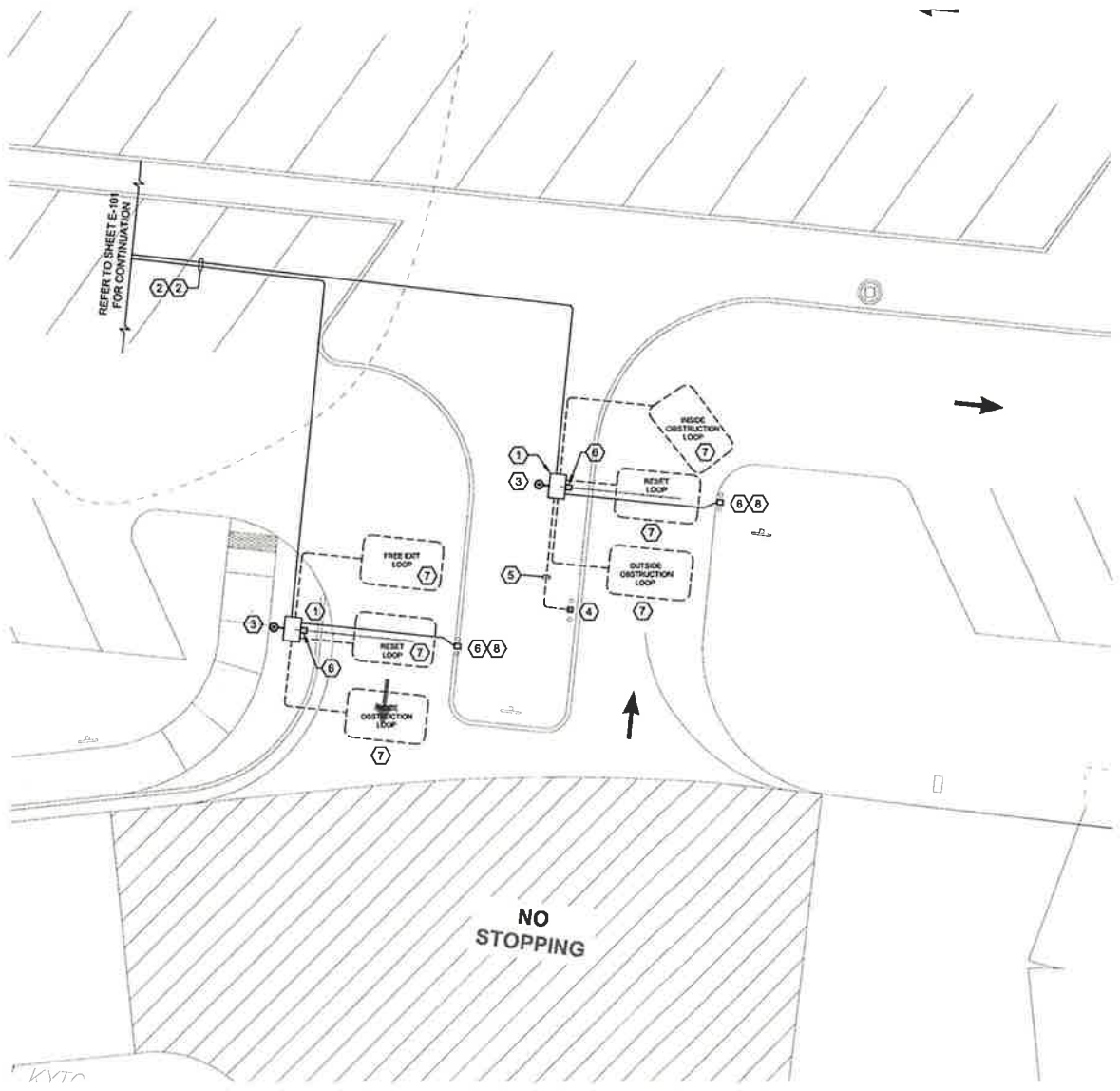
DESIGNED	DRAWN	REVISED	APPROVED
PJB	PJB	PJB	PJB

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SCALE: 0 1/2" 1" | THIS MARK SHOULD MEASURE EXACTLY 1" WHEN PLOTTED

DATE: JANUARY 23, 2026
SCALE: 1" = 50'-0"
SHEET NO: E-101



GENERAL NOTES:

1. LOCATE ALL EXISTING UNDERGROUND UTILITIES AND COORDINATE WITH GENERAL CONTRACTOR FOR ALL NEW UNDERGROUND WORK PRIOR TO ANY EXCAVATION OR TRENCHING. MAINTAIN MINIMUM 12" CLEARANCE, UNLESS OTHERWISE NOTED.
2. MINIMUM BURY FOR ALL SITE CONDUIT SHALL BE 30", UNLESS OTHERWISE NOTED.
3. ALL EXPOSED CONDUIT SHALL BE GALVANIZED RIGID STEEL AND UNDERGROUND CONDUIT SHALL BE SCHEDULE 80.

⬡ SHEET KEYNOTES:

1. TRAFFIC CONTROL GATE OPERATOR (3/4HP, 208V/3-PHASE).
2. CONTRACTOR SHALL PROVIDE GATE OPERATOR ELECTRICAL FEEDER FROM PANELBOARD MP1. REFER TO CONDUIT/CONDUCTOR INFORMATION ON PANELBAORD SCHEDULE.
3. 3/4" X 10' GROUND ROD WITH #6 AWG COPPER GROUND CONDUCTOR. PROVIDE 1" PVC SLEEVE. TERMINATE ON GROUND LUG WITHIN OPERATOR.
4. KEYPAD FOR TRAFFIC CONTROL GATE CONTROL. REFER TO DETAIL 4, SHEET E-501. CONTRACTOR SHALL PROVIDE A WIRED KEYPAD FOR GATE CONTROL. KEYPAD SHALL BE EQUIVALENT TO MILLENNIUM ACCESS CONTROLS, INC MODEL 950.
5. PROVIDE 2#12 (24VDC), 2#12 (OPEN SIGNAL), 1#12 GND, 1"C FROM KEYPAD TO GATE OPERATOR.
6. PHOTO EYE SENSOR (TRANSMITTER OR RECEIVER). COORDINATE WITH GATE OPERATOR INSTALLER. MOUNT SIMILAR TO DETAIL 2, SHEET E-501.
7. OBSTRUCTION LOOP (OR RESET LOOP). CONTRACTOR TO PROVIDE 1"C FROM OPERATOR TO LOOP.
8. PROVIDE BOLLARDS FOR PROTECTION OF PHOTO EYE SENSOR.

1 ELECTRICAL ENLARGED SITE PLAN
SCALE: 1"=10'-0"

0 10' 20'

PLAN NORTH

STATE OF KENTUCKY
PATRICK J BAISDEN
LICENSED PROFESSIONAL ENGINEER
1/23/26

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ELECTRICAL ENLARGED SITE PLAN

LFUCG FIRE TRAINING
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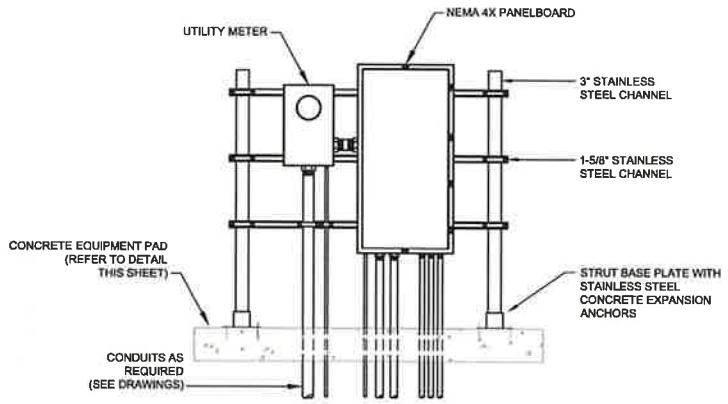
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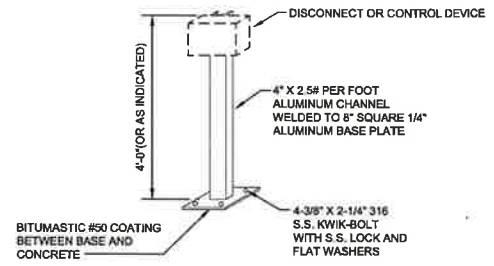
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DATE: JANUARY 23, 2026
SCALE: 1" = 10'-0"
SHEET NO: E-401

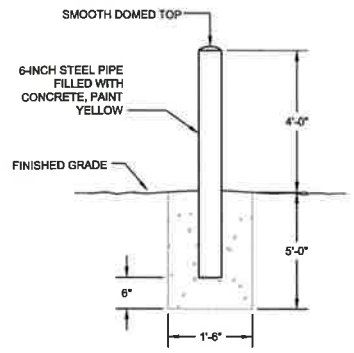
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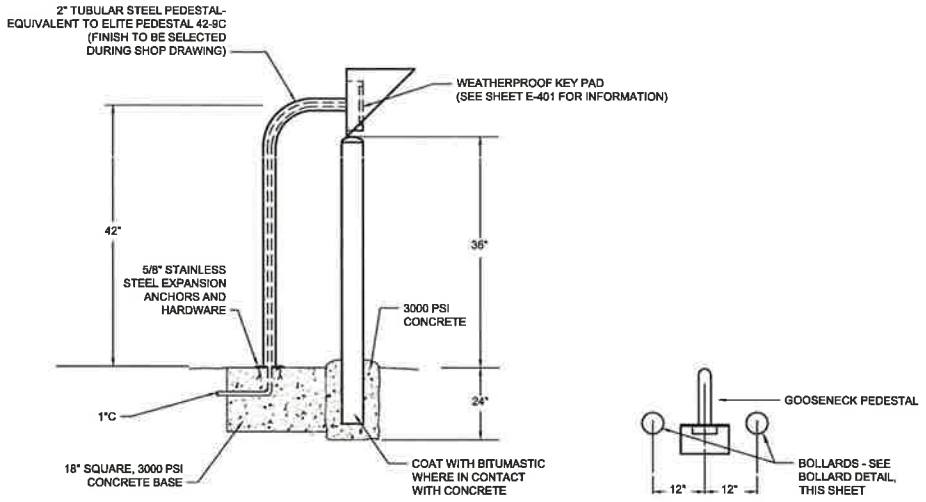
1 EQUIPMENT RACK (PANEL MP1)
NOT TO SCALE



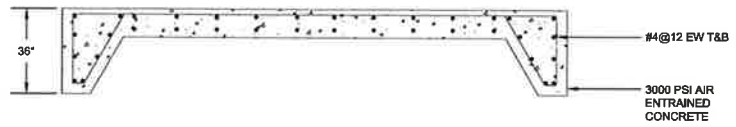
2 EQUIPMENT SUPPORT BRACKET
NOT TO SCALE



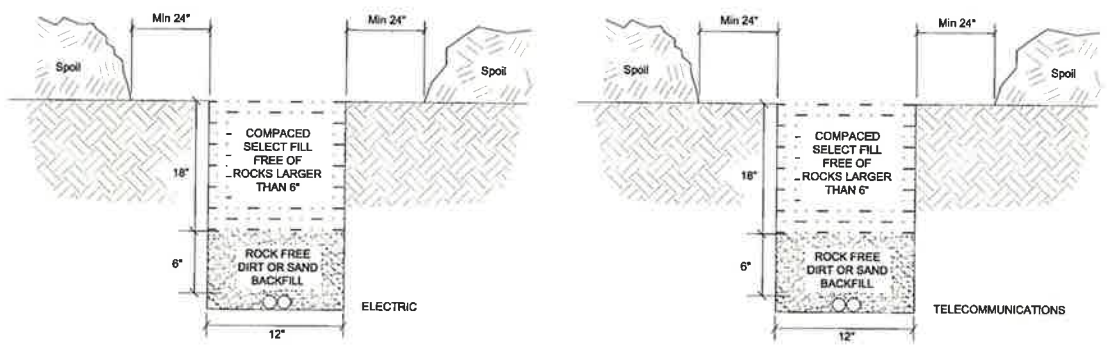
3 BOLLARD DETAIL
NOT TO SCALE



4 KEY PAD PEDESTAL MOUNT
NOT TO SCALE



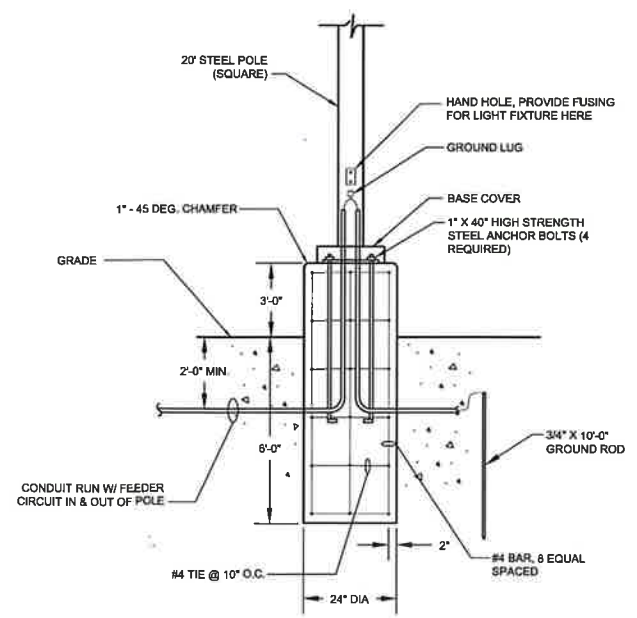
5 TYP. CONCRETE PAD - ELECTRICAL EQUIPMENT
NOT TO SCALE



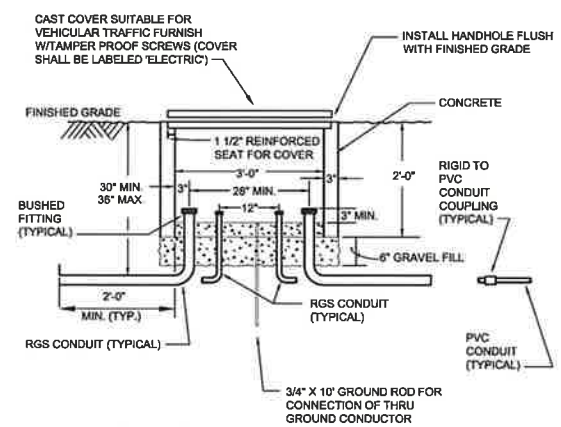
NOTES:

1. ALL EMPTY UTILITY CONDUITS SHALL HAVE PULL LINE INSTALLED.
2. CONTRACTOR RESPONSIBLE FOR ALL EXISTING UNDERGROUND WORK LOCATES.
3. INSTALL PVC SCHEDULE 80 CONDUIT UNDER PAVEMENT. CONDUIT SHALL BE CONCRETE ENCASED WITH FLOWABLE FILL.
4. ALL TURNS TO BE RIGID METALLIC LONG SWEEPING ELBOWS.
5. WARNING TAPE REQUIRED. INSTALL 12" ABOVE CONDUITS.

6 STANDARD DITCH DETAILS
NOT TO SCALE



7 AREA LIGHTING POLE BASE DETAIL
NOT TO SCALE



NOTES:

1. THIS DETAIL ALSO APPLIES FOR COMMUNICATIONS (SIGNAL WIRING) WHERE SHOWN ON DRAWINGS. COVER SHALL BE LABELLED 'COMMUNICATIONS' WHERE UTILIZED FOR SIGNAL WIRING.
2. DIMENSIONS ARE FOR REFERENCE ONLY. PULL BOXES SHALL BE SIZED PER NEC.

8 ELECTRICAL HANDHOLE DETAIL
NOT TO SCALE

STATE OF KENTUCKY
PATRICK J. BAISDEN
LICENSED PROFESSIONAL ENGINEER
1/23/26

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ELECTRICAL DETAILS I

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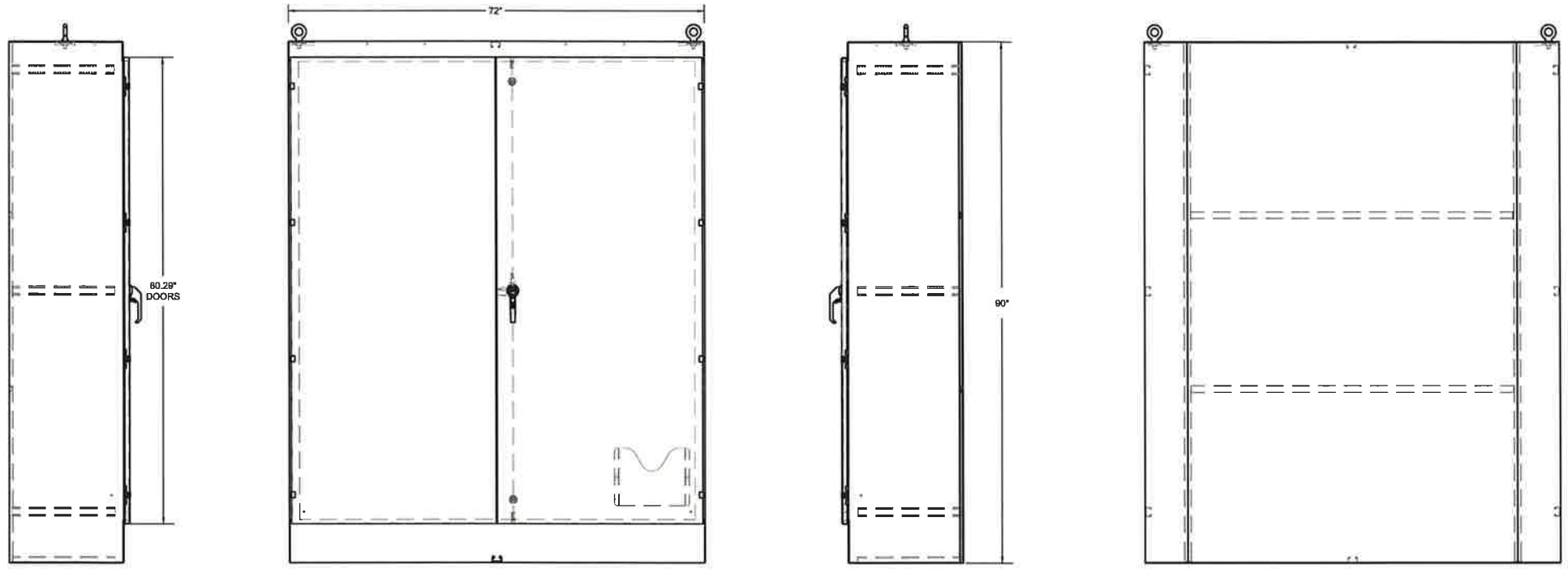
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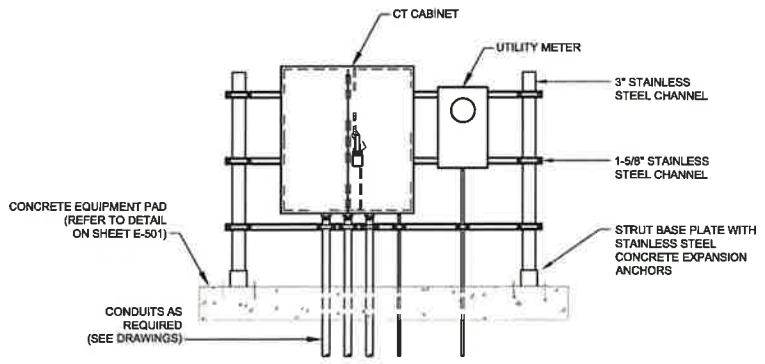


NOTES:

1. ELECTRICAL EQUIPMENT ENCLOSURE SHALL BE SIZED TO INSTALL PANELBOARD MP2.
2. ENCLOSURE SHALL BE CONSTRUCTED AS FOLLOWS:
   - 2.1. 90"W X 20"D X 90"H.
   - 2.2. STAINLESS STEEL TYPE 304.
   - 2.3. REMOVABLE AND INTERCHANGE DOORS.
   - 2.4. CONCEALED HINGES.
   - 2.5. SEEMS CONTINUOUSLY WELDED AND GROUND SMOOTH.
   - 2.6. STRONG RIGID CONSTRUCTION WITH STIFFENERS WELDED ON BACK.
   - 2.7. LIFTING EYES FOR EASY HANDLING.
   - 2.8. 3-POINT LATCHING MECHANISM.
   - 2.9. BLACK ZINC DIE CAST KEYLOCKING/PADLOCKING HANDLE.
   - 2.10. LATCH RODS.
   - 2.11. FLANGE THROUGH COLLAR AROUND ALL SIDES OF DOOR OPENING.
   - 2.12. MOUNTING CHANNELS WELDED HORIZONTALLY ON SIDES OF INTERIOR BODY AT TOP, BOTTOM, AND MIDDLE FOR MOUNTING.
   - 2.13. OIL RESISTANT DOOR GASKET.
   - 2.14. GROUND STUD ON DOOR AND BODY.
   - 2.15. #4 BRUSHED FINISH ON ALL EXTERIOR SURFACES.
3. EQUIVALENT TO SAGINAW CONTROL & ENGINEERING - SCE-907220SSFSD.

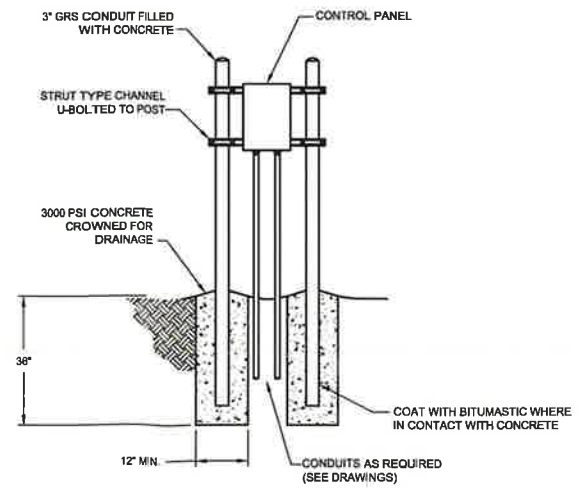
1 ELECTRICAL EQUIPMENT ENCLOSURE (PANELBOARD MP2)

NOT TO SCALE



2 EQUIPMENT RACK (CT CABINET AND METER)

NOT TO SCALE



3 ELECTRICAL EQUIPMENT RACK - OUTDOOR EQUIPMENT

NOT TO SCALE

PLOTTED BY: PBaiden

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ELECTRICAL DETAILS II

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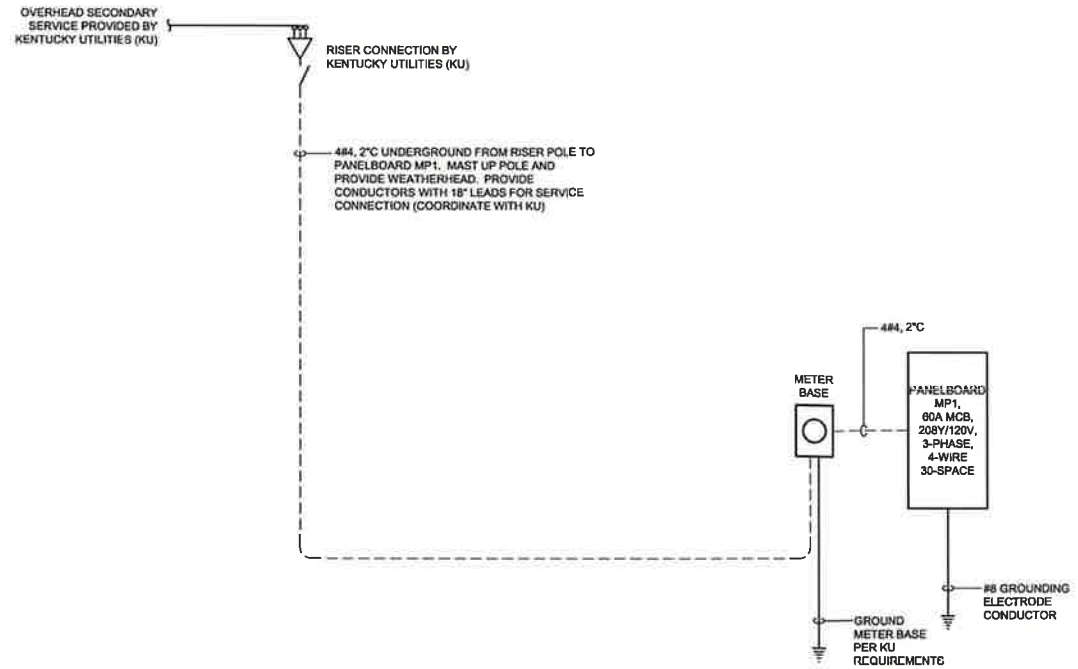
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DATE: JANUARY 23, 2026

SCALE: NOT TO SCALE

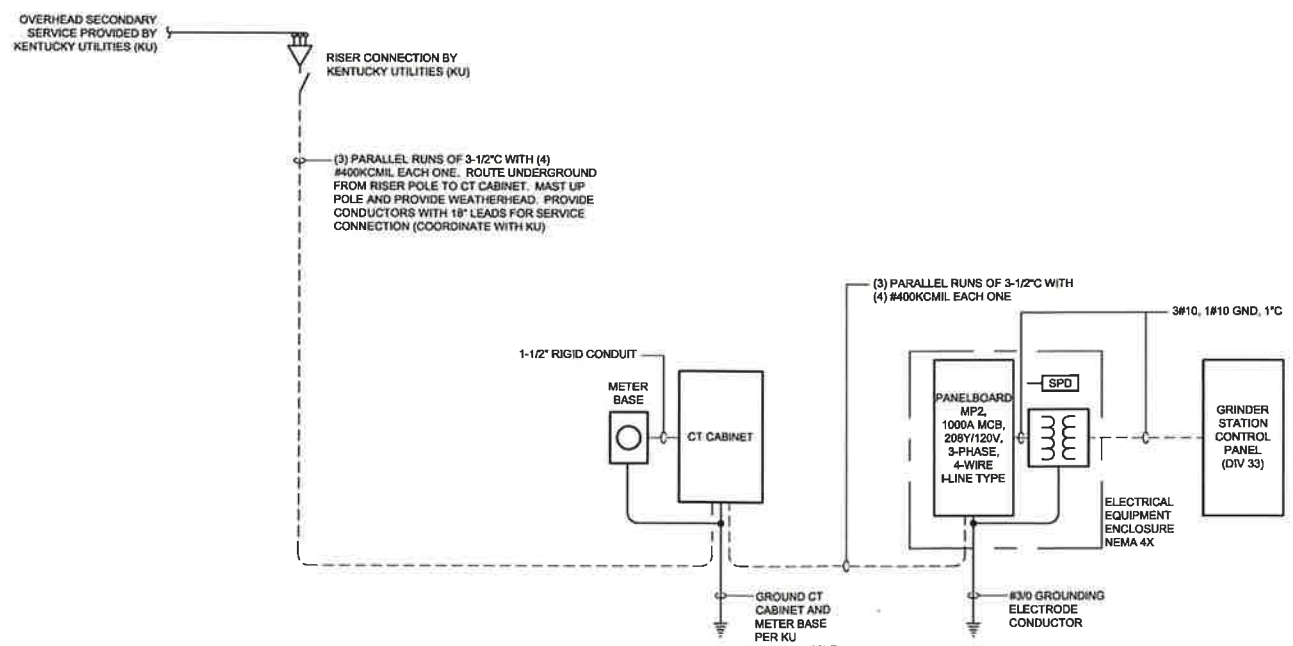
SHEET NO: E-502



1 ELECTRICAL ONE-LINE DIAGRAM - PANELBOARD MP1
NOT TO SCALE

NOTES:

1. CONTRACTOR SHALL PROVIDE/INSTALL METER BASE, GROUNDING LUGS, AND CONDUIT.
2. COORDINATE ADDITIONAL REQUIREMENTS WITH KENTUCKY UTILITIES.



2 ELECTRICAL ONE-LINE DIAGRAM - PANELBOARD MP2
NOT TO SCALE

NOTES:

1. CONTRACTOR SHALL PROVIDE/INSTALL CT CABINET, METER BASE, GROUNDING LUGS, PLYWOOD, POWER BLOCKS, AND CONDUIT. POWER BLOCKS SHALL BE ILSCO # PDB-55-500-1 OR APPROVED EQUAL.
2. CONTRACTOR SHALL INSTALL KENTUCKY UTILITIES PROVIDED CTS AND TEST BOXES.
3. COORDINATE ADDITIONAL REQUIREMENTS WITH KENTUCKY UTILITIES.

STATE OF KENTUCKY
PATRICK J. BAISDEN
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ELECTRICAL ONE-LINE DIAGRAMS

LFUCG FIRE TRAINING
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PANEL SCHEDULE	MP1					VOLTAGE		208Y/120V, 3-PHASE, 4-WIRE				
LOCATION	SOUTHEAST PARKING LOT					MAINS AMPACITY		60A				
ENCLOSURE	NEMA 4X					MAIN CB SIZE		MCB				
SURFACE, FLUSH, OR MCC	SURFACE					TOTAL SPACES		30				
AIC RATING	22,000 SER					NEUTRAL BUS		YES				

DESCRIPTION	VA	#P	BKR	FEEDER	NO	-A- VA	-B- VA	-C- VA	NO.	FEEDER	BKR	#P	VA	DESCRIPTION
TRAFFIC ARM	444	3	15	3#12, 1#12 GND, 1"C	1	778			2	2#10, 1#10 GND, 1"C	20	2	334	LIGHTING - DRIVE
"	444	"	"	"	3		778		4	"	"	"	334	"
"	444	"	"	"	5			945	6	2#12, 1#12 GND, 1"C	20	2	501	LIGHTING - P. LOT
TRAFFIC ARM	444	3	15	3#12, 1#12 GND, 1"C	7	945			8		"	"	501	
"	444	"	"	"	9		1344		10	2#8, 1#8 GND, 1"C	20	1	900	RECEPTACLE
"	444	"	"	"	11			444	12		20	1		SPACE ONLY
SPACE ONLY		1			13	0			14		20	1		SPACE ONLY
SPACE ONLY		1			15		0		16		20	1		SPACE ONLY
SPACE ONLY		1			17			0	18		20	1		SPACE ONLY
SPARE BREAKER		1	20		19	0			20		20	1		SPARE BREAKER
SPARE BREAKER		1	20		21		0		22		20	1		SPARE BREAKER
SPARE BREAKER		1	20		23			0	24		20	1		SPARE BREAKER
SPARE BREAKER		1	20		25	0			26		20	1		SPARE BREAKER
SPARE BREAKER		1	20		27		0		28		20	1		SPARE BREAKER
SPARE BREAKER		1	20		29			0	30		20	1		SPARE BREAKER
TOTAL VOLT-AMPERES PER PHASE						1723	2122	1389						
TOTAL AMPERES PER PHASE						14.4	17.7	11.6						

PANEL SCHEDULE	MP2					VOLTAGE		208Y/120V, 3-PHASE, 4-WIRE				
LOCATION	NORTHEAST PARKING LOT					MAINS AMPACITY		1000A				
ENCLOSURE	NEMA 1					MAIN CB SIZE		MCB				
SURFACE, FLUSH, OR MCC	SURFACE					TOTAL SPACES		42				
AIC RATING	65,000 SER					NEUTRAL BUS		YES				

DESCRIPTION	VA	#P	BKR	FEEDER	NO	-A- VA	-B- VA	-C- VA	NO.	FEEDER	BKR	#P	VA	DESCRIPTION
FUTURE POLE BARN	54100	3	800		1	54518			2	2#12, 1#12 GND, 1"C	20	2	418	LIGHTING - DRIVE
"	54100	"	"	"	3		54518		4	"	"	"	418	"
"	54100	"	"	"	5			54518	6	2#12, 1#12 GND, 1"C	20	2	418	LIGHTING - P. LOT
LIGHTING - TRAINING	418	2	20	2#8, 1#8 GND, 1"C	7	836			8	"	"	"	418	"
"	418	"	"	"	9		958		10	2#10, 1#10 GND, 1"C	20	1	540	RECEPTACLE
LIGHTING - TRAINING	334	2	20	2#10, 1#10 GND, 1"C	11			1054	12	2#6, 1#6 GND, 1"C	20	1	720	RECEPTACLE
"	334	"	"	"	13	874			14	2#6, 1#6 GND, 1"C	20	1	540	RECEPTACLE
FUTURE POLE BARN	27050	3	300		15		28010		16	3#10, 1#10 GND, 1"C	30	2	960	GRINDER STATION
"	27050	"	"		17			28010	18	"	"	"	960	"
"	27050	"	"		19	27050			20					SPACE ONLY
SPACE ONLY					21		0		22					SPACE ONLY
SPACE ONLY					23			0	24					SPACE ONLY
SPACE ONLY					25	0			26					SPACE ONLY
SPACE ONLY					27		0		28					SPACE ONLY
SPACE ONLY					29			0	30					SPACE ONLY
SPARE BREAKER		1	20		31	0			32					SPACE ONLY
SPARE BREAKER		1	20		33		0		34					SPACE ONLY
SPARE BREAKER		1	20		35			0	36		20	1		SPARE BREAKER
SPARE BREAKER		1	20		37	0			38		20	1		SPARE BREAKER
SPARE BREAKER		1	20		39		0		40		20	1		SPARE BREAKER
SPARE BREAKER		1	20		41			0	42		20	1		SPARE BREAKER
TOTAL VOLT-AMPERES PER PHASE						83278	83486	83582						
TOTAL AMPERES PER PHASE						694	695.7	696.5						

LUMINAIRE SCHEDULE

TAG	SHORT DESCRIPTION	LAMPS	COLOR TEMP	LUMENS	INPUT WATTAGE	VOLTAGE	DIMMING	MOUNTING	HEIGHT	MANUFACTURER	MODEL	EQUIVALENT MANUFACTURERS
SL1	LED AREA LUMINAIRE W/ TYPE IV MEDIUM DISTRIBUTION AND 25' SQUARE STEEL POLE	LED	4000K	20,539	167 W	208V	0-10V	POLE	28'-0" AFG	LITHONIA	DSX1 LED P6 40K 80CRI T3M MVOLT SPA NLTAIR2 PIRHN / SSS 25 5G DM19AS FDLGFCI2B (NOTES 1-3)	BEACON, VISIONAIRE OR APPROVED EQUIVALENT
SL2	LED AREA LUMINAIRE W/ TYPE III MEDIUM DISTRIBUTION AND 25' SQUARE STEEL POLE	LED	4000K	20,845	167 W	208V	0-10V	POLE	28'-0" AFG	LITHONIA	DSX1 LED P6 40K 80CRI T4M MVOLT SPA NLTAIR2 PIRHN SSS 25 5G DM19AS FDLGFCI2B (NOTES 1 -3)	BEACON, VISIONAIRE OR APPROVED EQUIVALENT
SL3	LED AREA LUMINAIRE W/ FORWARD THROW MEDIUM DISTRIBUTION AND 25' SQUARE STEEL POLE	LED	4000K	20,989	167 W	208V	0-10V	POLE	28'-0" AFG	LITHONIA	DSX1 LED P6 40K 80CRI TFTM MVOLT SPA NLTAIR2 PIRHN SSS 25 5G DM19AS FDLGFCI2B (NOTES 1 -3)	BEACON, VISIONAIRE OR APPROVED EQUIVALENT

NOTES:

1. COLOR/FINISH SELECTION BY ARCHITECT DURING SHOP DRAWING REVIEW.
2. INTEGRAL CONTROLS SHALL INCLUDE PHOTOCELL FOR ON/OFF CONTROL AND MOTION SENSOR FOR AUTOMATIC DIMMING. LIGHTING POWER SHALL DIM BY 30% WHEN NO ACTIVITY HAS BEEN DETECTED FOR A TIME NO LONGER THAN 15 MINUTES.
3. PROVIDE "FDLGFCIxy" OPTION FOR POLES INDICATED WITH GFCI RECEPTACLE ON SITE PLAN. CONTRACTOR SHALL FIELD INSTALL GFCI AND WHILE-IN-USE COVER.

PLOTTED BY: PBaisden
PRINTED: 1/21/2026 @ 6:14PM
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CONSTRUCTION DOCUMENTS

ELECTRICAL SCHEDULES

LFUCG FIRE TRAINING
CITY OF LEXINGTON, KENTUCKY

DESIGNED	DRAWN	REVIEWED	APPROVED
PJB	PJB	PJB	PJB

REVISIONS

NO	DESCRIPTION	DATE	BY

THIS MARK SHOULD MEASURE EXACTLY 1" WHEN PLOTTED
SCALE IS FOR 11 X 17 PLOTS

DATE: JANUARY 23, 2026
SCALE: NOT TO SCALE
SHEET NO: E-701